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Course Descriptions

Course Numbering

To simplify the task of maintaining accurate and complete academic records for all students at the College, an alpha-numeric code is used to identify all courses. In this code, the alpha characters indicate the subject area. For example, World Regional Geography carries the course number GEOG-1010. The letters GEOG refer to the subject area, Geography. The number 1010 has been assigned to a specific course, World Regional Geography, within that subject area.

Subject areas are listed in alphabetical order by subject title, not by the course code. Courses are listed in numerical order within each subject area. The semester course numbering system defines the type of course it is. Courses numbered 09xx generally are designed to provide students with basic skills necessary for freshman studies. ENG-0980, for example, is Language Fundamentals I. Courses that begin with the number "1xxx" normally represent freshman-level courses. Courses that begin with the number "2xxx" are usually sophomore-level courses. The numbering scheme for the semester system courses may be found in Appendix V.

Modular courses may be offered in some subject areas. A modular course is a component of an approved semester course and is identified with a final letter of A, B, C, D, or E. The course content of a modular course must be contained in the original course.

A special topics course permits the teaching of a variety of topics not currently contained in its subject area. An "18xx" numbered course indicates a freshmen-level special topics course; a "28xx" is assigned to a sophomore-level course. The beginning of the Course Description section lists course descriptions for Special Topics courses, Independent Study/Research courses, and Cooperative Education courses. These courses have a generic course description and thus are not repeated in their subject area.

Honors courses are also discussed at the beginning of the Course Description section. Some standard courses have an equivalent honors course that may replace the standard course if the student meets the honors program requirements. Course descriptions for honors courses are listed within their subject area. A listing of current available honors courses may be found in the Equivalent Courses list which is located in Appendix VI.

Course numbers do not indicate whether or not a course will be accepted for transfer to other institutions. Students are advised to consult with their counselors regarding transfer of courses and credits to other institutions.

Credits

The number of semester credits for each course described in the Catalog is indicated after the course title. For example, three credits are indicated as 03 Semester Credits. The number of credits for a course does not necessarily equal the number of hours that the course meets in one week.

Prerequisites

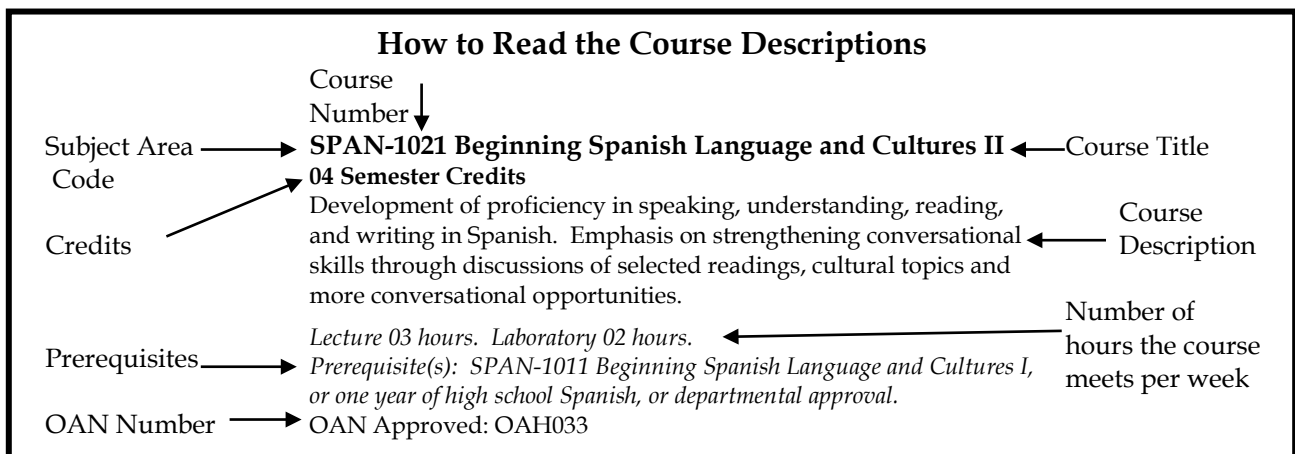
Prerequisites, if any, are listed at the end of each course description. Prerequisites are established by each department, for each course in that department, to ensure that the student has an adequate and sufficient background to enroll in the course and achieve success. Students must have completed the prerequisite course with a grade of "C" or higher to meet the prerequisite requirement. It is the student's responsibility to ensure that he or she has met the prerequisites for any course in which he or she enrolls. PREREQUISITES WILL BE CHECKED BY THE COMPUTER AT THE TIME OF REGISTRATION. If the student is unsure that the prerequisite has been met, he or she should consult with the department PRIOR to registering for that course.

Ohio Articulation Number (OAN)

Number assigned by the State of Ohio to denote that course has been accepted as part of a specific state-wide Transfer Assurance Guide (TAG).

Schedule of Classes

Courses described in this Catalog are those approved by the Cuyahoga Community College Board of Trustees at the time of publication. Inclusion of a course description does not obligate the College to offer the course in any given semester or academic year. A Credit Schedule of classes is published each semester prior to the registration period. The schedule of classes contains a list of classes to be offered and general registration information. Courses approved by the Board of Trustees after the publication of this Catalog are reflected in the Credit Schedule of classes.



<u>Subject Areas</u>	<u>Subject Code</u>		
Accounting	ACCT	Humanities	HUM
Administrative Office Systems	AOS	Information Technology	IT
American Sign Language	ASL	Networking Software	ITNT
Anthropology	ANTH	Programming and Development	ITMP/ITWM
Applied Industrial Technology	AIT	Integrated Systems Engineering Technology	ISET
Bricklaying & Allied Crafts	ATBL	Interior Design	INTD
Carpentry	ATCT	Italian	ITAL
Cement Masonry	ATCM	Japanese	JAPN
Communication Transport Systems	ATCW	Journalism and Mass Communication	JMC
Construction Tending and Hazardous	ATLB	Marketing	MARK
Material Abatement		Massage Therapy	MT
Drywall Finishing	ATDW	Mathematics	MATH
Electrical Construction	ATEL	Manufacturing Industrial Engineering Technology	MET
Floorlaying	ATFL	Mechanical Engineering Technology	MET
Glazing	ATGL	Media Arts and Filmmaking	MARS
Ironworking	ATIW	Medical Assisting	MA
Lifting Technologies	ATLT	Medical Laboratory Technology	MLT
Manufacturing Technology	ATMT	Music	MUS
Millwrighting	ATMW	Nuclear Medicine	NMED
Operating Engineers	ATOE	Nursing	NURS
Painting	ATPT	Occupational Therapy Assistant Technology	OTAT
Pile Driving	ATPD	Optical Technology	OPT
Pipefitting	ATPF	Paralegal Studies	PL
Plumbing	ATPL	Pharmacy Technology	PHM
Sheet Metal Working	ATSM	Philosophy	PHIL
Sign and Display	ATSD	Physical Education	PE
Teledata	ATTC	Physical Science	PSCI
Art	ART	Physical Therapist Assisting Technology	PTAT
Automotive Technology	AUTO	Physician Assistant	PA
Biology	BIO	Physics	PHYS
Business Administration	BADM	Plant Science and Landscape Technology	PST
Chemistry	CHEM	Political Science	POL
Chinese	CHIN	Practical Nursing	PNUR
Captioning and Court Reporting	C&CR	Psychology	PSY
Construction Engineering Technology	CNST	Radiography	RADT
Criminal Justice	CJ	Recording Arts and Technology	RAT
Dance	DANC	Religious Studies	REL
Deaf Interpretive Services	DIS	Respiratory Care	RESP
Dental Hygiene	DENT	Russian	RUSS
Diagnostic Medical Sonography	DMS	Sociology	SOC
Dietetic Technology	DIET	Spanish	SPAN
Early Childhood Education	ECED	Sport and Exercise Studies	SES
Earth Science	ESCI	Speech Communication	SPCH
Economics	ECON	Surgical Technology	SURT
Education	EDUC	Theatre Arts	THEA
Electrical/Electronic Engineering Technology	EET	Urban Studies	UST
Electroneurodiagnostic	END	Veterinary Technology	VT
Emergency Medical Technology	EMT	Visual Communication and Design	VC&D
English	ENG	Digital Video and Digital Filmmaking	VCDV
English as a Second Language	ESL	Graphic Design	VCGD
Environmental, Health & Safety Technology	EHST	Illustration	VCIL
Financial Management	FIN	Web and Interactive Media	VCIM
Fire Technology	FIRE	Photography	VCPH
French	FREN	Women's Studies	WST
General Studies	GEN		
Geography	GEOG		
German	GER		
Health	HLTH		
Health Information Management	HIM		
Health Technologies	HTEC		
History	HIST		
Hospitality Management	HOSP		
Human Services	HS		

Course Descriptions

The College offers a variety of courses in each discipline which carry a common description. The course descriptions are listed below. Students should see the current semester Credit Schedule of classes for specific offerings.

SPECIAL TOPICS

xxxx-1800 – 1819 Special Topics in (subject area name)

01-03 Semester Credits

Study of selected topics or current issues in *(subject area name)*. Provides student an opportunity to explore various topics in greater detail (see Credit Schedule of classes for current offerings). Repeatable for different topics. No more than six credits of special topics may be applied toward elective and/or program graduation degree requirements.

Lecture 01-03 hours. Laboratory 02-09 hours.

Prerequisite(s): Faculty counterparts determine appropriate prerequisite/corequisite for each topic.

xxxx-2800 – 2819 Special Advanced Topics in (subject area name)

01-03 Semester Credits

Study of selected advanced topics or current issues in *(subject area name)*. Provides student an opportunity to explore various topics in greater detail (see Credit Schedule of classes for current offerings). Repeatable for different topics. No more than six credits of special topics courses may be applied toward elective and/or program graduation degree requirements.

Lecture 01-03 hours. Laboratory 02-09 hours.

Prerequisite(s): Faculty counterparts determine appropriate prerequisite/corequisite for each topic.

INDEPENDENT STUDY/RESEARCH

xxxx-1820 Independent Study/Research in (subject area name)

01-03 Semester Credits

Directed individual study. Study/research title and specific content arranged between instructor and student (see Credit Schedule of classes for current offerings). May be repeated for a maximum of six credits of different topics.

Lecture 01-03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval, and instructor approval, and eligibility for ENG-1010 College Composition I.

xxxx-182S Independent Laboratory Study/Research in (subject area name)

01-03 Semester Credits

Independent two-hour lab per credit. Directed individual study. Study/research title and specific content arranged between instructor and student (see

Credit Schedule of classes for current offerings). May be repeated for a maximum of six credits of different topics.
Lecture 00 hours. Laboratory 02-06 hours
Prerequisite(s): Departmental approval, and instructor approval, and eligibility for ENG-1010 College Composition I.

Available in some disciplines.

xxxx-182T Independent Laboratory Study/Research in (subject area name)

01-03 Semester Credits

Independent three-hour lab per credit. Directed individual study. Study/research title and specific content arranged between instructor and student (see Credit Schedule of classes for current offerings). May be repeated for a maximum of six credits of different topics.

Lecture 00 hours. Laboratory 03-09 hours.

Prerequisite(s): Departmental approval, and instructor approval, and eligibility for ENG-1010 College Composition I.

Available in some disciplines.

xxxx-2820 Independent Advanced Study/Research in (subject area name)

01-03 Semester Credits

Directed individual advanced study. Study/research title and specific content arranged between instructor and student (see Credit Schedule of classes for current offerings). May be repeated for a maximum of six credits of different topics.

Lecture 01-03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval, and instructor approval, and eligibility for ENG-1010 College Composition I.

xxxx-282S Independent Advanced Laboratory Study/Research in (subject area name)

01-03 Semester Credits

Independent two-hour lab per credit. Directed individual advanced study. Study/research title and specific content arranged between instructor and student (see Credit Schedule of classes for current offerings).

May be repeated for a maximum of six credits of different topics.

Lecture 00 hours. Laboratory 2-6 hours.

Prerequisite(s): Departmental approval, and instructor approval, and eligibility for ENG-1010 College Composition I.

Available in some disciplines.

xxxx-282T Independent Advanced Laboratory Study/Research in (subject area name)

01-03 Semester Credits

Independent three-hour lab per credit. Directed individual advanced study. Study/research title and specific content arranged between instructor and student

(see Credit Schedule of classes for current offerings).
May be repeated for a maximum of six credits of different topics.

Lecture 00 hours. Laboratory 03-09 hours.

Prerequisite(s): Departmental approval, and instructor approval, and eligibility for ENG-1010 College Composition I.

Available in some disciplines.

COOPERATIVE EDUCATION

xxxx-2830 Cooperative Field Experience 01-03 Semester Credits

Open to students eligible for the Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): See campus CO-OP Advisor for the Cooperative Education Program application.

Available in some disciplines (see Credit Schedule of classes for current offerings).

HONORS COURSES

Honors courses at Cuyahoga Community College are based upon a commitment to college, a commitment to scholarship and a commitment to community. Interested students of high academic potential who wish to join specially selected faculty in a partnership dedicated to learning and personal growth should consider taking Honors courses. Students enrolled in Honors courses can expect university parallel curriculum, strong faculty mentoring relationships and contractual-independent learning opportunities. These students may also be eligible to join the Honors Program, which offers honors scholarships and a variety of cultural, community and academic activities, and the Phi Theta Kappa Honor Society, which provides opportunities for development of leadership, service and scholarship. Both of these organizations offer a variety of activities that complement class work and form an important extra- and co-curricular component of an honors education.

Besides regular Honors courses, a one-hour Honors Contract (179H/279H) is available as an addition to almost any honors or non-honors class with the approval of the instructor. Honors courses are open to both new and current students. Honors courses normally end with an "H" in the fourth position of the course number.

For information about admission to Honors courses, contact the Counseling Department or the Campus Honors Coordinator. For more information about Phi Theta Kappa, visit <http://www.tri-c.edu/programs/honors/Pages/PhiThetaKappa.aspx>. For more information about the Tri-C Honors Program, visit the Honors Website at www.tri-c.edu/honors.

xxxx-179H Honors Contract 01 Semester Credit

Honors Contract complements and exceeds requirements and expected outcomes for an existing 1000-level honors course through formulation of a contract with a faculty mentor. This independent study at the honors level may also be taken with a non-honors course. When taken with a non-honors course the Honors Contract adds an honor experience to that course. In conjunction with a faculty mentor, student will formulate a contract, which upon completion will result in distinctive scholarship. The student is required to meet on a regularly scheduled basis with the instructor for mentor-student tutorial sessions. A maximum of six Honor Contracts (six credit hours) may be taken at the College (includes 179H and 279H).

Lecture 01 hour. Laboratory 00 hours.

Other Required Hours: 00.

Prerequisite(s): Must be taken concurrently with a 1000-level course whose instructor agrees to mentor the student in this contract. Departmental approval required.

Available in some disciplines (see department or Credit Schedule of classes for current offerings).

xxxx-279H Sophomore (Second Year) Honors Contract

01 Semester Credit

Sophomore Honors Contract in (subject area) complements and exceeds requirements and expected outcomes for an existing [subject area] 2000-level course (not an honors course) through formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, student will formulate a contract that upon completion will result in distinctive scholarship appropriate to honors 2000-level. In order to complete the contract, student is required to meet on a regularly scheduled basis with instructor offering the contract for mentor-student tutorial sessions. A maximum of six Honors Contracts (six credits) may be taken at the College (includes 179H and 279H).

Lecture 01 hour. Laboratory 00 hours.

Other Required Hours: 00.

Prerequisite(s): Must be taken concurrently with a 2000-level course (not an honors course) in (subject area), whose instructor agrees to mentor the student in the sophomore honors contract. Departmental approval required.

Available in some disciplines (see department or Credit Schedule of classes for current offerings).

xxxx-182H Honors Independent Study 01-03 Semester Credits

Honors-level directed individual study. Must meet criteria set forth in the Honors Course Checklist used to approve regular honors courses. Study/research title and specific content arranged between instructor and student. May be repeated for a maximum of six credits of different topics.

Lecture 01-03 hours. Laboratory 00 hours.

Other Required Hours: 00.

Prerequisite(s): Departmental approval and instructor approval, and eligibility for ENG-1010 College Composition I or eligibility for ENG-101H Honors College Composition I, and must have earned an A or B in at least 3 honors courses.

xxxx-282H Honors Independent Study 01-03 Semester Credits

Advanced Honors-level directed individual study. Must meet criteria set forth in the Honors Course Checklist used to approve regular honors courses. Study/research title and specific content arranged between instructor and student. May be repeated for a maximum of six credits of different topics.

Lecture 01-03 hours. Laboratory 00 hours.

Other Required Hours: 00.

Prerequisite(s): Departmental approval and instructor approval, and eligibility for ENG-1010 College Composition I or eligibility for ENG-101H Honors College Composition I, and must have earned an A or B in at least 3 honors courses.

xxxx-180H Honors Special Topics in (subject area name)

Honors study of selected topics or current issues in (subject area name). Provides student an opportunity to explore various topics in greater detail (see Credit Schedule of classes for current offerings). Repeatable for different topics. No more than six credits of special topics may be applied toward elective and/or program graduation degree requirements.

Prerequisite(s): Departmental approval: Member of the Honors Program; successfully completed a minimum of one Honors course (3 or more credit hours) with a grade of A or B.

xxxx-280H Honors Special Advanced Topics in (subject area name)

Honors study of selected advanced topics or current issues in (subject area name). Provides student an opportunity to explore various topics in greater detail (see Credit Schedule of classes for current offerings). Repeatable for different topics. No more than six credits of special topics may be applied toward elective and/or program graduation degree requirements.

Prerequisite(s): Departmental approval: Member of the Honors Program; successfully completed a minimum of two Honors courses (6 or more credit hours) with a grade of A or B.

APPLIED MUSIC COURSE ENROLLMENT

Cuyahoga Community College offers students the opportunity to study a particular musical instrument or vocal music in an intensive class setting for credit. Before registering for any of the Applied Music courses, students must contact the Applied Music Coordinator at the campus of enrollment:

Metropolitan Campus: 216-987-4256

Eastern Campus: 216-987-2210

Western Campus: 216-987-5532

All students are eligible to take the basic Applied Music courses, MUS-1290 or MUS-2290. If the student plans to enroll in the Music Major courses (MUS-1460, MUS-1470, MUS-2460, or MUS-2470), an audition performed for the coordinator and applied faculty in the particular musical instrument may be required.

Students enrolled in Applied Music are required to pay a non-refundable private lesson fee each semester in addition to the credit hour cost, (\$150.00 for half-hour lessons, and \$300.00 for hour lessons).

Applied Music courses at Cuyahoga Community College are private, one-on-one lessons with College Music Faculty. Students will have 16 weekly lessons or 15 weekly lessons and one jury, upon the recommendation of the individual instructor. The College absence policy will be followed in this program.

A one-credit Applied Music course requires a minimum of 7 hours of rehearsal/practice outside of lessons per week. A two-credit Applied Music course requires a minimum of 14 hours of rehearsal/practice per week. Individual instructors may decide how to monitor this requirement.

A jury is required each semester for students enrolled in the music major classes: MUS-1460, MUS-1470, MUS-2460, and MUS-2470. Students' progress through these courses shall be judged at the end of each term of enrollment, and faculty will make recommendations about the students' placement. Faculty approval and a grade of "C" or higher are required to move onto the next level of study.

ACCOUNTING - ACCT

ACCT-1011 Business Math Applications

03 Semester Credits

Application of applied quantitative procedures to typical accounting, financial, and business situations. Includes percents in business, simple and compound interest, financing, property and sales taxes, applied statistics, present and future values, and other accounting/business topics. Required use of financial (business analyst) calculator and available internet resources in problem-solving.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0910 Basic Arithmetic and Pre-Algebra, or appropriate score on Math placement test.

ACCT-1020 Applied Accounting

03 Semester Credits

Fundamentals of accounting procedures as used in a double-entry bookkeeping system. Emphasis on application of techniques and procedures to record financial information in an accounting system and to generate financial statements. Introduction to use of commercial general ledger software in recording business transactions.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

ACCT-1030 Payroll

03 Semester Credits

Detailed study of payroll, record-keeping regulations, reporting requirements, accounting procedures, and federal labor laws. Computations of gross wages, salaries, mandatory deductions of federal, state and local taxes, and optional deductions. Covers employers' related taxes and preparation of various payroll tax forms.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ACCT-1310 Financial Accounting, or ACCT-1020 Applied Accounting; and ACCT-2830 Cooperative Field Experience, or departmental approval: equivalent coursework or experience.

ACCT-1041 Individual Taxation

04 Semester Credits

Individual income taxes with concentration at federal level. History, assumptions, and objectives of federal income tax law. Determination of filing status, exemptions, inclusions, exclusions, adjustments, deductions, credits, tax liability, and reporting requirements. Completion of tax returns, tax planning, and introduction to federal tax research. Use of commercial tax-preparation software. Determination of sole proprietorship income and taxes thereon.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): None.

ACCT-1310 Financial Accounting

04 Semester Credits

Introduction to methodology and logic of accounting procedures, principles, and standards used in preparing financial information for external users. Emphasis on measuring, describing, recording, interpreting, and analyzing economic activities within for-profit business entities.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0955 Beginning Algebra or appropriate Math placement score to enroll in MATH-1000 level Mathematics.

OAN Approved: OBU010

ACCT-1340 Managerial Accounting

04 Semester Credits

Theory and practice of accounting procedures used by management to plan operations, control activities, and make sound business decisions. Create and interpret budgets, standard cost systems, breakeven analysis, activity based costing (ABC) and job costing systems. Discuss other tools necessary to effectively manage companies.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ACCT-1310 Financial Accounting, or departmental approval.

OAN Approved: OBU011

ACCT-1520 QuickBooks Immersion

02 Semester Credits

Fundamentals of accounting procedures as used in a double-entry bookkeeping system. Emphasis is on application of techniques and procedures to record financial information in an accounting system and to customize and generate financial statements for a small business. Introduction to commonly used commercial general ledger software in recording business transactions and preparing business documents and reports.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ACCT-1020 Applied Accounting, or ACCT-1310 Financial Accounting; or departmental approval.

ACCT-2041 Business Taxation

04 Semester Credits

Concentration on corporate federal income taxes and taxation of partnership income. Preparation of various tax forms including 1120, 1120S, and 1065 and related schedules. Payroll taxes, sales and use tax, personal property taxes, franchise taxes, and other taxes related to business.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ACCT-1041 Individual Taxation, or departmental approval: equivalent coursework or experience.

ACCT-2050 Volunteer Income Tax Assistance 02 Semester Credits

Train in the basics of individual taxation for federal, Ohio and local tax compliance as well as in the use of professional level tax preparation software. Students must successfully pass Ethics, Part A - Basic, and Parts B - Intermediate of the Volunteer Income Tax Assistance (VITA) Exam provided by the Internal Revenue Service in order to qualify as a volunteer tax preparer at a VITA Tax Clinic.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Recommend completing ACCT-1041 Individual Taxation prior to enrolling in this course.

ACCT-2310 Intermediate Accounting I 04 Semester Credits

Focuses on increasing understanding and application of accounting theory and the underlying financial accounting principles, procedures and reporting requirements used primarily in the for-profit sector. Topics include: financial reporting, accounting cycle, financial statement analyses, business segment and interim reports, income statement, receivables, cash cycle, asset valuation, liabilities, and earnings management.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ACCT-1310 Financial Accounting, and MATH-1240 Contemporary Mathematics or higher, or departmental approval: equivalent course work or experience. Recommend IT-1010 Introduction to Microcomputer Applications for students who are not already proficient in Microsoft Excel, Word, and PowerPoint.

ACCT-2320 Intermediate Accounting II 04 Semester Credits

Continuation of Intermediate Accounting I. Emphasis on analysis, methods of valuation and statement presentation of current and long-term liabilities, including leases and pensions, corporate equity in both simple and complex structures, including earnings per share computations; income tax accounting; error correction and financial statement analysis.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ACCT-2310 Intermediate Accounting I and recommend IT-1010 Introduction to Microcomputer Applications for students who are not already proficient in Microsoft Excel, Word, and PowerPoint.

ACCT-2340 Cost Accounting 04 Semester Credits

Theory and practice of cost accounting as applied to management of manufacturing, retail, and service industries. Emphasis on advanced terminology, job and process costing schedules, budgeting and variances, joint costing, pricing decisions, and capital budgeting. Application of Cost-Volume-Profit (CVP) models, the Equivalent Units (EOQ) model, Just-in-time (JIT) and other

analytical tools used by management in the decision-making process.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ACCT-1340 Managerial Accounting, or departmental approval: equivalent coursework or experience.

ACCT-2500 Governmental/Non-Profit Accounting 04 Semester Credits

Accounting principles, standards and procedures for government entities and non-profit service entities, including school systems, colleges and universities, hospitals, charitable and religious organizations, and fraternal organizations. Application of current Financial Accounting Standards Board (FASB) and Government Accounting Standards Board (GASB) standards. Modular courses.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ACCT-1020 Applied Accounting, or ACCT-1310 Financial Accounting, or departmental approval: equivalent coursework or experience.

ACCT-2510 Auditing 04 Semester Credits

Audit regulatory environment, approach, planning, and procedures; compliance and substantive testing; treatment of audit adjustments, subsequent events, and discovered irregularities; preparing various audit worksheets and final product, the auditor's report.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ACCT-1340 Managerial Accounting, and FIN-2100 Financial Management.

ACCT-2830 Cooperative Field Experience 01-03 Semester Credits

Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): Formal application into the Cooperative Education Program.

ACCT-2995 Accounting Technology 03 Semester Credits

Capstone course in Accounting. Integrates business and accounting core curriculum and application of accounting concepts requiring critical thinking and teamwork skills. Builds on students' existing technology skills and utilizes various applications to research, present, and support financial management decision making and reporting. Spreadsheet, data management, accounting software applications, tax and other research concepts.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ACCT-1041 Individual Taxation, and FIN-2100 Financial Management or concurrent enrollment.

ADMINISTRATIVE OFFICE SYSTEMS - AOS

AOS-1201 Word Processing I

04 Semester Credits

Basic and intermediate techniques and skills using word processing software applied to practical business applications. Introduction to and formatting of a variety of documents will be taught. Professionalism and soft skills emphasized (e.g. punctuality, getting along with others, etc.)

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): IT-1000 Keyboarding, or departmental approval: equivalent proficiency.

AOS-1220 Speed Building

02 Semester Credits

For individuals with ability to type by touch. Focuses on improving speed and accuracy in keyboarding at the microcomputer. May be repeated; only 2 credits may be applied to degree requirements.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): IT-1000 Keyboarding, or departmental approval.

AOS-1241 Records Management

03 Semester Credits

Fundamentals of records, including basic rules for filing, five basic methods, and records handling from creation to destruction or archival storage. Study of electronic office filing, micrographics, electronic media, and optical storage. Applications on microcomputer.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1010 Introduction to Microcomputer Applications.

AOS-2200 Word Processing II

03 Semester Credits

Study and application of advanced text editing features of word processing software as applied to complex business documents. Includes document assembly, advanced merge techniques, sort, forms, complex tables and columns, math functions, styles, outlines, templates, macros, graphics, and web applications.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): AOS-1201 Word Processing I, or departmental approval: equivalent proficiency.

AOS-2210 Presentation Software

03 Semester Credits

Comprehensive instruction in the major features of presentation software. Students learn to create professional-quality slide presentations. Instruction in design strategy-importing and creating graphics; sound-

creating, editing, playing and downloading from the Internet; and video-capturing, playing, and editing video.
Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, or departmental approval: comparable knowledge or skills.

AOS-2220 Electronic Spreadsheet Use and Design

03 Semester Credits

Study of electronic spreadsheet concepts and software applications as used in a business environment. Spreadsheet theory, design, manipulation, and implementation techniques. Hands-on applications, case studies, and problem-solving strategies using spreadsheet software for accurate and timely storage, retrieval, manipulation, and interpretation of data.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, or departmental approval: comparable knowledge or skills.

AOS-2250 Virtual Assistant/Virtual Cyber Office

03 Semester Credits

Explore concepts and issues to learn how to establish and successfully develop a virtual assistant business including how to locate customers, set fees, and develop client contracts. Students will also use integrated applications software to complete tasks and projects.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, or departmental approval.

AOS-2270 Desktop Publishing

03 Semester Credits

Hands-on applications using desktop publishing software package. Application of desktop publishing techniques and design concepts, applied to a variety of business publications. Course assumes prior word processing experience/knowledge.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): AOS-1201 Word Processing I, or departmental approval: equivalent proficiency.

AOS-2370 Office Meeting and Events Coordination

03 Semester Credits

Presents sound principles and practices for office professionals and public relations practitioners who coordinate events, meetings, conferences, or conventions. Students will complete assignments, activities, and projects utilizing "current" integrated office suite applications software such as Microsoft Office.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, and AOS-2210 Presentation Software, and AOS-2270 Desktop Publishing or concurrent enrollment, and AOS-2990 Office Procedures and Practices or concurrent enrollment.

AOS-2400 Virtual Portfolio Project

03 Semester Credits

This course requires students to write a business plan for creating a virtual office; plan, design, create and publish a Virtual Assistant website. Students will also develop a marketing strategy and promotional materials for the virtual office. Upon completion, students will have prepared a professional portfolio.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, and AOS-2210 Presentation Software, and AOS-2270 Desktop Publishing.

AOS-2410 Office Management

03 Semester Credits

Basic principles of office organization and management. Emphasis on problem-solving and communications necessary to administer office functions.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BADM-1020 Introduction to Business.

AOS-2600 Voice Recognition Technology

02 Semester Credits

Presents an overview of current technology, getting started using the technology, learning the basics, making speech recognition part of the computer routine, and using speech recognition and digital input tools routinely as communication tools.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): AOS-1201 Word Processing I, or departmental approval: equivalent proficiency.

AOS-2830 Cooperative Field Experience

01-03 Semester Credits

Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): Formal application into the Cooperative Education Program.

AOS-2990 Office Procedures and Practices

03 Semester Credits

Designed to update knowledge of rapidly changing office environment and preparation for initial employment as well as promotion to supervisory and administrative positions.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): AOS-1201 Word Processing I, and IT-1010 Introduction to Microcomputer Applications, and AOS-2410 Office Management, or departmental approval.

AMERICAN SIGN LANGUAGE - ASL

ASL-1001 Fingerspelling

02 Semester Credits

Elementary proficiency of the manual alphabet and numbers of Fingerspelling ASL in conversational settings, with emphasis on fingerspelled words used as signs in ASL (loan signs) and acronyms, clubs and organizations related to the Deaf community. Emphasizes accuracy, clarity, speed, and rhythm in application of comprehension and production skills.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

ASL-1010 Beginning American Sign Language I

04 Semester Credits

First in two-course sequence. Introduction to American Sign Language (ASL) and its history with emphasis on basic communication skills, focusing on principles of ASL grammar, body language, and facial expressions. Practice in expressive and receptive skills.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): None.

OAN Approved: OFL025

ASL-1020 Beginning American Sign Language II

04 Semester Credits

Second in two-course sequence. Focuses on enhancing American Sign Language vocabulary. Daily practice in expressive and receptive skills in paragraph form. Introduction to conversational skills along with verb and adjective inflection. Introduction of various aspects of Deaf culture and common occurrences in the daily lives of people who are deaf.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ASL-1010 Beginning American Sign Language I, or departmental approval.

ASL-1100 Deaf Culture

03 Semester Credits

Cultural differences and similarities between the hearing and Deaf communities. History of ASL, deafness and its causes. Deaf education, ADA laws, and special devices utilized by people who are deaf. Examine selected vocabulary and facial expressions and learn their relevance to Deaf culture. One visit outside classroom may be required.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

**ASL-2010 Intermediate American Sign Language I
04 Semester Credits**

First in two-course sequence. Focuses on signs, body language, and facial expressions with emphasis on more complex conversational situations. Practice at intermediate level. Visitation outside the classroom is required.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ASL-1020 Beginning American Sign Language II, or departmental approval.

**ASL-2020 Intermediate American Sign Language II
04 Semester Credits**

Second in two-course sequence. Integrates facial expressions, body language, and ASL vocabulary at an increasingly complex level. Practice receptive skills in dialogue mode. Keep current in the field of deafness and interpreting by reading articles from various sources. Students participate in activities outside the classroom with persons who are deaf.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ASL-2010 Intermediate American Sign Language I, or departmental approval.

**ASL-2412 Advanced American Sign Language I
04 Semester Credits**

Study of particular dialogues and drills, both from text and original work. Practice at advanced level, receptively and expressively. Visitation outside the classroom may be required.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ASL-2020 Intermediate American Sign Language II, or appropriate assessment score or ASL placement/skill assessment.

**ASL-2420 Advanced American Sign Language II
04 Semester Credits**

Study of particular dialogues and drills, from text, video and original work, with emphasis on engaging in impromptu conversational and presentational activities. Practice at an increasingly complex advanced level, both receptively and expressively. Community engagement and lab projects may be required outside the classroom.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ASL-2412 Advanced American Sign Language I.

ANTHROPOLOGY - ANTH

**ANTH-1010 Cultural Anthropology
03 Semester Credits**

Introduction to cultural study of human societies. Examples from various cultures within the United States and around the world used to provide understanding of cultural differences and similarities. Will relate current

findings, perspectives and methods used by anthropologists in all fields.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OSS001

**ANTH-1210 Human Evolution
04 Semester Credits**

Survey of the human evolutionary past. Biological Anthropology course that focuses upon evolutionary theory and principles, archaeology, living primates, the fossil record, human ancestors, and modern human variation.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I, or departmental approval.

OAN Approved: OSS002

**ANTH-179H Honors Contract in Anthropology
01 Semester Credit**

Honors Contract complements and exceeds the requirements and objectives for an existing Anthropology 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion, will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions. May be repeated for a maximum of six credits of different topics.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Must be taken concurrently with a 1000-level course in Anthropology, whose instructor approves the Honors Contract.

**ANTH-2010 Peoples and Cultures of the World
03 Semester Credits**

Cross cultural understanding of universal human concerns and issues affecting particular regions and cultures, using a variety of anthropological perspectives and theories. Emphasis on concerns of non-Western peoples and cultures.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ANTH-1010 Cultural Anthropology, or SOC-1010 Introductory Sociology, or departmental approval.

ANTH-2030 Archaeological Field Methods

04 Semester Credits

Overview of methods used in field archaeology as applied to actual archaeological sites. Students receive training and experience in surveying, mapping, excavation, artifact processing and data analysis. Requires on-site student participation in the field.

Lecture 01-03 hours. Laboratory 03 hours.

Other Required Hours: 75 hours of supervised field experience.

Prerequisite(s): Departmental approval: approval of instructor.

ANTH-2110 Archaeology

03 Semester Credits

Investigation of the human past using archaeological methods and perspectives. Provides a survey of significant archaeological findings and interpretations from across the globe.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I.

OAN Approved: TMSBS

APPLIED INDUSTRIAL TECHNOLOGY - AIT

AIT-1010 Construction Measurements and Calculations

04 Semester Credits

Covers fundamental measuring and calculation skills essential to the skilled craftsperson working in the construction industry. Provides a basic level of knowledge and understanding of practical measurements used to establish building, wall and equipment locations as well as material sizes and quantities. Field application and measurement conversions are stressed. Basic mathematical concepts are explained and applied in job situations.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-0980 Language Fundamentals I, and MATH-0910 Basic Arithmetic and Pre-Algebra or appropriate score on Math placement test to enroll in MATH-0955, and concurrent enrollment in the following courses: AIT-1020 Comprehension and Communication for Construction, AIT-1030 Basic Construction Language, AIT-1040 Spatial and Mechanical Reasoning, AIT-1050 Construction Industry Orientation, AIT-1060 Construction Tools, and AIT-1120 Building Construction Trades Lab.

AIT-1020 Comprehension and Communication for Construction

02 Semester Credits

Covers basic skills necessary for reading factual information used in construction with concentration on supporting details, clarifying information, and end results needed for success in the construction industry.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-0980 Language Fundamentals I, and MATH-0910 Basic Arithmetic and Pre-Algebra or appropriate score on Math placement test to enroll in MATH-0955, and concurrent enrollment in the following courses: AIT-1010 Construction Measurements and Calculations, AIT-1030 Basic Construction Language, AIT-1040 Spatial and Mechanical Reasoning, AIT-1050 Construction Industry Orientation, AIT-1060 Construction Tools, and AIT-1120 Building Construction Trades Lab.

AIT-1030 Basic Construction Language

02 Semester Credits

Study of construction drawings to determine specifications, lines and line weights, measurements related to laying out, dimensioning, estimating and planning.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-0980 Language Fundamentals I, and MATH-0910 Basic Arithmetic and Pre-Algebra or appropriate score on Math placement test to enroll in MATH-0955, and concurrent enrollment in the following courses: AIT-1010 Construction Measurements and Calculations, AIT-1020 Comprehension and Communication for Construction, AIT-1040 Spatial and Mechanical Reasoning, AIT-1050 Construction Industry Orientation, AIT-1060 Construction Tools, and AIT-1120 Building Construction Trades Lab.

AIT-1040 Spatial and Mechanical Reasoning

01 Semester Credit

Introduces the student to spatial development skills and mechanical reasoning. Included are practical applications of orthographic projections, figure conceptualization and cubic translations. Also included are mechanical analysis of pulley and gear systems and simple machines including basic properties of physics.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-0980 Language Fundamentals I, and MATH-0910 Basic Arithmetic and Pre-Algebra or appropriate score on Math placement test to enroll in MATH-0955, and concurrent enrollment in the following courses: AIT-1010 Construction Measurements and Calculations, AIT-1020 Comprehension and Communication for Construction, AIT-1030 Basic Construction Language, AIT-1050 Construction Industry Orientation, AIT-1060 Construction Tools, and AIT-1120 Building Construction Trades Lab.

AIT-1050 Construction Industry Orientation
03 Semester Credits

An introduction to the construction industry, to respective construction apprenticeship programs, and respective entry requirements. Included are soft skills for industry success, introduction to green building techniques and apprenticeship training center visits. Instruction site exploration will be included whenever possible.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-0980 Language Fundamentals I, eligibility for MATH-0955 Beginning Algebra, and concurrent enrollment in the following courses: AIT-1010 Construction Measurements and Calculations, AIT-1020 Comprehension and Communication for Construction, AIT-1030 Basic Construction Language, AIT-1040 Spatial and Mechanical Reasoning, AIT-1060 Construction Tools, and AIT-1120 Building Construction Trades Lab.

AIT-1060 Construction Tools
02 Semester Credits

Covers the hand tools and materials of the respective building trades. Introduces the student to basic operations of respective crafts using hand tools of the trade. In addition, construction safety will be covered in depth and a certificate for an Occupational Safety and Health Administration (OSHA -10) card will be granted upon successful completion.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): Eligibility for ENG-0980 Language Fundamentals I, and MATH-0910 Basic Arithmetic and Pre-Algebra or appropriate score on Math placement test to enroll in MATH-0955, and concurrent enrollment in the following courses: AIT-1010 Construction Measurements and Calculations, AIT-1020 Comprehension and Communication for Construction, AIT-1030 Basic Construction Language, AIT-1040 Spatial and Mechanical Reasoning, AIT-1050 Construction Industry Orientation, and AIT-1120 Building Construction Trades Lab.

AIT-1120 Building Construction Trades Lab
03 Semester Credits

An introduction to work in building construction trades through discussion and hands- on training, providing an understanding of the history, practices, technologies, and factors of influences upon the industry. Extensive project work will include completion of masonry, carpentry, roofing, interior finishing, residential electrical, plumbing, and construction measurement. Emphasis to be placed upon safety principles include preparation for the OSHA 10 certification in construction. Construction site visits may be included.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MATH-0910 Basic Arithmetic and Pre-Algebra or appropriate score on Math placement test to enroll in MATH-0955, and eligibility for ENG-0980 Language Fundamentals I and concurrent enrollment in the following courses: AIT-1010 Construction Measurements and Calculations, AIT-1020

Comprehension and Communication for Construction, AIT-1030 Basic Construction Language, AIT-1040 Spatial and Mechanical Reasoning, AIT-1050 Construction Industry Orientation, and AIT-1060 Construction Tools.

AIT-2990 Contracting in a Diverse World
03 Semester Credits

Capstone course in Applied Industrial Technology. Study of construction contracting principles, procedures and practices including estimating and subcontracting practices. Includes working with diverse workforce groups in union and non-union settings utilizing teamwork.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: completion of more than fifty percent of the respective trade apprenticeship.

APPLIED INDUSTRIAL TECHNOLOGY
(Bricklaying) - ATBL

ATBL-1300 Basic Bricklaying Trade Skills
02 Semester Credits

Basic study of bricklaying trade skills involving positioning, laying up, mixing and applying mortar and joint formation.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATBL-1310 Bricklaying Materials, Tools and Equipment
02 Semester Credits

Study of materials, tools and equipment used in brick and block construction.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

ATBL-1320 Basic Construction Drawings
01 Semester Credit

Study of construction drawings to determine specifications, layout of pattern bonds, measurements related to laying out, laying up, dimensioning, estimating and planning.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): ATBL-1310 Bricklaying Materials, Tools and Equipment or concurrent enrollment, or departmental approval.

ATBL-1330 Wall Construction I
02 Semester Credits

Study of wall construction, grouting, layout, laying up, pattern bond pointing, parqing, and caulking. Use of reinforced masonry also studied.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATBL-1300 Basic Bricklaying Trade Skills or concurrent enrollment, or departmental approval.

ATBL-1340 Arch Construction I

02 Semester Credits

Beginning study of construction of arches. Topics include types of arches, parts and dimension of arches, and laying out centers for arches. Focuses on constructing segmental and jack arches.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATBL-1300 Basic Bricklaying Trade Skills or concurrent enrollment, or departmental approval.

ATBL-1350 Intro to Refractory

02 Semester Credits

Introductory course covering the history of refractory/refinery masonry oven, kiln and furnace construction, and the specialized equipment and materials used. Included are safety regulations and practices to be adhered to as outlined by the Occupational Health and Safety Administration (OSHA).

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATBL-1370 Construction Trades Safety

01 Semester Credit

Study of safe practices on job, basic first aid, and OSHA requirements for construction trades.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATBL-1530 Wall Construction II

02 Semester Credits

Advanced study of wall construction to include cavity, retaining, cantilever, gravity retaining, intersecting, and garden and foundation/basement walls.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATBL-1330 Wall Construction I or concurrent enrollment, or departmental approval.

ATBL-1540 Arch Construction II

02 Semester Credits

Study of basic plans to identify information included in a set of written specifications pertaining to concrete and to estimate amount of materials needed for project.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATBL-1340 Arch Construction I or concurrent enrollment, or departmental approval.

ATBL-1950 Construction Trades Field Experience

01-03 Semester Credits

Limited to students in the Apprenticeship Program of the Construction Trades Joint Apprenticeship Training Committees. Employment in an approved training facility. Students may earn up to three credits in one semester and repeat to a cumulative maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 12-36 hours per week.

Prerequisite(s): Formal acceptance into the Joint Apprenticeship Training Committee Apprenticeship Program; and ATBL-1300 Basic Bricklaying Trade Skills, and ATBL-1310 Bricklaying Materials, Tools and Equipment, and departmental approval.

ATBL-2510 Advanced Brick-Block Construction

02 Semester Credits

Advanced study of brick-block construction of corners, piers, pilasters and columns.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATBL-1530 Wall Construction II, and ATBL-1540 Arch Construction II or concurrent enrollment; or departmental approval.

ATBL-2520 Step and Paving Assembly Construction

02 Semester Credits

Study of masonry steps and paving assembly construction procedure, layout and lay-up.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATBL-1320 Basic Construction Drawings, or concurrent enrollment, or departmental approval.

ATBL-2530 Door and Window Construction

02 Semester Credits

Study of door and window construction to produce rough and finish masonry openings.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATBL-1320 Basic Construction Drawings, and ATBL-1340 Arch Construction I or concurrent enrollment; or departmental approval.

ATBL-2710 Advanced Bricklaying Skills

03 Semester Credits

Study of advanced bricklaying skills for the construction of flashings, lintels, chases, chimneys, vents and control joints.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATBL-1320 Basic Construction Drawings, and ATBL-2530 Door and Window Construction or concurrent enrollment; or departmental approval.

**APPLIED INDUSTRIAL TECHNOLOGY
(Carpentry) - ATCT**

ATCT-1301 Introduction to Carpentry

02 Semester Credits

Introduction to carpentry apprenticeship. Includes in-depth overview of OSHA regulations as related to construction industry. A history of labor management association as it was in past, and how Joint Apprenticeship Committees interact today. Safety principles, including first aid and CPR.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1310 Carpentry Safety**02 Semester Credits**

Introduction to hazards and dangers of elevated working conditions, including those that involve use of ladders and scaffolds. Hazards of working in confined spaces of limited means of egress with limited natural ventilation that are not meant for continuous occupancy will be examined. Introduction to Material Safety Data Sheets and their use to reduce chemical accidents in the workplace. Use of proper safety procedures and safety equipment as prescribed by OSHA and/or safety enforcement agencies will be emphasized.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1320 Introduction to Hand and Power Tools**02 Semester Credits**

Study of wood properties, measurement techniques, types and applications of various common fasteners, properties of different woods, identification and use of hand tools, safety considerations, and use of circular portable saw, belt sander, edge sander, router, jigsaw, finish sander, and drill.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1331 Concrete Footers and Walls**02 Semester Credits**

Introduction to construction of concrete form work. Includes reading of construction working drawings, layout, fabrication, and erection of standard wall, column, and footing forms.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1351 Metal Studs and Dry Walls**02 Semester Credits**

Introduction to the Interior Systems industry. Construction practices, materials, and equipment used to lay out, fabricate and install metal stud systems. Related blueprint reading skills, math concepts, soffits, door frames and hardware are also an integral part of this course. An emphasis on safety regulations as according to OSHA standards.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1370 Layout**02 Semester Credits**

Introduction to use of builder's level, level transit, and digital theodolite in the construction industry for establishment of elevations and grades and building layout. Course includes required math and geometry concepts and interpretation of site drawings and

topographical plans generally used in construction industry.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1381 Wood Framing**02 Semester Credits**

Introduction to basic principles of framing including terminology, print information, design, codes and systems.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1390 Welding for Carpentry**02 Semester Credits**

Introduction to base level knowledge and skill in elementary shielded metal arc welding techniques and practices. Included are general theory of arc welding process, operation of welding equipment, welding safety practices, electrode characteristics and selection, identification of types of weld joints, and guided instruction and practice in arc welding.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1491 Residential Steel Framing**02 Semester Credits**

Introduction to fundamentals of residential framing with steel. Course will include techniques on floor construction, interior/exterior wall construction and roof framing assemblies using steel trusses and/or rafters.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1381 Wood Framing, and departmental approval: admission to any Applied Industrial Technology program.

ATCT-1550 Roof Framing I**02 Semester Credits**

Introduction to construction of common roof types to include reading of construction working drawings, application of mathematical concepts and calculations related to roof structure, layout, fabrication, and erection of roof members.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-1610 Interior Finish**02 Semester Credits**

Introduction to skills required to determine materials and installation of finish elements. Included are window and door trim, interior door installation, standing and running trims.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1381 Wood Framing, or departmental approval.

ATCT-1710 Stairs Layout

02 Semester Credits

Introduction to basic principles of stair layout including stair terminology, print information, design, codes, and types.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-2220 Roof Framing II

02 Semester Credits

Introduction to construction of hip roofs and intersecting roofs to include reading of construction working drawings, applying terminology and math concepts related to hip roof type construction, and layout, fabrication, and erection of hip roof members.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1550 Roof Framing I or departmental approval.

ATCT-2330 Trade Show

02 Semester Credits

Installation and dismantling of trade show exhibits. Includes techniques and procedures, aerial lift, welded frame/mobile tower scaffold erector, and rigging.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-2341 Concrete Specialties

02 Semester Credits

Heavy construction methods for forming piers, columns and decks are an integral part of this course. The techniques to form elevated decks, ramps and stairways will be emphasized. This course will focus on forming procedures as well as related mathematical concepts.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1331 Concrete Footers and Walls, and departmental approval: admission to any Applied Industrial Technology program.

ATCT-2361 Suspended Ceilings

02 Semester Credits

Skills and techniques required to install a variety of suspended ceiling systems. Includes identification and correct use of tools, reading blueprints, and focus on suspended grid systems.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1351 Metal Studs and Dry Walls or departmental approval.

ATCT-2370 Interior Systems Layout

02 Semester Credits

Includes elementary concepts of the interior systems industry construction methods used to layout and fabricate standard metal stud partition walls and soffit systems. Includes related blueprint reading skills, angle and octagon wall layout, applicable math concepts, and

safety regulations as prescribed by Occupational Safety and Health Administration (OSHA) standards.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1351 Metal Studs and Dry Walls, and ATCT-2361 Suspended Ceilings, and departmental approval: admission to any Applied Industrial Technology program.

ATCT-2380 Advanced Stairs

02 Semester Credits

This is an advanced stair building course covering the calculation of stair design numbers needed to construct a set of curved stairs. Applied math with specific emphasis on the geometry of circles will be covered. In addition techniques necessary to layout, cut and fabricate curved stairs will be covered and applied in shop exercises.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1710 Stairs Layout and departmental approval: admission to an Applied Industrial Technology Program.

ATCT-2390 Trussed Roofs

02 Semester Credits

Covers the framing of common roof types using manufactured trusses. Includes reading of truss design and placement drawings, truss design and layout. Also included will be the erection, bracing and sheathing of trussed roofs and the construction of blind valleys according to installation standards. Fall protection and crane safety will also be an integral part of this course.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1550 Roof Framing I, and departmental approval: enrollment in a union carpenter's apprenticeship program.

ATCT-2500 Exterior Finish

02 Semester Credits

Introduction to basic elements of exterior finish which includes roofing, door and window framing, wall finish. Product types, weather and heat considerations are examined.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1610 Interior Finish or concurrent enrollment, or departmental approval.

ATCT-2511 Concrete Columns and Decks

02 Semester Credits

Interpretation of plans and specifications to lay out concrete foundations and construct columns, beams and decks for large commercial buildings.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1331 Concrete Footers and Walls, and ATCT-2341 Concrete Specialties, and ATCT-1370 Layout, or departmental approval.

ATCT-2520 Stairs Installation**02 Semester Credits**

Introduction to the art and science of laying out, fabricating, and installing fine staircases which are mitered and have hard balustrades using newel posts, rails, and balusters.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCT-2540 Roof Framing III**02 Semester Credits**

Introduction to layout procedures and mathematical derivation of rafter lengths found in roofs, having more than one slope and containing various offsets. Includes roofs containing all or part of hexagonal shapes or octagonal shapes. Cutting and fabrication of all rafters is an integral part of course.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1550 Roof Framing I and ATCT-2220 Roof Framing II and departmental approval.

ATCT-2560 Interior Systems III**02 Semester Credits**

In depth study of interior systems including barrel and dome ceilings and commercial door hardware used in the construction industry. Topics include use of specific tools and machining techniques required to install doors and door hardware, frames, exit devices, and associated items. Applicable math concepts, door and hardware schedules; and safety practices as prescribed by OSHA also included. Extensive guided instruction and practice provided.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-2361 Suspended Ceilings or departmental approval.

**APPLIED INDUSTRIAL TECHNOLOGY
(Cement Masonry) - ATCM****ATCM-1300 Fundamentals of Concrete Construction****02 Semester Credits**

Study of concrete: ingredients, steps in production, factors of concrete mix design, uses for various types of concrete, admixtures and tests for various types of fresh concrete.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCM-1310 Applied Technical Communications and Economics**02 Semester Credits**

Principles of effective industrial reports and letters; obtaining data; analysis of data; outlining and organizing of materials; letter writing techniques. Effective

communication in writing, listening and speaking to meet industrial needs emphasized.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCM-1320 Basic Plan Reading**02 Semester Credits**

Study of basic plans to identify information included in a set of written specifications pertaining to concrete and to estimate amount of materials needed for project.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCM-1330 Concrete Construction Equipment**02 Semester Credits**

Study of tools used in concrete construction for testing, forming, placing and finishing fresh concrete with emphasis on care and safe use of equipment.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

ATCM-1340 OSHA Standards for the Construction Industry**03 Semester Credits**

Study of occupational safety and health standards for construction industry.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCM-1370 Construction Trades Safety**01 Semester Credit**

Study of safe practices on job, basic first aid, and OSHA requirements for construction trades.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATCM-1390 Basic Welding Skills**02 Semester Credits**

Basic welding skills emphasized to obtain a thorough knowledge of welding safety related to electrical shock, body protection, accident prevention, reporting, and ventilation. Fundamentals of arc and oxy-acetylene welding studied.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Department approval: admission to any Applied Industrial Technology program.

ATCM-1400 Concrete/Cement Forming and Finishing**03 Semester Credits**

Study of various types of forms, placement of forms, placing leveling and finishing of concrete.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATCM-1300 Fundamentals of Concrete Construction or concurrent enrollment, or departmental approval.

Applied Industrial Technology (Cement Masonry) • (Communication Transport Systems) _____

ATCM-1410 Commercial/Residential Form and Finish Work

04 Semester Credits

Study of building of steps, sidewalks, patios and driveways. Discussion includes types, finishes, and nosing.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ATCM-1400 Concrete/Cement Forming and Finishing or concurrent enrollment, or departmental approval.

ATCM-2320 Blueprint Fundamentals-Construction

02 Semester Credits

Study of basic plans to identify information included in a set of written specifications pertaining to concrete and estimating amount of materials needed for the project.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCM-1320 Basic Plan Reading or concurrent enrollment, or departmental approval.

ATCM-2500 Fundamentals of Concrete Curing

01 Semester Credit

Study of fundamentals associated with concrete curing, reason for curing and types of curing.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCM-1400 Concrete/Cement Forming and Finishing or concurrent enrollment, or departmental approval.

ATCM-2510 Fundamentals of Concrete Joints

01 Semester Credit

Study of joints in concrete to include types, locations, sealants, maintenance and reason for joints.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): ATCM-1410 Commercial/Residential Form and Finish Work or concurrent enrollment, or departmental approval.

ATCM-2520 Basic Cement Patching

02 Semester Credits

Study of essentials to properly rub and sack walls for patching and steps necessary to take when preparing the walls.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCM-1400 Concrete/Cement Forming and Finishing or concurrent enrollment, or departmental approval.

ATCM-2530 Concrete Restoration

03 Semester Credits

Study of surface defects in concrete and how to recognize, recommend preventative treatment, techniques and remedies to restore surface.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATCM-2520 Basic Cement Patching or concurrent enrollment, or departmental approval.

ATCM-2700 Advanced Concrete Finishing

03 Semester Credits

Advanced study of placing and finishing a slab; placing and finishing concrete floors with various types of finishes.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATCM-1400 Concrete/Cement Forming and Finishing or concurrent enrollment, or departmental approval.

ATCM-2710 Concrete Specialty Products

01 Semester Credit

Study of pavements: types of equipment used on pavement, procedures necessary to finish pavements and operation of paving machine.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): ATCM-2530 Concrete Restoration or concurrent enrollment, or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY (Communication Transport Systems) - ATCW

ATCW-1010 Worker Safety for Communication Transport

02 Semester Credits

Covers specific safety concerns for the communication transport worker including job conditions and pole climbing hazards. Includes an introduction to the Occupational Safety and Health Act (OSHA) for 10 hour certification. Topics include employee responsibilities and rights, standards, and basic hazard training.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission into the CWA apprenticeship program.

ATCW-1020 Communication Worker History

02 Semester Credits

Covers the history of communications in America, union organizing efforts and union evolution. Includes the divestiture and deregulation of the communication industry and the effects on telephone workers and companies.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission into the CWA apprenticeship program.

ATCW-1040 Basic Information Systems

02 Semester Credits

Certification course covering skills, transmission mediums and administration tasks required for industry proficiency. In addition, installation of cable systems in conjunction with industry standards will be covered.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission into the CWA apprenticeship program.

ATCW-1060 Fire Stop and Overhead Safety**01 Semester Credit**

Covers the purpose and systems of fire stopping of communication transport systems including types, governing codes and standards and oversight agencies for installation and testing qualifications. Includes the safety standards including hazard recognition and operator responsibilities with respect to aerial platforms.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission into the CWA apprenticeship program.

ATCW-1210 Introduction to Information Transport - Copper**02 Semester Credits**

Advanced certification course covering in depth skills, transmission mediums and applied administration tasks required for industry proficiency. In addition, installation of copper cable systems in conjunction with industry standards will be covered. Training to lead installers to be self sufficient and able to start, run and complete small copper projects.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission into the CWA apprenticeship program.

ATCW-1230 Standards and Measurements**02 Semester Credits**

Basic course covering electrical codes and industrial standards and manufacturing warranties for the communications transport industry. In addition, industry practices for jurisdictional compliance are included.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission into the CWA apprenticeship program.

ATCW-1250 Infrastructure Layout**02 Semester Credits**

Course covers the application of math concepts to the communications industry, the interpretation of construction working drawings for worksite requirements and the importance of site surveys. In addition, proposed and actual timelines are discussed.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission into the CWA apprenticeship program.

ATCW-1270 Grounding and Bonding**01 Semester Credit**

Basic course covering grounding and bonding of active and inactive electronic components required for worker and equipment protection. In addition, governing bodies that oversee the communications industry will be identified and application procedures are covered.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission into the CWA apprenticeship program.

ATCW-2010 Information Transport-Fiber**02 Semester Credits**

Advance certification course covering Fiber Optics skills, transmission mediums and administration tasks required for industry proficiency. In addition, installation of Fiber Optic cable systems in conjunction with industry standards will be covered. Course to enable learners to be self sufficient and able to start, run, and complete fiber optic projects.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission into the CWA apprenticeship program.

ATCW-2030 Data Theory**01 Semester Credit**

Advanced course covering the topology and transmitting information related to signal transmission and transport. In addition, purpose and function of information systems will be discussed.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission into the CWA apprenticeship program.

ATCW-2050 Audio Visual**01 Semester Credit**

Course covers the types, purpose and functions of audio visual communication systems and discusses transmission fundamentals, including required skills and site preparations. In addition, legal consequences and ramifications with respect to security issues is discussed.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission into the CWA apprenticeship program.

ATCW-2070 Information Transport Circuits**01 Semester Credit**

Advanced course covering the functions and limitations of transmission signals and the provider equipment and hardware used for information transport. In addition, troubleshooting procedures, tools and equipment, will be discussed.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission into the CWA apprenticeship program.

ATCW-2120 Advanced Systems Transport**02 Semester Credits**

Certification course covering skills, transmission mediums and administration tasks required for industry proficiency. In addition, installation of cable systems in conjunction with industry standards will be covered.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission into the CWA apprenticeship program.

**APPLIED INDUSTRIAL TECHNOLOGY
(Construction Tending and Hazardous
Material Abatement) - ATLB**

**ATLB-1010 Craft Orientation for Laborers
01 Semester Credit**

Course designed for Laborer apprentices in their first year. History of the labor movement in North America and the Laborers' International Union of North America (LIUNA). Fringe benefits, the apprenticeship program, union organization, work site management structure and work ethics. Basic construction math, measuring, terminology and tool identification are included.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

**ATLB-1020 Measurements and Leveling
02 Semester Credits**

Construction measuring using rulers and tapes. Introduction to leveling and layout instruments. Elevation transfer and standard building layout procedures.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

**ATLB-1030 Laborers: Introduction to Transits
02 Semester Credits**

A study of construction site layout for building positioning using digital instruments. Emphasis is placed on instrument applications and field data recording.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval by Program Training Director.

**ATLB-1040 Pipelaying
02 Semester Credits**

Calculation and application of grades, distances and elevations of storm water and sanitary sewer piping. Procedures for preparing the site for the pipe and its installation. Safety regulations and practices.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

**ATLB-1210 Concrete Placement
02 Semester Credits**

History of concrete, its properties and calculation of material quantities. Site preparation, form layout and installation. Placement and consolidation of concrete, and finishing and curing procedures will be discussed,

demonstrated and practiced in field applications.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

**ATLB-1220 Traffic Control
02 Semester Credits**

Covers the procedure for establishing traffic control including flagging operations for asphalt placement, barrier and control sign stationing and placement of asphalt on roadways. Presentations covering estimating asphalt quantities. Care and use of hand tools for installation procedures.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

**ATLB-1230 Radiation Worker
01 Semester Credit**

Fundamentals of radiation, how it affects the worker and the importance of recognizing the health hazards associated with it. Methods used to clean contaminated sites and measures that are taken to avoid radiation on jobsites, including energy producing facilities and nuclear plants. Operation, maintenance and repair of the respective equipment.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

**ATLB-1340 Mason Tending
03 Semester Credits**

Study of scaffolds related to masonry work, mortar components, and materials requirements. Includes concrete properties and ingredients, steps in making concrete, properties of cement, erection and stocking of scaffolds, mortar preparation, and tools required. Extensive guided instruction and practice provided.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

**ATLB-1600 Asbestos Abatement
02 Semester Credits**

Study of concepts related to EPA, OSHA, and ODH requirements for asbestos abatement. Includes types of asbestos, diseases linked to asbestos exposure, sampling techniques, stages of development, and safe work practices.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

Applied Industrial Technology (Construction Tending and Hazardous Material Abatement)

ATLB-2110 Small Engines and Concrete Saws **02 Semester Credits**

Start-up procedures and safety requirements of small engine machines and gas powered saws. Trenching equipment, chain saw safety and 2-cycle and 4-cycle engines will be covered.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-2120 Pneumatic Tools and Carpenter Tending **02 Semester Credits**

The care and use of pneumatic tools including compressors and pavement breaking equipment, carpenter tending duties, and hydraulic splitters. The safe operation of a sandblaster. A review of OSHA Subpart I, pneumatic tools and personal protective equipment (P.P.E.) is given.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-2130 Pressure Pipe **02 Semester Credits**

Types of pressure pipe waterline, including asbestos and ductile iron pipe, and installation techniques required to meet industry standards. Bedding requirements, trenching safety standards, and tapping procedures. Applied math concepts required for pressure and volume loss tests are also covered.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-2150 Guniting **02 Semester Credits**

Properties of Guniting, its mixture and use and applications in the construction industry. Discussion and application of equipment operation and maintenance, including various nozzles for special conditions.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement apprenticeship program.

ATLB-2160 Tunnel Construction **04 Semester Credits**

History and terminology of tunneling in the construction industry. The need for tunnels and methods of boring is addressed. Skill development using specialty tools and equipment including jack-leg drills and hand tools for tunneling is included. Installation procedures, alignment

and bolting of steel liner plates are demonstrated and practiced.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-2200 Surveying Techniques and Applications **03 Semester Credits**

Study of modern surveying techniques, applications, and methodology. Includes equipment, data collection methods, field records, plane transformations, software, and routine procedures.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Completion of 6 credit hours in ATLB, ATCT, ATBL, or ATCM coursework.

ATLB-2310 Advanced Instruments **06 Semester Credits**

Instrumentation used for highway and building construction and layout. Includes calculations required for determining local coordinates, staking and road alignments, and the pinning of a building with offsets and open and closed transverses. Also included are procedures and techniques required for setting up and using total station equipment. Field applications and exercises.

Lecture 06 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Construction Tending and Hazardous Material Abatement apprenticeship program.

ATLB-2320 Gas Pipe Line Worker **02 Semester Credits**

Introductory course covering the general skills, safety and mainline operations required to work on gas pipe line installations. Included are exercises intended to develop job skill proficiency for site clearing and specialty operations needed to restore Right of Ways to their original state.

Lecture 02 hours. Laboratory 00 hours.

Departmental approval: admission to Construction Tending and Hazardous Material Abatement apprenticeship program.

ATLB-2400 Pipelaying Techniques **02 Semester Credits**

Study of standard pipelaying techniques, practices, and procedures. Includes trenching, excavation safety, line and grade determination, and gravity flow systems.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Completion of 6 credit hours in ATLB, ATCT, ATBL, or ATCM coursework.

ATLB-2600 Scaffolds and High Elevation Techniques
03 Semester Credits

In-depth study of scaffolding and high elevation procedures. Set up and erection procedures, scaffold types, scaffold parts, and safety requirements.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Completion of 6 credit hours in ATLB, ATCT, ATBL, or ATCM coursework.

ATLB-2650 Demolition Techniques
03 Semester Credits

Study of industry standard demolition techniques. Topics include use of cutting tools, use of cutting torches, and safe removal of materials and clean-up procedures.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Completion of 6 credit hours in ATLB, ATCT, ATBL, or ATCM coursework.

ATLB-2660 Grade Checking
04 Semester Credits

The layout and interpretation of surveyor stakes for highway construction. Included is the application of math concepts required for determining slope and elevation of roadways at sub-grade and top of pavement, centerlines and shoulders. The set up and operation of curbing machines and grade lasers is covered.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Construction Tending and Hazardous Material Abatement program.

ATLB-2740 Lead Abatement
03 Semester Credits

Concepts related to OSHA lead abatement regulations. Includes areas of lead abatement, responsibility of lead abatement workers, effects of lead in the body, personal protective equipment, collection methods, and labeling systems. Extensive guided instruction and practice provided.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Completion of 6 credit hours in ATLB, ATCT, ATBL, or ATCM coursework, or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY
(Drywall Finishing) - ATDW

ATDW-1310 Tools and Methods of Drywall Finishing
02 Semester Credits

Introduction to basic tools and procedures of drywall finishing trade including identification, components, and use of hand and power tools, and cleaning, drying, and storage of tools.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to any Applied Industrial Technology program, or departmental approval.

ATDW-1330 Materials and Methods of Drywall Finishing
02 Semester Credits

Introduction to basic materials and procedures of drywall finishing trade including identification of boards, fasteners, adhesives, beads, and trim; measuring and cutting beads and trim; application of beads to various surfaces and structures.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to any Applied Industrial Technology program, or departmental approval.

ATDW-1620 Taping Tools and Procedures
02 Semester Credits

Instruction in tools and procedures in drywall taping and wiping including tools and materials, dry taping, wet taping, hopper and banjo taping methods, and wiping procedures.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to any Applied Industrial Technology Program, or departmental approval.

ATDW-2310 Automatic Taping Tools
02 Semester Credits

Instruction in principles and procedures of automatic tool taping including tools and equipment, the Bazooka automatic taping tool, loading, holding positions, and procedures for automatic tool taping individually and in teams.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATDW-1620 Taping Tools and Procedures, or departmental approval.

ATDW-2330 Finishing Boxes
02 Semester Credits

Instruction in use of finishing boxes including preparing, repairing, and loading flat finishing boxes; procedures for filling flats, butt joints and ceiling joints; procedures for using fastener spotters and angle finishing boxes; and cleanup procedures.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATDW-1310 Tools and Methods of Drywall Finishing or concurrent enrollment, or departmental approval.

ATDW-2340 Texturing
02 Semester Credits

Instruction in texturing, including types of textures, surface preparation, texturing machines and application, spraying techniques, using color, texturing large areas, repairing damaged areas, and hand texturing.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATDW-1310 Tools and Methods of Drywall Finishing, or departmental approval.

ATDW-2350 Filling Compounds and Procedures
02 Semester Credits

Instruction in basic elements and procedures for using filling compounds including terminology, selection of filler, elements of drying, application of filler with trowel and broad knife, and finish sanding.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATDW-1310 Tools and Methods of Drywall Finishing or concurrent enrollment, or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY
(Electrical Construction) - ATEL**ATEL-1300 Direct Current Fundamentals**
03 Semester Credits

Study of Ohm's Law, electronic theory, series, and parallel circuits, Kirchhoff's Law, motor sizes, wire sizes, voltage drop, wiring systems, and troubleshooting.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Electrical Construction program.

ATEL-1310 Alternating Current Fundamentals
03 Semester Credits

Study of three and four wire two-phase circuits, three-phase induction star and delta circuits, power balanced and unbalanced loads, transformer principles, characteristics and connection, electrical instruments, self synchronous systems, protective relays, lamps and illumination.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATEL-1300 Direct Current Fundamentals, or departmental approval: admission to any Applied Industrial Technology program.

ATEL-1330 National Electric Code
02 Semester Credits

Study of the National Electrical Code (NEC) for wiring and apparatus. Topics include wiring design and protection, wiring methods and materials, general use equipment, special occupancies, special equipment, and use of table and diagrams for the solution of practical wiring problems.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Electrical Construction program, or departmental approval.

ATEL-1350 Industrial Safety
01 Semester Credit

Study of selected topics to cover occupational safety and health. The student will become familiar with rules and regulations for Occupational Safety and Health Administration (OSHA) compliance.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATEL-1360 Blueprint Fundamentals - Electrical
02 Semester Credits

Introduction to blueprints. Topics include identifying components, mechanical and electrical symbols, diagrams, architectural views, and common scales. Also includes blueprint specification, schedules, and system integration.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATEL-2300 Industrial Electronics Fundamentals I
03 Semester Credits

Introduction to electronics which includes semi-conductor theory and circuits, transistor theory and circuits, power supplies, integrated circuits, oscillator circuits, photosensitive devices, and pulse circuits.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATEL-1310 Alternating Current Fundamentals, or departmental approval.

ATEL-2310 Industrial Electronics Fundamentals II
03 Semester Credits

Study of electricity as it relates to environmental control systems, fire alarms, security systems, smoke detectors, and Heating, Ventilation, and Cooling (HVAC) systems.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATEL-2300 Industrial Electronics Fundamentals I, or departmental approval.

ATEL-2350 Programmable Logic Controllers
03 Semester Credits

Introduction to programming techniques, and hardware configuration and theory of operation of a programmable logic controller. Systems to be studied may include the Allen-Bradley programmable logic controller (PLC) 2 and Modicon Industrial Controllers.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATEL-1300 Direct Current Fundamentals, or departmental approval.

ATEL-2500 AC/DC Motors and Generators
04 Semester Credits

Direct current (DC) motor construction and principles of operation, kinds of DC motors and their characteristics and control, permanent magnet meter movement, ammeter and voltmeter construction, operation care and use, watt-meter and wheatstone bridge area. Other topics include DC motors, alternators, rotating magnetic fields, alternating current (AC) motors, speed control, types of winding, and introduction to AC motor control.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ATEL-1300 Direct Current Fundamentals, and ATEL-1310 Alternating Current Fundamentals; or departmental approval.

ATEL-2510 Motor Controls

03 Semester Credits

Introduction to direct current (DC) and alternating current (AC) motor control circuits.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATEL-2310 Industrial Electronics

Fundamentals II or concurrent enrollment, or departmental approval.

ATEL-2700 Electrical Instrumentation

04 Semester Credits

Introduction into various types of instruments employed in industry, along with operating principles and actual application. Instruments covered are those used in measurement, transmission, and control of various industrial processes.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ATEL-2310 Industrial Electronics

Fundamentals II or concurrent enrollment, or departmental approval.

**APPLIED INDUSTRIAL TECHNOLOGY
(Floorlaying) - ATFL**

ATFL-1300 ATFL Residential Installation Procedures

02 Semester Credits

Introduction to residential flooring products and installation procedures. Includes residential carpet and vinyl product knowledge, and custom installations (borders, insets, patterns, and upholstered stairs). Also includes customer relations, etiquette, and communication skills related to residential work.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATFL-1450 Floorlaying Concepts

02 Semester Credits

Comprehensive study of floorlaying essentials, including material properties, measurement techniques, types and applications of various sheet good adhesives, identification and use of hand tools and power equipment used in the floorlaying industry. Also included are concepts commonly found in construction blueprints including symbols, abbreviations, and conventions required in drawing interpretation. Floor preparation for installations of tile, sheet goods, carpeting, hardwood, laminates and ceramics also included.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Applied Industrial Technology Floorlaying program.

ATFL-1600 Modular Tile

02 Semester Credits

Basics of modular tile installation. Includes math and geometry concepts required for estimating materials, room layouts and interpreting construction drawings.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATFL-1450 Floorlaying Concepts, or departmental approval: admission to Applied Industrial Technology Floorlaying program.

ATFL-1610 Jute and Action Back Carpeting

02 Semester Credits

Carpeting and manufacturing process as related to jute and action-back product types. Topics include material, hand and power tools, job preparation, layout and installation procedures, and interpretation of construction drawings.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or departmental approval.

ATFL-1620 Ceramics I

02 Semester Credits

Wall and floor treatment, grouting and installation of ceramic tile. Includes related math and blueprint reading exercises.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATFL-1610 Jute and Action Back Carpeting or concurrent enrollment, or departmental approval.

ATFL-1630 Wood Flooring I

02 Semester Credits

Wood flooring materials and installation including strip, strip and plank, parquet, installation techniques and tools for installation.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or departmental approval: admission to any Applied Industrial Technology program.

ATFL-1640 Sheet Goods Concepts

02 Semester Credits

Floor installation requiring special treatment of adhesives and seam, sheet good products requiring interflex systems, heat seam welding and/or chemical welding. Also presented will be product usage and handling and application of concepts and materials.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or departmental approval: admission to any Applied Industrial Technology program.

ATFL-1650 Sheet Goods - Flash Coving**02 Semester Credits**

Products and components used in flash cove and sanitary floor installation. Topics include techniques of installation, blueprint reading and use of applicable tools.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, and ATFL-1640 Sheet Goods Concepts or concurrent enrollment; or departmental approval: admission to any Applied Industrial Technology program.

ATFL-1710 Velcro and Modular Carpeting**02 Semester Credits**

Carpeting and manufacturing process as related to Velcro and modular product types. Includes materials, hand and power tools, job preparation, layout and installation procedures, and interpretation of construction drawings.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or departmental approval: admission to any Applied Industrial Technology program.

ATFL-1720 Sheet Goods - Geometric Layout and Inlay**02 Semester Credits**

Study of advanced floorlaying techniques used in layout and installation of sheet goods in specialty situations including geometric shapes and producing templates.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATFL-1650 Sheet Goods - Flash Coving or concurrent enrollment, and ATFL-1450 Floorlaying Concepts or concurrent enrollment; or departmental approval: admission to any Applied Industrial Technology program.

ATFL-1730 Unitary Back and Enhancer Back Carpeting**02 Semester Credits**

Carpeting and manufacturing processes as related to Unitary Back and Enhancer Back product types. Topics include materials, hand and power tools, job preparation, layout and installation procedures, and interpretation of construction drawings.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or ATFL-1710 Velcro and Modular Carpeting or concurrent enrollment; or departmental approval: admission to Applied Industrial Technology program.

ATFL-2300 Ceramics II**02 Semester Credits**

Ceramics design, material and tile installation in wet areas such as food prep, pools, shower and laundry.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATFL-1620 Ceramics I or concurrent enrollment, or departmental approval.

ATFL-2320 Wood Flooring II**02 Semester Credits**

Advanced flooring systems using acrylic, engineered, and laminate systems with special attention given to custom

layouts such as herringbone and diagonal installations, riser, tread, bullnose installation, and proper floor sanding techniques.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or departmental approval.

ATFL-2400 Sheet Goods - Specialty Products**02 Semester Credits**

Study of specialty flooring systems, requiring antibacterial protection and wet areas needing moisture close tolerance installation. Course also includes presentations, one-piece flash coving demonstrations, heat welded seams demonstrations, and cutting and fitting special components such as cove steps and cap metals.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATFL-1640 Sheet Goods Concepts, or concurrent enrollment, and ATFL-1650 Sheet Goods - Flash Coving, or concurrent enrollment and departmental approval.

ATFL-2430 Woven and Axminster Carpeting**02 Semester Credits**

Carpeting and manufacturing process as related to woven and axminster product types. Includes materials, hand and power tools, job preparation, layout and installation procedures, and interpretation of construction drawings.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATFL-1450 Floorlaying Concepts or concurrent enrollment, or departmental approval.

**APPLIED INDUSTRIAL TECHNOLOGY
(Glazing) - ATGL****ATGL-1330 Hand Tools for Glaziers****02 Semester Credits**

Introduction to hand tools for glazing, including basic hand tools such as screwdrivers, wrenches, pliers; levels and transits; glass, plastic, and metal cutters; pliers, lifters, and tongs, punches, chisels, rivet guns, and taps.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATGL-1620 Glass and Mirror Replacement and Installation**02 Semester Credits**

Instruction in glass replacement and mirror layout, measurement cutting, edging and mounting. Includes safety procedures, and glass installation using putty.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATGL-1630 Basic Welding

02 Semester Credits

Introduction to arc welding and oxy-acetylene cutting including shop safety, electrode identification and classification and selection, all position welding, set up of fillet, power sources, weld size, and weld symbols.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATGL-1640 Door Fabrication and Installation

02 Semester Credits

Door fabrication and installation, including installation and maintenance of manual and power assisted revolving doors; fabrication and installation of aluminum doors; installation of specialty doors and showcases; and safety procedures and regulations.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATGL-2330 Transits, Leveling Instruments and Lasers

02 Semester Credits

Use of transits, levels, and lasers for glazing installation including elements of instruments; types of instruments; care and handling; setting up, leveling, and using instruments; and specific applications of leveling and installation.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATGL-1330 Hand Tools for Glaziers; or departmental approval.

ATGL-2340 Advanced Welding

02 Semester Credits

Instruction in advanced welding, including oxy-acetylene, M.I.G., T.I.G., and F.C.A.W. welding processes, welding of cast iron, aluminum, copper alloys, and stainless steel, hardfacing, and plasma cutting.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATGL-1630 Basic Welding or concurrent enrollment; or departmental approval.

ATGL-2350 Curtainwall Fabrication and Installation

02 Semester Credits

Instruction in curtainwall principles and methods, including methods and standards; layout practices and tolerances; curtainwall systems and erection procedures for I-Beam, Stickwall, and Trusswall construction.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATGL-1330 Hand Tools for Glaziers; or departmental approval.

ATGL-2370 Sealants

02 Semester Credits

Instruction in use of sealants including terminology, properties, forms, classifications, and sealant selection;

sealant application, testing, and remedial caulking; joint types and design; substrate preparation primers and backer rods; safety procedures and use of MSDS sheets.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATGL-1330 Hand Tools for Glaziers; or departmental approval.

ATGL-2400 Advanced Rigging and Hoisting

02 Semester Credits

Advanced procedures of rigging and hoisting including rope materials, care, and handling; knot tying; slings; rigging hardware and hoisting techniques; hand signals; and safety procedures.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATPT-1320 Safety Standards for Construction (OSHA-10).

APPLIED INDUSTRIAL TECHNOLOGY

(Ironworking) - ATIW

ATIW-1300 Structural Steel Concepts

02 Semester Credits

Introduction to structural steel concepts, including an overview of historical use of iron and steel in construction. Fundamental principles of and preparation for erection of structural steel; blueprint reading; and proper use of tools, according to OSHA regulations.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Ironworking apprenticeship program, or departmental approval.

ATIW-1310 Safety for Ironworkers

01 Semester Credit

Occupational safety and health standards for construction industry in general, and ironworking trade specifically. Includes regulations and procedures for fall protection; electrical work; scaffolding; confined spaces; personal protective equipment; materials handling, storage, use and disposal; hand and power tools; steel erection; and cranes, derricks, hoists, elevators, and conveyors.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Admission to Ironworking apprenticeship program, or departmental approval.

ATIW-1320 Steel Construction Procedures**01 Semester Credit**

Steel construction procedures, including necessary individual and raising gang skills, and proper use of tools according to OSHA regulations. Introduction to bridge types and components. Blueprint reading relevant to layout and erection.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): ATIW-1300 Structural Steel Concepts or concurrent enrollment, or departmental approval.

ATIW-1330 Erection Concepts and Practices**03 Semester Credits**

Principles and techniques of structural steel erection, including detailing procedures. Covers installation of temporary flooring, accurate alignment of steel assembly, safety nets and railings, and various types of connections: bolts, rivets and pins, layout and erection of bar joists, bridging, scaffolds and ladders, according to OSHA regulations. Includes blueprint reading.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATIW-1300 Structural Steel Concepts or concurrent enrollment, and ATIW-1310 Safety for Ironworkers or concurrent enrollment, or departmental approval.

ATIW-1400 Principles of Reinforcing Steel**02 Semester Credits**

Basic principles of reinforcing steel, using tools and methods necessary for layout and fabrication, according to engineering and placing drawings. Application of basic structural building forms to reinforce concrete structures, including structural value of footings and use of beam and slab design; history of reinforced concrete and manufacturing process of reinforcing steel; and basic types of highway structures.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATIW-1300 Structural Steel Concepts or concurrent enrollment, and ATIW-1310 Safety for Ironworkers or concurrent enrollment; or departmental approval.

ATIW-1410 Practical Applications of Reinforcing Steel**01 Semester Credit**

Applications relating to placement of reinforcing steel in footings, walls, columns, beams, girders, joists and slabs and to bar splicing. Continued study of highway structures, including airport paving. Introduction to reinforcing accessories, dowels, and mechanical couplers.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): ATIW-1300 Structural Steel Concepts or concurrent enrollment, and ATIW-1310 Safety for Ironworkers or concurrent enrollment; or departmental approval.

ATIW-1600 Welding Fundamentals for Ironworkers**03 Semester Credits**

Fundamentals of welding with special emphasis on the ironworking trade. Includes welding processes; cutting and gouging processes; operational and site safety;

welding equipment and tools; and safety equipment and protective clothing.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATIW-1300 Structural Steel Concepts, and ATIW-1310 Safety for Ironworkers; or departmental approval.

ATIW-2300 Shielded Metal Arc Welding**03 Semester Credits**

Shielded metal arc welding principles and techniques.

Includes required equipment tools and supplies, electrical and environmental safety, eye hazards associated with arc burn, and protective clothing requirements.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATIW-1600 Welding Fundamentals for Ironworkers or concurrent enrollment, or departmental approval.

ATIW-2310 Welding Specialties**03 Semester Credits**

In-depth study of welding and cutting techniques.

Students will perform oxy-fuel gas welding and cutting techniques, arc cutting and gouging, and stud welding as applied to ironworking trade.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATIW-2300 Shielded Metal Arc Welding or concurrent enrollment, or departmental approval.

ATIW-2320 Welding Blueprints and Design**03 Semester Credits**

In-depth study of welding blueprint lines, arrows, views, and symbols; basic layout construction; and identification of welding positions, parts of fillet welds, groove joints and welds, and backup materials. Includes recognition, drawing, measurement calculations, and problem solving.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATIW-2310 Welding Specialties or concurrent enrollment, or departmental approval.

ATIW-2330 Pre-Construction Planning of Specialty Applications**02 Semester Credits**

Includes erection sequence and handling of specialty products. Installation of members and connections performed in compliance with OSHA regulations.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATIW-2320 Welding Blueprints and Design, or departmental approval.

ATIW-2340 Specialty Installation Equipment**02 Semester Credits**

Study and use of equipment in installation of specialty building products. Safety training including employee, equipment, and jobsite safety and procedures for material handling and inspections, according to OSHA regulations.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATIW-2330 Pre-Construction Planning of Specialty Applications or concurrent enrollment, or departmental approval.

Applied Industrial Technology (Ironworking) • (Lifting Technologies)

ATIW-2350 Ornamental Systems and Railings **02 Semester Credits**

Installation methods for and identification of various ornamental applications, including curtainwall and window wall systems, stairs, railings, and wall handrails, and their anchors and fasteners. Use of hand and power tools for installation. Operation of various layout instruments.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATIW-2330 Pre-Construction Planning of Specialty Applications or concurrent enrollment, or departmental approval.

ATIW-2360 Ornamental Applications **02 Semester Credits**

Procedures for and installation of ornamental applications, including rolling service doors, sloped walls, metal and ship ladders, toilet partitions, vanity supports, relief angles, flagpoles, and chain link fences.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATIW-2350 Ornamental Systems and Railings or concurrent enrollment, or departmental approval.

ATIW-2400 History of the Iron Workers Union **03 Semester Credits**

The Iron Workers Union in America from 1896 through today, including people and events that influenced the organization.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATIW-2350 Ornamental Systems and Railings or concurrent enrollment, or departmental approval.

ATIW-2500 Rigging and Hoisting **03 Semester Credits**

Procedures of rigging and hoisting including identification, handling, and storage of equipment: chains, hardware, reeving, slings with practice of knot tying and splicing. Topics include characteristics and uses of cranes, procedures for inspection, safe operation, testing and maintenance of cranes, including machine assembly and set-up procedures. Safety procedures and hand signaling, according to OSHA regulations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATIW-2360 Ornamental Applications or concurrent enrollment, or departmental approval.

APPLIED INDUSTRIAL TECHNOLOGY **(Lifting Technologies) - ATLT**

ATLT-1000 Orientation for Lifting Technologies **02 Semester Credits**

Introductory course covering the history and values of the Mazzella Company M/C, including career opportunities and advancement through continuing education and

apprenticeship. Included are basic technical training and application as part of the rigging industry.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental Approval: Admission to Lifting Technologies apprenticeship program.

ATLT-1010 Industrial Safety **01 Semester Credit**

Certification course covering industrial safety as it pertains to motorized lifts. Included are fork lifts and aerial lifts used in the crane and rigging industry for the movement of personnel, equipment, and/or material.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Admission to Lifting Technologies apprenticeship program.

ATLT-1020 Introduction to Lifting and Rigging **02 Semester Credits**

Introductory course into the Lifting and Rigging Industry, the applied practices and applications of slings.

Introduces various types of rigging gear in use, rigging hardware proper use and pre-use inspection. Explore loads, sling angle stresses, and common rigging applications and practices.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

ATLT-1030 Introduction to Wire Rope **01 Semester Credit**

Introductory course covering common types of wire rope used in the lifting and rigging industry. Includes basic understanding of terminology, identification of ropes, construction types as well as proper use, inspection, and maintenance of wire rope. The physical properties of wire rope will also be covered.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Admission to Lifting Technologies apprenticeship program.

ATLT-1040 Safety in Lifting and Rigging I **01 Semester Credit**

Introductory course covering common types of slings used in the rigging industry. Includes basic understanding of terminology, proper use, and maintenance of slings. In addition, the relationship of the rated load, including design factors and efficiency using sling charts and applied math concepts, for sling selection and proper lifting procedures will be covered.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Admission to Lifting Technologies apprenticeship program.

**ATLT-1050 Rigging Geometric
02 Semester Credits**

Provides an emphasis on the techniques used for understanding stresses common in lifting and rigging. Review of trade and industry math and applications commonly found in lift plans calculations. Includes the interpretation of drawings, technical drawings of lifting applications.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admissions to Lifting Technologies apprenticeship program.

**ATLT-1060 Layout and Fabrication Procedures
01 Semester Credit**

Introduction to the layout and fabrication techniques for slings and rigging gear. Covers the calculations and sizing of various types of slings. Includes practical hands on learning of the techniques of layout and fabrication to manufacture slings and the basics of reading drawings, technical drawings, and prints.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

**ATLT-1070 Blue Print Reading for Rigging I
02 Semester Credits**

Introduction to reading and interpreting working drawings for fabrication processes of both weldments and fabricated slings. Covers the fabrication prints of various types of rigging gear in use. Explore reading drawings including dimensions, bill of material, weld symbols, and specialty notes.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

**ATLT-1080 Lifting Technologies Safety Training
01 Semester Credit**

Covers the safety activities required in a lifting and rigging fabrication plant. Includes understanding of the hazards associated with wire rope, synthetic, and chain sling fabrication facilities. The safety considerations required for the handling, storage, shipping and receiving of rigging materials will also be covered.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

**ATLT-1090 Intro to Welding for Lifting Technologies
02 Semester Credits**

Covers the safety requirements for welding and cutting processes used in the lifting technologies industry. The physics of welding, various joints and positions and guided practices using oxygen - fuel and gas cutting is covered. In addition, welding processes using metal inert gas (MIG) and tungsten (TIG) used for specific applications will be addressed.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

**ATLT-1100 Introduction to Inspections: Field Tablets
IC3****01 Semester Credit**

Introductory course covering the rigging inspection connection process as performed on a mobile computer/tablet in the field. Includes utilizing an electronic tablet, the inspection data and report delivered to the end user. Includes creating, maintaining and organizing an asset management system, -Inspection Connexion- IC3.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Admission to Lifting Technologies apprenticeship program.

**ATLT-1110 Technologies in Rigging
01 Semester Credit**

Provides an emphasis of the technologies used in lifting and rigging industry. Incorporates the use of computers and specialized equipment to learn how to communicate and solve business and practical shop problems.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to apprenticeship program in Lifting Technologies.

**ATLT-2010 Lifting Project Module
01 Semester Credit**

Introductory course covering the lifting project module input and workflow in Adjutant. Includes utilizing Adjutant project module, task management, and route maintenance to deliver a process and workflow in conjunction with the appropriate project types.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

**ATLT-2020 Proof Test Operations
01 Semester Credit**

An introductory course into the safe testing processes and requirements for operating test equipment for non-destructive testing of slings, rigging gear and special lifting assemblies and hardware

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

ATLT-2040 Wire Rope Applications I

01 Semester Credit

Intermediate course covering wire rope applications common to the lifting and rigging industry. Includes understanding wire rope terminology, wire rope constructions, characteristics of various wire rope constructions, and general understanding of wire rope selection.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

ATLT-2050 Blue Print Reading for Rigging II

02 Semester Credits

Advanced reading and interpreting of working drawings for fabrication processes of both weldments and fabricated slings including inspections. Covers fabrication prints of various types of rigging gear in use. Real-world applications, inspection drawings, tolerance stacking, surface finishes, specialty weld symbols, electrical schematics and material alternatives.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

ATLT-2130 Overhead Crane Electrical

02 Semester Credits

Covers electrical maintenance procedures for all types of Cranes. Demonstrate the ability to troubleshoot electrical problems and determine effective methods of installing or repairing electrical components in any type of electric overhead crane, hoist, or workstation.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

ATLT-2140 Overhead Crane Mechanical Operations

02 Semester Credits

Introductory course in identifying and understanding the mechanical components of overhead cranes and hoists. An overview of proper component terminology, types, uses and the subsequent selection of various mechanical components and devices that make up an Overhead Crane or hoist.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

ATLT-2170 Overhead Crane Inspector

01 Semester Credit

Advanced course covering crane safety standards, as prescribed by the Occupational Health and Safety Administration, different crane types, and crane components. Included are procedures for crane inspections, configurations and reporting, and report

delivery to the end user with critical findings.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Admission to Lifting Technologies apprenticeship program.

ATLT-2280 Overhead Crane Inspection Safety

02 Semester Credits

Safety course covering inspection of overhead cranes. Included are the use of aerial lifts, Personal Protective Equipment (PPE), and fall protection. Also covered is electrical safety concerns related to specific inspections.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

ATLT-2500 Rigging Inspector Certification

03 Semester Credits

Introductory course covering the OSHA and ASME requirements for the visual inspection of alloy chain slings, metal mesh slings, wire rope slings, synthetics slings, round slings, and rigging hardware within the rigging industry. Includes the basic understanding of terminology, OSHA 1910.184, ASME B30.9, ASME B30.26 and application of these standards.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

ATLT-2510 Sling Fabrication - Flat Web & Chain

01 Semester Credit

Introduction to the layout and fabrication techniques for flat web slings and chain slings. Covers the calculations and sizing of various types of flat web and chain slings. Practical hands on learning of the techniques of layout and fabrication to manufacture flat web and chain slings and will cover basics of reading drawings, technical drawings and prints.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Admission to Lifting Technologies apprenticeship program.

ATLT-2520 Socketing

01 Semester Credit

Covers the basic types and fabrication of socket assemblies. Outline the techniques and processes required to fabricate these assemblies. Features the application and installation procedures of the various types of socketing.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Lifting Technologies apprenticeship program.

**APPLIED INDUSTRIAL TECHNOLOGY
(Manufacturing Technology) - ATMT****ATMT-1000 Mechanical and Spatial Relations****04 Semester Credits**

Relationship between two-view and three-view images. Basics of visualizing three-dimensional objects from two-dimensional front, side, and top views. Perceptual ability, spatial views, matching parts and figures. Visualization of shapes or patterns that can result from fitting together cut-up pieces. Graphically describing size and shape to represent basic mechanical elements along with cube counting.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATMT-1100 Manufacturing Skills I**03 Semester Credits**

Stresses relationship of engineering drawing to applications of manufacturing part including lines, views, dimensioning, metric system, calculating cut of points, freehand lettering, sketching, and use of drafting tools to construct blueprint. Includes fraction to decimal conversion, drafting line using geometric equations, line types, orthographic views, isometric views, offset sections, auxiliary sections, symbols, and broken sections.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Sponsorship in approved apprenticeship program offered by a member company, or acceptance to PMT certificate program.

ATMT-1110 Manufacturing Skills II**02 Semester Credits**

Provides skills in layout techniques and operations, including bolt hole circles, location of surfaces related by non-right angle triangles, and points of tangency. Includes layout drawing by sketching proper views from actual part.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATMT-1100 Manufacturing Skills I or concurrent enrollment; or departmental approval: admission to Applied Industrial Technology - Manufacturing Technology program.

ATMT-1120 Machine Operations I**06 Semester Credits**

Introduction to machine shop practices to produce manufacturing parts. Includes operations of machinery, terminology, safety, measurement, layouts, print reading, machine set-ups, hand tools, measuring tools, cutting tools, and processes in production work flow. Emphasis on use of typical equipment found in conventional machine shop. Extensive hands-on projects.

Lecture 01 hour. Laboratory 15 hours.

Prerequisite(s): Departmental approval: Admission to any Applied Industrial Technology program.

ATMT-1200 Machine Tool Theory**04 Semester Credits**

Presents foundation for study of manufacturing methods, processes, related equipment, and tools of industry, requiring student to understand shop safety practices, job planning, feeds and speeds, layout tools and procedures, hand tools and bench work, metal cutting saws, drilling machines, lathe, milling machines, jig bore and jig grinder, surface grinder, E.D.M, and abrasives.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Applied Industrial Technology - Manufacturing Technology program.

ATMT-1300 Manufacturing Procedures**02 Semester Credits**

Principles of blanking and/or piercing dies; bending; screw and dowel holes; die life; punches; pilots; die block construction; strippers and stock guides; shredders and knockouts; nest gages; pushers; die stops; stock material utilization; strip layouts; and die sets. Includes techniques and theory of building stamping dies with topics including cutting and forming operations, primary die components, and internal parts of complete die.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATMT-1200 Machine Tool Theory, or concurrent enrollment and departmental approval: admission to Applied Industrial Technology - Manufacturing Technology program.

ATMT-1500 Manufacturing Technology Skills I**04 Semester Credits**

Advanced study of relationship of engineering drawings to applications of machine shop production of precise parts, die, and mold components, to provide students with theory on use of coordinate measuring machine (CMM) for machine tool trades. Machine shop engineering drawing mathematics, used in development and production of part from print in machine shop, will be stressed. Application of engineering drawing skills on projects made in shop. Emphasis on geometric dimensioning. Students will learn to read and comprehend advanced engineering drawings from various industries.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ATMT-1200 Machine Tool Theory, and departmental approval: admission into Applied Industrial Technology - Manufacturing Technology program.

Applied Industrial Technology (Manufacturing Technology)

ATMT-1600 Introduction to CAD

02 Semester Credits

Introduction to computer systems and computer-aided drafting (CAD) software as tools used to produce engineering drawings. Keyboarding and computer operating skills are overlaid with software commands. Command topics include line coordinate systems, circles and arcs, geometry creation, text styles, editing geometry and text, controlling drawing display, drawing aids, layers, blocks, hatching, and dimensioning.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): ATMT-1300 Manufacturing Procedures or concurrent enrollment, and departmental approval: admission to Applied Industrial Technology - Manufacturing Technology program.

ATMT-1950 Field Experience

02 Semester Credits

Practical application of manufacturing concepts in field. Limited to students in the apprenticeship program of the Manufacturing Trades with employment in approved training facility. May be repeated up to four times.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field experience: 24 hours per week.

Prerequisite(s): ATMT-1100 Manufacturing Skills I or concurrent enrollment, and departmental approval: admission to Applied Industrial Technology - Manufacturing Technology program.

ATMT-2120 Machine Operations II

06 Semester Credits

Theory and application of use of engine lathe, planning machines, milling machines, grinders, quality control, metallurgy, and fasteners. Emphasis on use of typical equipment found in conventional machine shop.

Extensive hands-on projects.

Lecture 01 hour. Laboratory 15 hours.

Prerequisite(s): ATMT-1120 Machine Operations I.

ATMT-2300 Advanced Manufacturing Procedures

02 Semester Credits

Capabilities of computer aided design (CAD) systems are covered. Students will be required to produce working engineering drawings. Instruction in tool path generation, local CNC programming and 2D simulation, including capabilities of computer aided manufacturing (CAM) systems.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): ATMT-1600 Introduction to CAD, and departmental approval.

ATMT-2400 Advanced Die Making

02 Semester Credits

Study of most important elements of die function and performance. Resource for apprentices, tool designers,

and others who need a working reference on design, construction, and use of stamping dies.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATMT-2500 Manufacturing Technology Skills II, and departmental approval.

ATMT-2410 Advanced Moldmaking

02 Semester Credits

Study of fundamentals of mold construction, processes and construction of plastic molds such as compression, transfer, pressure molding of non-ferrous alloys, rubber molds, dies cast molds, and injection molds. Includes foundations of mold construction, depending on design of part, material used, equipment available, and ingenuity of moldmaker.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATMT-2500 Manufacturing Technology Skills II, and departmental approval.

ATMT-2420 Advanced Precision Machining

02 Semester Credits

Advanced study of relationship of materials, fixtures, and special machining operations as they relate to applications of machine shop production of precise parts, dies, and mold components. Provides theory on use of machining exotic materials, hard turning, machining of plastics, fourth and fifth axis programming, coolants and specialty inserts. Included are practical applications and machine shop mathematics formulas used in fixture and holding device design. Provides knowledge of castings, weldments, tool coatings and manufacturing methods that are becoming part of today's technology such as waterjets and lasers. Student will learn advanced metallurgy processes, and standard procedures for troubleshooting all types of manufacturing projects.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATMT-2500 Manufacturing Technology Skills II, and departmental approval.

ATMT-2500 Manufacturing Technology Skills II

04 Semester Credits

Study of relationship of engineering drawings to applications of manufacturing parts for CNC machines, screw machines, mold, and die components. Topics include dimension and tolerance; form tolerances; calculation of tolerance using equations; calculation of tolerances using standard shop formulas; profile and run out tolerances; location tolerances; geometric dimensioning; geometric applications; transferring engineering drawing using computer graphics; and development of engineering drawing with computer.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ATMT-2300 Advanced Manufacturing Procedures or concurrent enrollment, and departmental approval.

ATMT-2600 CNC Programming / Operations**02 Semester Credits**

Fundamentals of computer application as aid to machining processes. Emphasis on engineering drawing analysis, using trigonometry and other forms of mathematics to determine programming points; ascertaining implied part dimensions; determinations of machining parameters; calculation of speeds; feeds and tool offset; establishment of work zero and tool home positions. Manual programming of computer numerical control (CNC) machines using G-codes; tooling and set-up of CNC lathes and milling machines for machining operations; verification of toolpaths by simulation; and operating CNC machines to produce mechanical parts.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): ATMT-2300 Advanced Manufacturing Procedures or concurrent enrollment, and departmental approval.

ATMT-2620 CAM Principles**02 Semester Credits**

Study of geometric modeling, using selected CAD/CAM packages to graphically model parts in 2D, 3D wire-frame and solid, generating G-codes, post-processing G-codes into formats interpretable by given CNC controllers. Topics include editing G-codes with verification of toolpaths in 3D and solid model simulation; downloading path programs into CNC turning and milling centers; and machining parts. Use of metrology methods to check dimensional and geometrical accuracy of produced parts.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): ATMT-2600 CNC Programming / Operations, and departmental approval.

ATMT-2700 Manufacturing Technology Skills III**04 Semester Credits**

Advanced study of manufacturing methods, processes, related equipment, and tools of industry, requiring student to understand standard requirements to being a Journeyman Tool and Diemaker, Moldmaker, Precision Machinist, Precision Screw Machine operator, or Precision CNC operator. Topics include practices of job planning, maximum use of shop supplies, and how to work independently, efficiently and effectively. Scope is to demonstrate thin margin that is required to making a job profitable, helping student to troubleshoot problems that may occur with effective problem solving methods and technique.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ATMT-2500 Manufacturing Technology Skills II, and departmental approval.

ATMT-2990 Manufacturing Operation Principles**03 Semester Credits**

Capstone course in Manufacturing Technology. Topics include manufacturing flow, quoting, tool and materials supply inventory control, outsourcing, supplier tracking

and UCC coding.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATMT-2700 Manufacturing Technology Skills III or concurrent enrollment.

**APPLIED INDUSTRIAL TECHNOLOGY
(Millwrighting) - ATMW****ATMW-1320 Introduction to Millwrighting****02 Semester Credits**

Study of basic millwrighting concepts. Topics include hand and precision tool recognition and use, drilling and tapping, belt drive installation and application, and chain drive installation and application.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-1330 Print Reading for Millwrights**02 Semester Credits**

Study of print reading as applied to activities of millwrights. Topics include related math concepts, machine print components including orthographic views, line types, scale, exploded views, installation prints, revision information, optical tooling, and specifications.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-1340 Introduction to Pile Driving**02 Semester Credits**

Study of pile driving basics. Topics include history, definition of industry specific terms, blueprint reading, types and uses of pile driving tools and equipment, types of piling, skills and duties of pile drivers, safety equipment, and review of OSHA standards relevant to pile driving.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-1350 Hydraulics/Centrifugal Pumps**02 Semester Credits**

Covers the operation and the maintenance of overhung centrifugal pumps and mechanical seals. Disassembly, inspection, checking clearances and rebuilding these pumps to industry standards will be an integral part of this course.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATMW-1450 Heavy Rigging

02 Semester Credits

Study of rigging hardware and equipment required to lift equipment and material. Topics include mobile, fixed, tigger, and hand rigging cranes, formulating a safe lifting plan through the use of applicable calculations, weight estimation, sling loads, signaling, crane limitations, and implementing OSHA safety regulations.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-1490 Millwright Pile Driver Weld I

02 Semester Credits

Study of basic concepts and implementation of shielded metal arc welding. Topics include theory of arc welding, operation of welding equipment, safety practices, electrode characteristics and selection, identification of weld joint types, and personal protective equipment (PPEs).

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-1600 Rotating Equipment

02 Semester Credits

Study of rotating equipment. Topics include precision equipment and tools and terminology, bearing type installation and application, math concepts, shaft alignment, reverse dial alignments, laser alignment application and interpretation, and safety measures.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-1720 Machinery Installation

02 Semester Credits

Introduction to layout, leveling, and installation of heavy industrial equipment. Topics include hand rigging techniques, proper forklift operations, shoring, heavy timber, false work, and installation of equipment according to OSHA regulations.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry, or departmental approval.

ATMW-2120 Shaft Alignment

02 Semester Credits

In depth study of concepts related to shaft alignment. Topics include rim and face alignment procedures, indicator set up and use, soft foot identification and

elimination, correction methods, mathematical alignment concepts, and coupling installation and application.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry; or departmental approval.

ATMW-2130 Shaft Alignment II

02 Semester Credits

Review of rim and face alignment procedures. Covers reverse dial indicating. Application of mathematical formulas used to solve alignment problems and graphing techniques will be covered. Laser alignment systems and all of their functions will also be included.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATMW-2230 Millwright Pile Driver Weld II

02 Semester Credits

In-depth study of multi-pass horizontal and vertical-up groove welds using the shielded metal arc welding process. Topics include blueprint reading for welders, introduction to D1.1 structural weld code requirements, welding safety practices, and guided practice time.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATMW-1490 Millwright Pile Driver Weld I or concurrent enrollment; or departmental approval.

ATMW-2330 Precision Optics

02 Semester Credits

In depth study of concepts related to precision optics. Topics include operational theory, operation of tilting level and jig transit, interpretation and application of a Whyteface® scale, peg testing, measurement theory, and mirror usage.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-2350 Floor Conveyor

02 Semester Credits

Study of floor conveyor systems used to transfer materials in assembly line operations and related manufacturing facilities. Topics include blueprint reading, layout procedures, component installation, proper use of an aerial lift, and OSHA safety requirements.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-2400 Steam Turbines**02 Semester Credits**

Covers the various types of steam turbines currently in use. Students will learn how a turbine operates and will identify the various components of a turbine. Students will disassemble a steam turbine and determine the millwrights' responsibilities while working on steam turbine.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATMW-2500 Combustion Turbine**02 Semester Credits**

In-depth study of combustion turbine use, installation, and repair. Topics include turbine safety concepts, component identification, maintenance, rigging procedures, installation, and fuel nozzle installation and repair.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry or concurrent enrollment; or departmental approval.

ATMW-2520 Millwright Pile Driver Weld III**02 Semester Credits**

Study of advanced topics in millwright and pile driver welding. Topics include multi-pass vertical-up groove, technical review of material presented in ATMW 1490 Weld I and ATMW 2230 Weld II, carbon arc process, non-destructive testing, alloy welding, safety practices, guided practice time, and preparation for the American Welding Society (AWS) D1.1 vertical-up unlimited thickness certificate test.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATMW-2230 Millwright Pile Driver Weld II or concurrent enrollment, or departmental approval.

ATMW-2530 Advanced Welding IV**02 Semester Credits**

Course covers the welding techniques and skills required for welding certification in wire feed and standard shielded metal arc welding (SMAW) or stick welding. Included are techniques required for machine set-up for Tungsten Inert Gas (TIG) welding and its welding processes.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: acceptance to any Applied Industrial Technology program.

ATMW-2700 Monorail**02 Semester Credits**

Study of monorail systems used to transfer materials in assembly line operations and related manufacturing facilities. Topics include blueprint reading, layout

procedures, component installation, and screen guard installation.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Acceptance to any Applied Industrial Technology program, and ATCT-1301 Introduction to Carpentry; or departmental approval.

**APPLIED INDUSTRIAL TECHNOLOGY
(Operating Engineers) - ATOE****ATOE-1100 Operating Engineering Concepts****04 Semester Credits**

Basic concepts of compaction, compaction equipment, design of paving operations, and design concepts of asphalt and skid steer loaders. Tractor-scraper and oiler responsibilities also included.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATOE-1200 Basic Mechanical Concepts**03 Semester Credits**

Introduction to analysis of fuels, components and principles of fuel systems, common units, air intake systems, cooling system designs and maintenance, hydraulic systems including Pascal's law, basics of engine electrical systems, history, development and theory of internal combustion engines. Discussion on function of clutches, basics of power train, use of brakes, and components of tracks and tire construction, selection, maintenance and storage.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATOE-1650 Graders and Plans**02 Semester Credits**

Introduction to graders operations, safety information fundamentals, terminology and various support grader operations, pre and post operations, methods of finish grading, and fundamentals of construction leveling. Topics include terminology of laser and laser machine controls; proper set-up procedures; safe work practices in the use of lasers and components of laser machine controls; and common highway plans for construction projects including introduction to basic plans, their purpose, and learning how to interpret them.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

Applied Industrial Technology (Operating Engineers)

ATOE-1700 Paving, Tractor, Backhoe Operators

03 Semester Credits

Introduction to design concepts of paving, identifying operation controls of any hydraulic and loader equipment, basic operations and maintenance safety of equipment, standard and conventional scraper, differentiate one-engine and two-engine scrapers, inspection and start-up, and safety procedures.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to any Applied Industrial Technology program.

ATOE-2100 Mobile Crane

02 Semester Credits

In-depth focus on mobile cranes. Topics include components and parts, crane signals, communications, operational safety in set-up and OSHA standards and regulations, and using load charts to calculate load weight. Also includes wire rope and rigging, and electrical hazards.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATOE-1100 Operating Engineering Concepts, or departmental approval.

ATOE-2200 Mechanical Repair

03 Semester Credits

Study of major mechanical systems. Detailed troubleshooting practice and procedures. Clutch diagnosis and repair, types of power trains and undercarriage maintenance also included.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATOE-1200 Basic Mechanical Concepts, or departmental approval.

ATOE-2600 Bulldozer Practice

03 Semester Credits

Study of standard features, standard procedures, tools, inspection, and controls of bulldozers. Topics include attachments, terminology, inspection and controls.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATOE-1650 Graders and Plans, or ATOE-2640 Advanced Grader Practice or concurrent enrollment; or departmental approval.

ATOE-2620 Backhoe Practice

03 Semester Credits

Study of standard features, standard procedures, tools, inspection, and controls of backhoes. Topics include attachments, terminology, inspection, and controls.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATOE-1700 Paving, Tractor, Backhoe Operators, or departmental approval.

ATOE-2640 Advanced Grader Practice

03 Semester Credits

Study of standard features, standard procedures, tools, inspection, and controls of graders. Topics include

attachments, terminology, inspection and controls.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATOE-1650 Graders and Plans, or ATOE-1700 Paving, Tractor, Backhoe Operator; or departmental approval.

ATOE-2650 Safety Training Passport

01 Semester Credit

Introduction to the Occupational Safety and Health Act (OSHA). Topics include employee responsibilities and rights, standards, and basic hazard training.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): ATOE-1100 Operating Engineering Concepts, or departmental approval.

ATOE-2660 Grader Safety

02 Semester Credits

Application of safety operations of graders. Topics include reading warning signs and labels, avoiding general hazards, monitoring systems and cab features, operation techniques and towing.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATOE-1650 Graders and Plans, or ATOE-2640 Advanced Grader Practice or concurrent enrollment; or departmental approval.

ATOE-2670 Rough Terrain Forklift Operation

02 Semester Credits

In-depth focus on OSHA regulations regarding industrial trucks, specifically OSHA 1910.178. Also includes characteristics of forklifts, identification of components of a truck and their functions, safety operations and safety equipment used on forklifts.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATOE-1100 Operating Engineering Concepts, and ATOE-1650 Graders and Plans; or departmental approval.

ATOE-2680 Hazardous Material Handling and Field Safety

02 Semester Credits

Introduction to governmental laws and agencies involving worker's health and safety protection. In-depth study of hazardous waste and emergency response operations, including the formation of Occupational Safety and Health Administration (OSHA). Regulations pertaining to specific rights to Code of Federal Regulations - OSHA 29 CFR 1910.120 (The Access to Exposure and Medical Records Standard), and decontamination procedures. Includes advanced concepts in informational programs, heat and cold stress, normal cooling mechanisms, heat-related illnesses, identifying signs of heat and cold stress and their prevention, diesel exhaust risks, asphalt emissions, Respiratory Standard Act 1910.134 and respiratory protection.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATOE-1100 Operating Engineering Concepts, and ATOE-1650 Graders and Plans; or departmental approval.

**APPLIED INDUSTRIAL TECHNOLOGY
(Painting) - ATPT**

ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing

02 Semester Credits

Introduction to basic painting trades skills, including apprenticeship rights and responsibilities; painting, drywall finishing, glazing, and sign and display terminology; tools, materials, and equipment; preparation and application procedures; and safety practices.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1320 Safety Standards for Construction (OSHA-10)

03 Semester Credits

General instruction for occupational safety and health, including safety rules and procedures for fall protection, electrical work, scaffolding, ladders, confined spaces, personal protective equipment, and other trade related safety procedures. OSHA-10 certification will be completed.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1330 Filling Compounds and Procedures

02 Semester Credits

Instruction in basic elements and procedures for using filling compounds, including terminology, selection of filler, elements of drying, application of filler with trowel and broad knife, and finish sanding.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1340 Wall Preparation and Repair

02 Semester Credits

Instruction in wall preparation and repair, including pre-job inspection, preparation of job site, and repair of wallboard, painted surfaces, plaster, and stains.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1620 Wood Finishing

02 Semester Credits

Instruction in principles and procedures in wood finishing, including characteristics of woods, specifications and finishing procedures, preparation of surfaces, and maintenance and repair of finishes.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1630 Color Mixing and Matching

02 Semester Credits

Instruction in color mixing and matching, including color terminology and theory, lighting and surface effects of color, use of light boxes and viewing aids, and sequence and techniques of color mixing and matching.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1640 Rigging and Hoisting

02 Semester Credits

Introduction to basic procedures of rigging and hoisting including rope materials, care, and handling; knot tying; slings; rigging hardware and hoisting techniques; hand signals; and safety procedures.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1320 Safety Standards for Construction (OSHA-10), or departmental approval.

ATPT-1650 Blueprints I: Construction Fundamentals

02 Semester Credits

Introduction to basic principles of blueprint reading including terminology, types of drawings, specifications and schedules, lines, symbols, scales, dimensions, and uses for painting crafts.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-1660 Labor in American Society

02 Semester Credits

Instruction in nature of work and role of unions in American society, including history of workers and unions from early republic to contemporary era, role of unions at workplace and in society, relationship of workers and unions to economy, law, and democracy.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Painters and any Applied Industrial Technology program, or departmental approval.

ATPT-2310 Wallcovering and Paperhanging

03 Semester Credits

Instruction in principles and application of wallcoverings including types of wallcoverings, surface preparation, rollage estimates, matching prints and patterns, pasting, and trimming techniques.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATPT-1320 Safety Standards for Construction (OSHA-10); or departmental approval.

ATPT-2320 Safe Work Practices

03 Semester Credits

Instruction in basic and advanced safe work practices including general safe work practices, power tools, shop machinery, and advanced OSHA-30 rules.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATPT-1320 Safety Standards for Construction (OSHA-10); or departmental approval.

ATPT-2330 Spray and Industrial Painting

02 Semester Credits

Introduction to basic principles of spray painting including spray painting terminology, safety procedures, conventional air spray systems, airless spray painting, and other spray systems.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing, and Glazing, and ATPT-1320 Safety Standards for Construction (OSHA-10); or departmental approval.

ATPT-2340 Blueprints II: Advanced Reading and Estimating

02 Semester Credits

Advanced instruction in principles and application of blueprint reading including terminology, architectural drawings, engineering drawings, and application of specifications and schedules to painting crafts.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1650 Blueprints I: Construction Fundamentals, or departmental approval.

ATPT-2350 Advanced Spray and Industrial Painting

02 Semester Credits

Advanced instruction in spray and industrial painting techniques and procedures including equipment terminology, conventional air spray systems, electrostatic spray systems, HVLP turbine spray systems, and safety for spray painting.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-2330 Spray and Industrial Painting, or departmental approval.

ATPT-2360 Foreman Training

02 Semester Credits

Instruction in foreman training including functions and responsibilities, communication skills, personnel duties, safety and substance abuse responsibilities, and legal requirements.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1300 Introduction to Painting, Drywall Finishing and Glazing, and ATPT-1320 Safety Standards for Construction (OSHA-10); or departmental approval.

ATPT-2370 Abrasive Blasting Techniques

02 Semester Credits

Instruction in abrasive blasting operations and procedures including types of machines and their components,

materials and their characteristics, selection of machine and materials to fit job, water blasting operations, and surface preparation with abrasive blasting.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-2320 Safe Work Practices or concurrent enrollment; or departmental approval.

ATPT-2380 Special Coatings and Decorative Finishes

02 Semester Credits

Instruction in basic principles and techniques of special coatings and decorative finishes including terminology and glazing, antiquing, wood graining, marbleizing, stipple finishing, texturing, gilding, and stenciling techniques and procedures.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1630 Color Mixing and Matching, or departmental approval.

**APPLIED INDUSTRIAL TECHNOLOGY
(Pile Driving) - ATPD**

ATPD-1310 Technical Measurements, Hand & Power Tool Use in Pile Driving

02 Semester Credits

Introduction of safe use of pile driving tools. Topics include measurements, tool groups and tool applications.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter apprentice program.

ATPD-1330 Print Reading for Pile Driving

02 Semester Credits

Introduction to blue print reading as it pertains to the Pile Driver. In depth discussion on line types, scale, views, and revision information. Use of optical tooling for layout also included.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter apprentice program.

ATPD-1370 Pile Driving on Land and Water

02 Semester Credits

Introduction to basic pile types and applications. Topics include recognition and use of different types of hammers, pile families designs, structural characteristics, pile driving leads, required equipment and accessories, and pile driving on land and water.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter apprentice program.

ATPD-2020 Pile Driving Technologies**02 Semester Credits**

Advanced study of set up and breakdown of various cranes and equipment types. Includes identification of crane types, hardware & hitch usage, signals, and equipment capacities.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter apprentice program.

ATPD-2220 False Work and Heavy Timber**02 Semester Credits**

Efficient uses, advantages, disadvantages, and special considerations related to shoring methods. Examples of types of shoring equipment shown. Matching most efficient shoring system to application is also included.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter Apprentice program.

ATPD-2370 Advanced Pile Driving on Land**02 Semester Credits**

In depth study of pile driving. Includes caissons and drilled shafts, tie back walls, cofferdams and cells, shoring and lagging, and fundamentals of geo-technical engineering and soil.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter Apprentice program.

ATPD-2380 Advanced Pile Driving on Water**02 Semester Credits**

In depth study of pile driving on water. Topics include sheet pile and caissons, auger cast pile, cofferdams, stone setting, and extraction.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATCT-1301 Introduction to Carpentry, and departmental approval: admission to Carpenter Apprentice program.

ATPD-2700 Millwright-Pile Driver Weld IV**02 Semester Credits**

Reinforcement of necessary skills required for large multi-pass welds. Preparation for A.W.S. D1.5 vertical up unlimited thickness certification test. Includes in-depth review of blueprint reading for welders.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATMW-2520 Millwright Pile Driver Weld III, and departmental approval: admission to Carpenter Apprentice program.

ATPD-2710 Millwright-Pile Driver Weld V**02 Semester Credits**

Advanced welding practices as applied to pile driving. GMAW topics include innershield welding, safe set up

and use of wire fed welding machines.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPD-2700 Millwright-Pile Driver Weld IV, and departmental approval: admission to Carpenter Apprentice program.

**APPLIED INDUSTRIAL TECHNOLOGY
(Pipefitting) - ATPF****ATPF-1015 Heat, Matter and Energy****02 Semester Credits**

A study of heat theory, matter and energy as they relate to the pipefitting service industry. Included are relative definitions, mathematical conversions, and discussion of the laws of thermodynamics and of related topics covering applications to the heating and cooling industry.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1025 Basic Controls with Electricity**02 Semester Credits**

Course covers the application and theory of electricity as it relates to the heating ventilation and air conditioning industry. Also discussed are temperature controls including thermocouples and thermal resistors.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1035 Refrigeration Motors and Applications**02 Semester Credits**

Course discusses different types of motors, motor operation and the applications of motors in the refrigeration industry. Also covered are various motor devices use for overload protection and changing electrical current.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1045 Motor Controls and Troubleshooting**02 Semester Credits**

Basic electric motor course used for servicing refrigeration equipment. Course covers motor components and operation, safety considerations for restarting and servicing motors. Also included is a discussion of various electrical and mechanical problems that may cause motor malfunction.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1055 Evaporators, Condensers, and Compressors 02 Semester Credits

Course covers the function and purpose of evaporators, condensers and compressors used in the refrigeration industry. Included is a discussion of the respective components and the respective operation with respect to each other and performance in the air cooling process.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1065 Expansion Devices and Special Components 02 Semester Credits

Course covers expansion devices used in the refrigeration process, specific terminology and the operation of the respective components. In addition, the purpose and operation of expansion devices, including thermostatic and automatic valves, and other special refrigeration enhancing components will be addressed.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1070 Soldering Brazing and Pipefitting Tools 02 Semester Credits

Covers the care and use of hand and power tools that are used in the pipefitting industry. In addition, safe soldering practices, alloys, joint preparation and soldering and brazing operations are included. Emphasis will be placed on the application process where the tools and equipment will be used.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1085 Refrigeration and Refrigerants 02 Semester Credits

Introduction to the refrigeration process including relationships between pressure and boiling points and vaporization and cooling coils. Also covers refrigeration cycles, plotting and interpretation of pressure/enthalpy charts.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1095 Systems Charging 02 Semester Credits

Course covers the charging of refrigerants in vapor and liquid states into air conditioning and heat pump systems and refrigerant oil with systems applications. Also included are the identification and operation of precision instrument for calibrating procedure.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1125 System Evacuation 02 Semester Credits

Basic course covering the evacuation procedures followed in initiating refrigeration equipment and systems. Also included are tool and equipment identification and use, proper selection and application of each.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1135 Refrigeration Applications and Ice Machines 02 Semester Credits

Refrigeration course discussing various refrigeration types and conditions for proper applications. Also included are defrost methods for walk-in equipment, ice machines operation and product harvest and equipment service procedures.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1145 Refrigeration Transport and Problem solving 02 Semester Credits

Advanced course describing the refrigeration processes employed in the transportation of frozen and perishable goods using various vehicles of transport. Included are typical operating conditions for commercial refrigeration and troubleshooting common problems.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1210 Rigging 02 Semester Credits

A study of different materials used in the rigging process. Recognize a variety of knots and exhibit an ability to tie them. Includes crane operation and many alternate methods of determining load weights.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1220 Basic Pipefitting Layout 01 Semester Credit

A study of basic layout for pipefitters and technicians in the construction industry. Covers calculations involved in designing, installing and repairing piping runs. Reviews basic mathematics for preparation in to succeed in problem solving found on the job.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1260 Sprinkler Layout**01 Semester Credit**

A study of layout for the sprinklerfitter and technicians in the construction industry. Covers calculations involved in designing, installing and repairing sprinkler piping runs. Review in basic mathematics for preparation of problem solving on the job.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1270 Sprinkler Drawings**04 Semester Credits**

A study of sprinkler systems and techniques used to produce sprinkler drawings used by pipefitters in the construction industry. In addition, interpretation of fire suppression drawings and relative piping will be thoroughly addressed.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-1360 Hydronic Heating and Cooling**02 Semester Credits**

A study of hydronic heating and cooling systems used by pipefitters and service technicians in the construction industry. Course includes a discussion of various systems, equipment sizing, air control and installation techniques. Course includes a discussion of various systems, equipment sizing, air control and installation techniques and factors that affect chilled water equipment.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2115 Electric Heat**01 Semester Credit**

Introductory course covering electric heat devices including hydronic boilers and controls that regulate equipment operation and safety. Included are service technician repair and preventative maintenance guidelines.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2125 Gas Heat**02 Semester Credits**

Course covers gas furnaces, operation and controls, including safety features of gas heat. Troubleshooting and customer service is also demonstrated and discussed.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2130 Oil and Hydronics**02 Semester Credits**

Course discusses the types operation of oil and hydronic furnaces including the atomization of fossil fuels and water systems used for the ignition and circulation process. Maintenance procedures for service of the respective systems including oil burning efficiency and damping effects.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2145 Air Distribution and Psychrometrics**02 Semester Credits**

Course covers air quality, psychrometric and air distribution of heat systems with respect to the pipefitting industry. Properties of air and air pollutants, heat recovery and purification will also be discussed.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2155 Air Conditioning Installation and Controls**02 Semester Credits**

Course covers different types of air conditioning systems and related controls. In addition, installation and system balancing and troubleshooting mechanical problems are addressed.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2165 All Weather Systems**02 Semester Credits**

Basic refrigeration course covering the concepts and operation of year round air conditioning systems including reverse cycle refrigeration and heat pumps. In addition, open and closed pump systems and effects on water quality will be covered.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2175 Domestic Refrigeration**02 Semester Credits**

Covers the refrigeration cycle and process of domestic refrigeration including component function and defrost procedures. Also included are trouble shooting and maintenance procedures and related safety hazards.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2340 Steam Systems

02 Semester Credits

Instructional course describing the proper installation, service and repair of steam piping systems in various commercial and industrial situations.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2450 Oxy/Acetylene Cutting and Basic Welding I

02 Semester Credits

Introduction to oxy-acetylene flame cutting and Shielded Metal Arc Welding (SMAW) arc welding. Includes safe equipment assembly, layout & assembly of pipefittings and tacking & welding of pipefittings.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship Program.

ATPF-2470 Oxy/Acetylene Cutting and Basic Welding II

02 Semester Credits

Covers proper technique of oxy-acetylene flame cutting and Shielded Metal Arc Welding (SMAW) arc welding. Includes safety precautions, simple flame cutting projects, and operation of various welding machines.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2510 Sprinkler Fire Protection

02 Semester Credits

Instructional course describing the proper installation, service and maintenance of sprinkler fire protection systems.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

ATPF-2520 Valve Repair

02 Semester Credits

Course describing the proper installation, service and repair of valves in various commercial, industrial and residential situations. Also includes proper selection of valves for each situation.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Pipefitter's apprenticeship program.

**APPLIED INDUSTRIAL TECHNOLOGY
(Plumbing) - ATPL**

ATPL-1000 Care and Use of Tools

02 Semester Credits

Identifies the hand and power tools used in the plumbing industry and discusses the operation and respective safety concerns as prescribed in the standards found in the Occupational Safety and Health Administration (OSHA) and in the manufacturer's specifications.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1010 Soldering and Brazing

02 Semester Credits

Basic principles of joining tubing used in domestic water and medical gas installations. In addition, discussion of the principles and practices used in soldering and brazing applications.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1030 State of Ohio Plumbing Code I

02 Semester Credits

Introduction to the State of Ohio code for plumbing. Covers general regulations, definitions and specific installations including hot water tanks and storm water systems.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1040 Plumbing Heritage

02 Semester Credits

Introduction to labor history and the roles of the apprenticeship, apprentice, journeyman, local union and union contractors in the construction industry. Also discusses good work habits and skills needed to excel in the construction industry.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1050 Construction Drawings for the Trades

02 Semester Credits

Covers residential blueprint reading as applied to mechanical and architectural trades. Includes sections explaining the use of various plans (site, foundation, floor) with building sections and details.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1060 Medical Gas**02 Semester Credits**

Certification course that studies the installation, maintenance and safety concerns of medical gas and its environmental effects.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1070 Pipe Fittings, Valves, and Supports**02 Semester Credits**

Identifies the pipe, pipe fittings, valves and supports that are used in the plumbing trade and discusses the fabrication and installation methods that are required for proper and safe installations.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1210 State of Ohio Plumbing Code II**02 Semester Credits**

A study of the State of Ohio Plumbing Code with concentration on governing provisions of venting materials, design, construction, and installation of venting systems. In addition, code provisions covering fixtures, faucets and fittings, special health care regulations, and indirect waste systems are included.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1220 Gas Systems**02 Semester Credits**

Study of the procedures followed in the installation of natural gas systems, pipe sizing, safety and the repair of natural gas systems.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-1230 Water Supply**02 Semester Credits**

Overview of potable water from its source to its end use. Includes discussion of water treatment, water mains, service and building water systems including water system layout, installation and maintenance, and different effects of the introduction of heat to potable water.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2320 State of Ohio Plumbing Code III**02 Semester Credits**

Review of the State of Ohio Plumbing Codes I & II with the study of storm and sanitary drainage.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2350 Electricity for Plumbers**02 Semester Credits**

Fundamentals of electricity for the plumbing trade. Covers safety, transformers, direct and alternating current, and basic controls. Discussion of motors and troubleshooting exercises.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2360 Green Plumbing Systems**01 Semester Credit**

Fundamentals of sustainable design, green building practices and installation procedures that are used in the plumbing industry. Includes applied green awareness and function with respect to the conservation and recycling of potable water and the reuse of storm and sanitary water disposal systems.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2410 City and State Backflow Certification**02 Semester Credits**

Preparation to test and repair various backflow prevention devices that are used to protect the public water supply.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2430 Trench and Excavation Safety/Confined Space**01 Semester Credit**

Introduction to hazards and dangers of working in confined spaces. Examination of spaces with limited means of egress and limited natural ventilation that are not meant for continuous occupancy and examination of permit-required work areas with compliance to OSHA standards.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2440 City of Cleveland Plumbing License**01 Semester Credit**

Certification course identifies the natural gases that are installed for application in the medical industry and discusses their environmental effects. Discussion of methods of installation and maintenance while addressing safety concerns with installations.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

ATPL-2510 Pumps
02 Semester Credits

Pumps, pump theory, and different systems used to pump various viscous liquids in plumbing systems. Reviews basic electricity and applies that knowledge to sequence of operations of pumping controls. Includes pump installation and alignment procedures and safety.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Plumbers' apprenticeship program.

ATPL-2550 Plumbing Service and Procedures
02 Semester Credits

Discusses the service division of the plumbing industry including customer service and salesmanship. Includes sections explaining maintenance and servicing of drains, faucets, valves and hot water tanks.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Plumbers' apprenticeship program.

ATPL-2560 Foreman Certification
02 Semester Credits

Discussion on the responsibilities of foremanship including leadership roles to the employer and to the respective labor organization. Covers methods of handling job and labor disputes using effective communication techniques, efficient work practices and attention to safety and consequences resulting from failure to do so.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Plumbers' apprenticeship program.

ATPL-2580 Design and Layout
02 Semester Credits

Utilization of residential and commercial drawings to identify mechanical areas within a structure where problem situations exist including conflicting elevations, illegal venting, interferences and others. In addition, writing "requests for information" (RFI's), and change work orders will be covered.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Plumbers' apprenticeship program.

APPLIED INDUSTRIAL TECHNOLOGY
(Sheet Metal Working) - ATSM

ATSM-1010 Benefits Management
01 Semester Credit

The collective bargaining process, worker wages and benefits including hospitalization and pension plans including annuities. Also covered are membership

investments, dues structure and personal money management.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-1020 Trade History
01 Semester Credit

An introductory course covering the sheet metal industry and its history. Included is a discussion of the roles and responsibilities of the sheet metal worker.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-1030 Layout and Fabrication I
02 Semester Credits

Introduces various techniques that are required to layout and fabricate fittings from sheet metal. In addition, the transferring of measurements from mechanical and shop drawings, to fabrication of metal, and safety in using tools and machinery for cutting metal will be discussed.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-1040 OSHA 16 Hour Safety Training
01 Semester Credit

Introduction to the Occupational Safety and Health Act (OSHA). Topics include employee responsibilities and rights, standards, and basic hazard training.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-1210 Estimating and Bidding
01 Semester Credit

Covers the estimating and bidding process used by contractors to justify costs and to be awarded contracts for sheet metal projects. Included is bid information, contract language and field costs.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-1220 Layout and Fabrication II
02 Semester Credits

Covers sheet metal layout and design applications in conjunction with parallel line and radial line development. Included are shop exercises involving applied math and geometric concepts that are required for calculating cut sizes for ductwork. Soldering techniques for assembling sheet metal patterns will also be covered.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-1230 Field Installation**03 Semester Credits**

Covers the techniques required to layout, cut and fabricate components necessary to construct plenum boxes in heating and cooling systems installations. Included are applied math concepts for layout and cutting operations and drafting exercises.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2310 Refrigeration I**01 Semester Credit**

Introduces refrigeration theory, heat transfer, and the refrigeration cycle, including the piping of residential split systems using refrigeration tubing, with concentration on installation techniques including brazing and soldering. Also included are various layout procedures using mechanical and shop drawings.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2330 Layout and Fabrication III**03 Semester Credits**

Covers sheet metal layout, fabrication, and design applications in conjunction with the triangulation method of development. Included are shop exercises involving applied math, trigonometry, and geometric concepts that are required for calculating cut sizes for ductwork. Soldering techniques for assembling sheet metal patterns will also be covered.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2340 Advanced Field Installation**03 Semester Credits**

Develop team building skills by engaging in a group exercise that requires interaction among the participants to design, construct, and install the required ductwork for a project in accordance with the parameters of tolerance within a designated work area. Develop a set of construction and mechanical drawings that are needed for this specific learning exercise.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2350 Duct Design and Testing**02 Semester Credits**

Covers duct configuration and design concepts including plenum requirements and aspect ratios covering air loss due to friction. Also included is a section on performing a system leak test.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2360 Load Calculations**01 Semester Credit**

Covers heating and air conditioning load calculations required for selecting the proper size equipment for various types of buildings. Included are sections dealing with heat transmission, design temperatures, and air infiltration.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2410 Residential Heating**03 Semester Credits**

Identifies the different types of heating systems, discusses the combustion process including fuel-air mixtures and atomization of fuel oil. Also covered are electrical circuitry, air circulation, controls and safety limits.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2420 Refrigeration II**02 Semester Credits**

Covers the components of refrigeration systems, applications to air conditioning and the use of specialty tools including vacuum pumps and gages. Installation methods, maintenance and troubleshooting are also covered.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2510 Commercial Roof Top Units**02 Semester Credits**

Describes the different types of heating/air conditioning systems used on commercial buildings, including the use of specialty roof mounting systems. Also covered are electrical circuitry, air circulation, gas piping and optional accessories.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2520 Project Management**02 Semester Credits**

Covers the leadership and motivational aspects of project management including contract administration, project organization and site supervision.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

ATSM-2530 Direct Digital Controls

02 Semester Credits

Covers the different types of electronic and pneumatic control circuits that are used in the heating and air conditioning industry. Included are sections covering control components, loops and applications and installation procedures. Advantages and disadvantages of using digital controls are also covered.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Sheet Metal Worker's apprenticeship program.

**APPLIED INDUSTRIAL TECHNOLOGY
(Sign and Display) - ATSD**

ATSD-1300 Introduction to Sign and Display

02 Semester Credits

Introduction to Sign and Display crafts. Includes sign and neon sign fabrication and erection; neon tube bending, service, and repair; sign manufacturing; sign and pictorial painting; color mixing and spray painting; sign and display tools, computer software; and trade show displays.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Painters and Allied Trade apprenticeship program, or departmental approval.

ATSD-1330 Hand Tools for Sign and Display

02 Semester Credits

Introduction to hand tools for sign and display, including basic hand tools; levels and transits; glass, plastic, and metal cutters; pliers, lifters, and tongs; punches, chisels, rivet guns, and taps.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Painters and Allied Trade apprenticeship program, or departmental approval.

ATSD-1620 Plastic Face Fabrication and Techniques

02 Semester Credits

Interpretation of drawings and work orders necessary to explain and perform plastic face fabrication and techniques, including safe and accurate use of Computer Numeric Control/Computer Aided Systems (CNC/CAS), vacuum/form and press, various hand and power tools used with substrates, plastic materials, and preparation of molds to final sign production.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Painters and Allied Trade apprenticeship program, or departmental approval.

ATSD-2330 Sign Lighting and Wiring

02 Semester Credits

Interpretation of drawings and study of electrical theory to perform sign lighting and wiring, including knowledge of materials, industry standards and codes, fluorescent

lighting, and use of tools to wire, install, and test sign lighting components.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1320 Safety Standards for Construction (OSHA-10), or departmental approval.

ATSD-2340 Advanced Welding

02 Semester Credits

Instruction in advanced welding. Includes oxy-acetylene, gas, metal inert gas (M.I.G.), tungsten inert gas (T.I.G.), and shielded metal arc welding (S.M.A.W.) welding processes; welding of cast iron, aluminum, copper alloys, and stainless steel; hardfacing; and the use of oxy-acetylene torches.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATGL-1630 Basic Welding or concurrent enrollment, or departmental approval.

ATSD-2350 Structural Steel and Support Fabrication

02 Semester Credits

Interpretation of drawings and work orders; use of tools and equipment for the fabrication and assembly of supports for signs and displays; and building jigs, welding, bolting, and painting.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATGL-1630 Basic Welding, or departmental approval.

ATSD-2360 Computerized Manufacture of Signs

02 Semester Credits

Instruction in computer skills for vinyl sign manufacturing. Includes overview of drawing software, such as Gerber Graphix Advantage, Scanvek, and Corel DRAW; creating logos, calendars, labels, and posters; new features in drawing programs; exporting to sign programs; and creating a portfolio.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1630 Color Mixing and Matching, or departmental approval.

ATSD-2370 Letter Fabrication

02 Semester Credits

Procedures used in letter fabrication, including interpreting drawings and work orders, measurements and layout of letters and templates, and use of tools and fasteners.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATSD-1620 Plastic Face Fabrication and Techniques, and ATSD-2330 Sign Lighting and Wiring, or departmental approval.

**ATSD-2390 Advanced Blueprints for Sign and Display
02 Semester Credits**

Study of advanced blueprints including terminology, types of drawings, specifications and schedules, lines, symbols, scales, dimensions, and uses for sign and display work.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATPT-1650 Blueprints I: Construction Fundamentals, or departmental approval.

**ATSD-2460 Computerized Sign Design
02 Semester Credits**

Instruction in computer skills for vinyl sign design. Includes overview, tools, and use of computerized sign designing software; creating logos; scanning images; retouching photos; saving files to sign software; outputting files to vinyl; and creating a portfolio.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ATSD-2360 Computerized Manufacture of Signs or concurrent enrollment, or departmental approval.

**APPLIED INDUSTRIAL TECHNOLOGY
(Teledata) - ATTC****ATTC-1340 AC Circuits/Telephony
03 Semester Credits**

Study of fundamentals of alternating current (AC), basic transformer principles, telephone networks and circuitry.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Teledata apprenticeship program.

**ATTC-1350 Premises Cabling
03 Semester Credits**

Introduction to premises cabling and the Telecommunications Industry Association/Electronics Industry Association (TIA/EIA) standards and codes. Topics include troubleshooting structured cabling systems and the connectors and hardware used in installation and upkeep as well as performance of the system.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Teledata apprenticeship program.

**ATTC-1360 Network Cabling
03 Semester Credits**

Study of network cabling and standards. Topics include local area network (LAN) fundamentals and standards, an overview of the entire structured cabling system, Ethernet LAN cabling and topologies, and token ring LAN cabling and topologies.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Teledata apprenticeship program.

**ATTC-2300 Advanced Telecommunications
04 Semester Credits**

Advanced study of electronic components as well as security systems, smoke detectors, pagers, locks, sensors, and doors. Installation and troubleshooting included using guided instruction and practice.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ATTC-1340 AC Circuits/ Telephony or concurrent enrollment, or departmental approval: admission to Teledata apprenticeship program.

ART - ART**ART-1010 Art Appreciation
03 Semester Credits**

Introduction to the nature, vocabulary, media, and history of art as well as an examination of art's themes and purposes, visual elements, and principles of design.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

**ART-1040 Survey of Non-Western Art
03 Semester Credits**

Provides a stylistic and historical overview of indigenous visual arts in Africa, India, Indian Surround, China, Japan, Oceania, South America, Mesoamerica, and Native North America.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

**ART-1050 Drawing I
03 Semester Credits**

Introduces basic drawing methods, media and concepts. Studio experiences emphasize drawing from observation and the development of line, mass, proportion, negative/positive space and shape, composition, light, relative values, and perspective. Historical precedents are discussed, master works analyzed, and relevant practical information is assimilated into the flow of class assignments.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): None.

OAN Approved: OAH001

**ART-1060 Drawing II
03 Semester Credits**

Further development of observational and conceptual drawing skills. Emphasis is on spatial, structural and compositional concepts. Introduces color media and develops additional drawing strategies to meet situations demanding advanced skills. May be repeated for up to nine credits, three of which are applicable to degree requirements.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-1050 Drawing; or departmental approval: comparable skills.

ART-1070 3D Foundations**03 Semester Credits**

Study of the elements of three-dimensional visual design and their application in creative expression. Recommended for students taking art related courses and programs that emphasize three-dimensional investigations.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): None.

OAN Approved: OAH004

ART-1080 Visual Design I**03 Semester Credits**

Study of the two-dimensional design elements and principles of organization needed to create a foundation in visual communication. Traditional media and computer assisted sections available.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): None.

OAN Approved: OAH003

ART-1091 Color Theory and Application**03 Semester Credits**

Study visual design principles of color theory. Explore spatial, emotional, perceptual and optical properties of color organization. Use color as an effective tool in visual communication of concept. Additional work outside of class required to create a quality portfolio to use for transfer to a four/five year school or to seek employment. Traditional media and computer assisted sections available.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): None.

ART-1100 Sculpture I**03 Semester Credits**

Introduction to sculptural forms, materials, and processes. Application of three-dimensional design principles to given spatial problems. Overview of historic significance of sculpture. Projects may vary with classroom facilities at each campus.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-1070 3D Foundations; or departmental approval: comparable course.

OAN Approved: OAH047

ART-1200 Calligraphy**03 Semester Credits**

Study and execution of letter forms and scripts from various cultural systems of writing. Understanding inherent beauty of scripts as graphic design elements. May be taught using hand or computer skill development.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): None.

ART-1500 Art for Elementary Education**03 Semester Credits**

Basic art education theory and practice in visual arts for elementary education majors. Emphasis on integration of visual arts disciplines with other subjects in elementary curriculum.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

ART-1600 Introduction to Art Therapy**03 Semester Credits**

Introduction to basic concepts of art as therapy, provide an overview of the origins, theories, and foundations of art therapy. Students will be exposed to a variety of art media and major readings in the field utilizing art as a means of communication. Artistic talent is not required for this course.

Note: Certification at the professional level in Art Therapy requires appropriate work experience and a master's degree from an approved graduate program. This course provides the undergraduate student foundational knowledge in Art Therapy and meets AATA (American Art Therapy Association) prerequisite requirements for entering a master's program in Art Therapy.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

ART-1610 Art Therapy II: Methods and Media**03 Semester Credits**

Explore theories of art therapy and their effect on the delivery of services. Student groups experience art therapy methods and media. Heighten the student's awareness of personal goals and expectations for entering the art therapy profession, and deepen the student's understanding of the creative process. Connect the student with his/her creative potential through studio experiences.

Note: Certification at the professional level in Art Therapy requires appropriate work experience and a master's degree from an approved graduate program. This course provides the undergraduate student foundational knowledge in Art Therapy and meets AATA (American Art Therapy Association) prerequisite requirements for entering a master's program in Art Therapy.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ART-1600 Introduction to Art Therapy, and PSY-1010 General Psychology; and PSY-2050 Psychology of Personality, or concurrent enrollment.

ART-1700 Ceramics I**03 Semester Credits**

Fundamentals of basic hand building methods, glazing and decorative techniques by creating forms of increasing complexity. Broad survey of ceramic history.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): None.

OAN Approved: OAH050

**ART-179H Honors Contract in Art
01 Semester Credit**

Honors Contract complements and exceeds requirements and objectives for an existing ART 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, student is required to meet on a regularly scheduled basis with instructor offering the contract for mentor-student tutorial sessions. May be repeated for a maximum of six credits of different topics.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Must be taken concurrently with a 1000-level course in Art, whose instructor approves the Honors Contract.

**ART-2000 Life Drawing I
03 Semester Credits**

Introduction to drawing the human figure from a live model. Emphasis is on gesture drawing to accurately establish the proportion and pose of the figure. The elements of line and value are used to describe form, structure and space. Anatomy for artists is introduced. Various media are explored.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-1050 Drawing I, or departmental approval: comparable skills.

OAN Approved: OAH051

**ART-2010 Life Drawing II
03 Semester Credits**

Continued exploration of drawing the human figure from a live model. Emphasizes anatomy lessons to portray human structure and to explore the figure's expressive nature. Craftsmanship and proficiency with various media are stressed. Control of gesture and proportion, and the representation of foreshortened forms within a three-dimensional environment will be examined. May be repeated for up to 9 credits; only 3 credits may be applied to degree requirements.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-2000 Life Drawing I, or departmental approval: comparable skills.

**ART-2020 Art History Survey: Prehistoric to Renaissance
03 Semester Credits**

A stylistic and historical overview of the visual arts in western culture from inception to the fifteenth century including: Prehistoric, Egyptian, Ancient Near Eastern, Greek, Etruscan, Roman, Byzantine, Early Medieval Monastic, Carolingian and Ottonian, Romanesque, Gothic, Fourteenth-Century Art in Italy, Fifteenth-Century Art in Northern Europe and Spain, and the Early Renaissance in Italy.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment.

OAN Approved: OAH005 (1 of 2 courses, both must be taken)

**ART-202H Honors Art History Survey: Prehistoric to Renaissance
03 Semester Credits**

Introduction to the major works of visual art in Western cultures from Prehistory to the early Renaissance including Paleolithic, Neolithic, Egyptian, Ancient Near Eastern, Greek, Etruscan, Roman, Byzantine, Islamic, Early Medieval, Romanesque, Gothic, and fourteenth-century and early fifteenth-century art in Northern Europe, Spain, and Italy. Critical examination of style and art historical analysis of objects from early Western cultures and civilizations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment or ENG-101H Honors College Composition I or concurrent enrollment.

**ART-2030 Art History Survey: Late Renaissance to Present
03 Semester Credits**

A stylistic and historical overview of the visual arts in western culture from the sixteenth century through today including Italian Renaissance, Mannerism, Sixteenth Century Art in Northern Europe and Spain, Baroque and Rococo, Neoclassicism and Romanticism, Nineteenth, Twentieth, and Twenty-First Centuries Art in Europe and the United States.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I.

OAN Approved: OAH005 (2 of 2 courses, both must be taken)

**ART-203H Honors Art History Survey: Late Renaissance to Present
03 Semester Credits**

Introduction to the major works of visual art in Western cultures from the late Renaissance to the present including Fifteenth Century Italy and Northern Europe, Sixteenth Century Italy, Northern Europe, and Spain, Mannerism, Baroque and Rococo, Neoclassicism, Romanticism, Nineteenth, Twentieth, and Twenty-First Centuries Art in Europe and the United States. Critical examination of style and art historical analysis of objects from late Renaissance to the present.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment; or ENG-101H Honors College Composition I or concurrent enrollment.

**ART-2050 Painting I
03 Semester Credits**

Introduction to materials and techniques of opaque painting (oil and acrylic). Emphasis on use of color, composition and other perceptual concerns. Exploration of various styles of painting.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-1050 Drawing I or departmental approval: comparable skills.

OAN Approved: OAH048

ART-2060 Painting II**03 Semester Credits**

Exploration of more advanced painting problems utilizing various subjects and styles. Emphasis placed on personal expression and independent problem-solving skills. Focus on craftsmanship and a high level of proficiency with opaque painting media. May be repeated for up to 9 credits; only 3 credits may be applied to degree requirements.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-2050 Painting I or departmental approval: comparable skills.

ART-2070 Watercolor**03 Semester Credits**

Introduction and exploration of transparent watercolor as painting technique. Investigates various styles of painting. May be repeated for up to 9 credits, but only 3 credits are applicable to degree requirements.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-1050 Drawing I, or departmental approval: comparable skills.

ART-2080 Portrait Drawing and Painting**03 Semester Credits**

In-depth study of drawing and painting portraits from live models. The focus will be on facial anatomy and relating the model to three-dimensional environment. The psychological aspects of portraiture will also be explored. Various media will be utilized throughout the course. May be repeated up to 9 credits; only 3 credits may be applied to degree requirements.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-1050 Drawing I or departmental approval: comparable skills.

ART-2100 Computer Graphic: Raster Images**03 Semester Credits**

Study raster (paint) software tools for graphic design and expressive images. Techniques relating to demands in current market include scanning, processing and compositing of images. Interactive digital portfolio output. May be repeated for up to 9 credits; only 3 credits may be applied to degree requirements. New software options available as course is repeated.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-1080 Visual Design I (computer aided), or ART-1091 Color Theory and Application (computer aided), or departmental approval: comparable skills.

ART-2110 Computer Graphic: Drawing**03 Semester Credits**

Study 2D vector object construction for graphic design images. Develop precision in Bezier curve manipulation, hand drawn images are scanned in, traced or streamlined into vector information. Filters humanize the mathematical hard edges of images. Interactive digital portfolio output. May be repeated for up to 9 credits; only

3 credits may be applied to degree requirements. New software options are available as course is repeated.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-1080 Visual Design I (computer aided), or ART-1091 Color Theory and Application (computer aided), or departmental approval: comparable skills.

ART-2151 Animation for Web and Media**03 Semester Credits**

[This course is cross-listed as VCIM-2270. Credit can only be applied to degree requirements once for either course.]

Technical and aesthetic fundamentals of 2D animation as they pertain to the Internet. Use of current software to develop interactive, animated graphics and interfaces. Various techniques including tweening, frame by frame, onion skinning, shape and color morphing as well as non-linear structure, interactivity, communication, scripting and troubleshooting. Acquisition or creation and integration of music, sound and video. May be repeated for up to 9 credits; only 3 credits may be applied to degree requirements.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-1080 Visual Design I or ART-1091 Color Theory and Application or VC&D-1015 Digital Studio Basics or departmental approval: comparable skills.

ART-2180 Sculpture II**03 Semester Credits**

Emphasis on independent concept development, meaningful connection to material choices, and contemporary concerns in sculpture, including social and environmental issues. Projects may vary with classroom facilities and resources at each campus. To advance skills, it may be repeated for up to 9 credits, 6 of which are applicable to Tri-C degree requirements.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-1100 Sculpture I, or departmental approval: comparable skills.

ART-2190 Ceramics II**03 Semester Credits**

Focus on wheel throwing skills and advanced hand building techniques in the creation of three-dimensional forms. Formal and functional design. Introduction to kiln firing and ceramic materials in clay and glaze formulation. To advance skills, course may be repeated for up to 9 credits, 6 of which are applicable to Tri-C degree requirements.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-1700 Ceramics I, or departmental approval: comparable skills.

ART-2210 Printmaking I

03 Semester Credits

Introduction to various aspects of printmaking and graphic composition. Techniques include relief printing (wood/linocut, monotype); intaglio (etching, engraving, dry point, mezzotint, aquatint); calligraphy, monoprint and multi-color work.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-1050 Drawing I, or departmental approval.

OAN Approved: OAH049

ART-2220 Printmaking II

03 Semester Credits

Continuation of advanced printmaking techniques such as intaglio, relief, lithography, serigraphy, calligraphy and/or monoprints. May be repeated for up to 9 credits; 3 of which are applicable to degree requirements.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-2210 Printmaking I, or departmental approval: comparable skills.

ART-2300 Art Therapy III: Approaches and Technique

03 Semester Credits

An examination of various techniques used by therapists. Studio Exposure work is used as a tool to understand and cultivate the discipline of self-awareness. Students must participate in site visits for observation and interviewing of a professional art therapist.

Note: Certification at the professional level in Art Therapy requires appropriate work experience and a master's degree from an approved graduate program. This course provides the undergraduate student foundational knowledge in Art Therapy and meets AATA (American Art Therapy Association) prerequisite requirements for entering a master's program in Art Therapy.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ART-1610 Art Therapy II: Methods and Media, and PSY-1010 General Psychology, and PSY-2050 Psychology of Personality.

ART-2310 Art Therapy Studio: Basic Therapeutic Skills

03 Semester Credits

Provides a directed self-study process and fosters development of professional helping skills through observation, participation and research. Attention given to creating a safe therapeutic environment involving the emotional, physical, spiritual and cultural aspects of clients. Cover theoretical and clinical dimensions of art therapy and interventions. Provides additional experience with various art therapy media.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ART-2300 Art Therapy III: Approaches and Technique, and PSY-1010 General Psychology, and PSY-2050 Psychology of Personality; and PSY-2080 Abnormal Psychology or concurrent enrollment; or departmental approval.

Note: Certification at the professional level in Art Therapy requires appropriate work experience and a master's

degree from an approved graduate program. This course provides the undergraduate student foundational knowledge in Art Therapy and meets AATA (American Art Therapy Association) prerequisite requirements for entering a master's program in Art Therapy.

ART-2790 Portfolio Development

01 Semester Credit

Covers development and presentation of an art portfolio. Define intent and focus of portfolio. Emphasize basic visual language skills and individual creative strengths. Students edit and modify work where required. Add new pieces that meet expected portfolio standards for transfer and job market. The course will include: selection and development of best format for presentation of their work, resume formats and development of a self-promotional piece.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Sufficient quantity of successfully completed work for portfolio inclusion.

ART-279H Sophomore (Second-year) Honors Contract in Art

01 Semester Credit

Sophomore Honors Contract in Art complements and exceeds requirements and expected outcomes for an existing Art 2000-level course (not an honors course) through formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, student will formulate a contract that upon completion will result in distinctive scholarship appropriate to honors 2000-level. In order to complete the contract, student is required to meet on a regularly scheduled basis with instructor offering the contract for mentor-student tutorial sessions. A maximum of six Honors Contracts (six credits) may be taken at the College (includes 179H and 279H).

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Must be taken concurrently with a 2000-level course (not an honors course) in Art, whose instructor agrees to mentor the student in the sophomore honors contract.

Departmental approval required.

AUTOMOTIVE TECHNOLOGY - AUTO

AUTO-1001 Automotive Maintenance and Consumer Issues

02 Semester Credits

Designed to teach automotive maintenance and introduce vehicle systems and components to the automobile owner. Introduction to brake, electrical, suspension, fuel, and cooling systems and their terminology. Examine consumer issues concerning automotive maintenance and automotive repair facilities, and purchase of new and used vehicles. Minimal hands-on application.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

AUTO-1050 Numerical Applications in Automotive Service

03 Semester Credits

Use of numerical concepts and principles in interpreting, assessing, and determining need for automotive repair. Whole numbers, decimals, fractions, integers, graphs, ratios and percentages used to evaluate engine, electrical, chassis and HVAC system operation. Customary and metric conversions, reading automotive measuring devices and auto service repair order computations reviewed.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

AUTO-1100 Introduction to Automotive Service Procedures

02 Semester Credits

Designed to provide introduction to several basic service procedures required of person beginning work in automobile service center. Oil change, transmission service, tire service, thread repair, cooling system service, safety inspection, battery testing will be demonstrated and practiced after introduction to shop safety and safe operation of automobile equipment and hand tools. May require visits to automotive service centers.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

AUTO-1300 Automotive Engines

03 Semester Credits

Operation of internal combustion gasoline engine including engine fundamentals and removal, lubrication and cooling system operation, and cylinder head and engine block diagnosis. Engine disassembly, measurements for correctness, proper assembly techniques and gasket and sealing information included.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): None.

AUTO-1350 Manual Transmission and Drivetrain

02 Semester Credits

Theory and operation of manual transmissions, transaxles, clutches, drive shafts, drivetrain couplings, differentials, rear axles, axle shafts, and four-wheel drive componentry. Laboratory skills emphasize diagnosis, troubleshooting and repair.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): None.

AUTO-1400 Automotive Alignment, Steering and Suspension

03 Semester Credits

Theory and principles of automotive alignment geometry and automotive steering and suspension systems. Laboratory competencies integrate diagnosis and repair of these systems through the use of special tools and alignment equipment.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): None.

AUTO-1450 Automotive Braking Systems

03 Semester Credits

Designed to provide student with foundation in theory and operation of automotive braking systems. Includes hydraulic brake principles, machining operations, and troubleshooting and repair of disc and drum brake assemblies. Operation and diagnosis of anti-lock braking systems included.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): None.

AUTO-1501 Automotive Electrical Fundamentals

02 Semester Credits

Fundamentals of electricity for automotive technicians. Electrical theory applied through construction of series, parallel and series-parallel circuits. Digital Volt Ohm Meter (DVOM) use in electrical diagnosing and testing of circuits covered, along with wire repair techniques. Emphasis on interpreting and using automotive electrical wiring schematics. Horn and wiper systems examined.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): None.

AUTO-1940 Automotive Field Experience I

01 Semester Credit

Provides student with automotive field experience needed to develop career skills through work experience in automotive service industry.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field experience: 12 clock hours per week.

Prerequisite(s): Departmental approval: job site approval.

AUTO-1950 Automotive Field Experience II

01 Semester Credit

Provides student with automotive field experience needed to develop career skills through work experience in automotive service industry.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field experience: 12 clock hrs. per week.

Prerequisite(s): Departmental approval: job site approval.

AUTO-1960 Automotive Field Experience III

01 Semester Credit

Provides student with automotive field experience needed to develop career skills through work experience in automotive service industry.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field experience: 12 clock hrs. per week.

Prerequisite(s): Departmental approval: job site approval.

AUTO-2300 Automatic Transmissions
03 Semester Credits

Operation of automotive transmissions and transaxles. Emphasis on knowledge and skills needed to properly diagnose transmission faults related to hydraulic, mechanical, and electrical systems that effect transmission operation. Specifics covered in this course include transmission operation, diagnostic, and service procedures, hydraulic fundamentals, controls and planetary gear train theory. Maintenance, diagnosis, inspection, overhaul proper assembly techniques of transmissions are included.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): AUTO-1501 Automotive Electrical Fundamentals.

AUTO-2350 Automotive HVAC
02 Semester Credits

Theory, diagnosis and servicing procedures of automotive air conditioning systems. Includes heating systems and operation, diagnosis and repair of electric and vacuum components and controls, and service procedures for R-12 and R-134A refrigerants.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): AUTO-1501 Automotive Electrical Fundamentals; or departmental approval: Industry related experience.

AUTO-2400 Engine Performance
03 Semester Credits

Fundamentals of proper engine performance. Ignition, electrical, engine mechanical, and fuel and emission system principles of operation, related driveability symptoms, and proper testing to verify cause will be explored. DVOM, scan tool and special tools used throughout course. Emphasis on operational concepts and individual component testing.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): AUTO-1300 Automotive Engines and AUTO-1501 Automotive Electrical Fundamentals; or departmental approval: industry-related experience.

CTAN Approved: CTAUT003

AUTO-2450 Automotive Electronic Engine Controls
03 Semester Credits

Operation and advanced diagnosis of modern automobile ignition, electrical, engine mechanical, and fuel and emission control systems which are computer controlled. Explore methods of analyzing and locating engine performance malfunctions using deductive methodology and diagnostic test equipment. Emphasis on OBD II software, in-depth scan tool usage, five-gas analysis, and digital scope signal analysis.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): AUTO-2400 Engine Performance; or departmental approval: industry related experience.

AUTO-2470 Automotive Electrical Systems
02 Semester Credits

Integrates operational principles and diagnostic skills needed to repair various vehicle electrical systems utilizing electrical concepts and schematics. Charging and starting systems, including interrelated security systems, primary ignition, supplemental restraint (SRS) and lighting systems, are explained and analyzed. Laboratory practice provides student applied knowledge for troubleshooting these systems.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): AUTO-1501 Automotive Electrical Fundamentals.

AUTO-2500 Automotive Electrical Diagnosis
02 Semester Credits

Problem-based learning to develop diagnostic skills needed to repair various automotive electrical systems and accessories. Laboratory practice focuses on techniques for diagnosing and troubleshooting any automotive electrical circuit.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): AUTO-2470 Automotive Field Electrical Systems, or departmental approval: industry-related experience.

AUTO-2650 Hybrid Vehicle Safety and Service
03 Semester Credits

Working safely with hybrid vehicles is reviewed and practiced. Advantages and disadvantages of various battery types, hybrid designs and electric motors are examined. Hands on course utilizes scan tools and diagnostic process to analyze and troubleshoot hybrid vehicles.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): AUTO-1501 Automotive Electrical Fundamentals, or departmental approval.

AUTO-2701 Automotive Service Operations
03 Semester Credits

Staffing and personnel selection, customer relations, consumer laws, expense control, repair facility site selection, hiring/firing legal issues, advertising and other business concerns dealing with an automotive repair facility are examined. Daily operations, business analysis and marketing for an automotive garage are explored with auto service computer software.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, or departmental approval.

AUTO-2940 Automotive Field Experience IV
01 Semester Credit

Provides student with automotive field experience needed to develop career skills through work experience in automotive service industry.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field experience: 12 clock hours per week.

Prerequisite(s): Departmental approval: job site approval.

AUTO-2950 Automotive Field Experience V
01 Semester Credit

Capstone course in automotive technology. Provides student with automotive field experience needed to develop career skills through work experience in automotive service industry.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field experience: 12 clock hours per week.

Prerequisite(s): Departmental approval: job site approval.

BIOLOGY - BIO

BIO-1040 The Cell and DNA
03 Semester Credits

Designed for non-science majors. Considers cell structure, function, and metabolism, cell division, DNA structure and function, Mendelian and molecular genetics. Scientific method and reasoning emphasized. To fulfill laboratory science requirements, students should enroll in the related laboratory course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

BIO-104L The Cell and DNA Laboratory
01 Semester Credit

Laboratory course examines scientific method, cell structure and function, cell division, DNA structure and function, and Mendelian and molecular genetics. Includes microscope work, models, role play and various experiments designed to illustrate concepts covered in the lecture course.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Concurrent enrollment in BIO-1040 The Cell and DNA is strongly recommended.

BIO-1050 Human Biology
03 Semester Credits

Designed for non-science majors. Considers concept of homeostasis of the human body. Basic structure and function of body systems and diseases of these systems studied. To fulfill laboratory science requirements, students should enroll in related laboratory course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG 1010 College Composition I.

BIO-105L Human Biology Laboratory
01 Semester Credit

Laboratory course examines structure and function of human body systems. Includes microscope work, models, computer applications, and animal dissection.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Concurrent enrollment in BIO-1050 Human Biology is strongly recommended.

BIO-1060 Environment, Ecology, and Evolution
03 Semester Credits

Designed for non-science majors. Questions about the natural world are explored through an introduction to the principles of evolution and ecology, including how populations change over time and how organisms interact with each other and the environment. Topics include scientific inquiry; nature of science; evolutionary processes; diversity of life; population, community, and ecosystem ecology; human impacts on the environment; environmental stewardship; and regional environmental concerns.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

BIO-106L Environment, Ecology, and Evolution
Laboratory
01 Semester Credit

Designed for non-science majors. Questions about the natural world are explored through hands-on laboratory and field activities focusing on evolution, ecology, and environmental science. Scientific inquiry is used to investigate how populations change over time; the diversity of life; community ecology; ecosystem ecology; and human impacts on the environment.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Concurrent enrollment in BIO-1060

Environment, Ecology, and Evolution is strongly recommended.

BIO-1100 Introduction to Biological Chemistry
03 Semester Credits

Basic principles of inorganic chemistry, organic chemistry and biochemistry necessary for study of human physiology. Physiological applications of the chemical processes of cellular transport, communication and metabolism emphasized. Laboratory includes use of metric system, basic chemistry techniques and physiological applications.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MATH-0955 Beginning Algebra, or sufficient score on math placement test.

BIO-1221 Anatomy and Physiology for Diagnostic
Medical Imaging
04 Semester Credits

Basic understanding of body systems, structures and organs based on functions and relationships to diagnostic medical imaging examinations.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): MA-1020 Medical Terminology I or concurrent enrollment.

BIO-1230 Anatomy and Physiology of the Eye**04 Semester Credits**

Detailed examination of the anatomy and physiology of the eye. Emphasis on eye terminology, structure, function, movement, disorders, diseases, lens physics, and visual testing/analysis. Study of eye model and preserved eye dissection.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval: admission to Optical Technology program.

BIO-1300 Horticultural Botany**03 Semester Credits**

[This course is crosslisted as PST-1300. Credit can only be earned once for either course.] Plant structure and diversity is examined through the study of the cells, tissues, and organs of plants, as well as their life cycles and reproduction. The physiology of plants is explored through the study of plant transport, nutrients, hormones, growth, and metabolism. Additionally, horticulturally significant bacteria, protists, and fungi are examined.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): ENG-0990 Language Fundamentals II, or eligibility for ENG-1010 College Composition I.

BIO-1410 Anatomy and Physiology of Domestic Animals I**04 Semester Credits**

Explores the comparative anatomy and physiology of the canine, feline, equine, bovine, ovine, porcine and domestic fowl species. Focuses on cellular biology, tissues and membranes, and the integumentary, skeletal, muscular, nervous, endocrine, and circulatory systems with emphasis on species variations. Laboratory includes preserved and fresh specimens, models, microscopic observations, and audio/visual aids.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): BIO-1100 Introduction to Biological Chemistry or concurrent enrollment; or CHEM-1010 Introduction to Inorganic Chemistry, or concurrent enrollment: or departmental approval: comparable knowledge or skills.

BIO-1420 Anatomy and Physiology of Domestic Animals II**03 Semester Credits**

Explores the comparative anatomy and physiology of the canine, feline, equine, bovine, ovine, avian and porcine species. Focuses on lymphatic, digestive, respiratory, urinary and reproductive systems. Immunology, pregnancy, lactation, blood and genetics considered. Laboratory includes preserved and fresh specimens, models, microscopic observations, demonstrations and audio/visual aids.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): BIO-1410 Anatomy and Physiology of Domestic Animals I.

BIO-1500 Principles of Biology I**04 Semester Credits**

Designed for science majors. The molecular and cellular basis of life is explored through an introduction to cell biology, molecular biology, genetics, and evolution in both lecture and laboratory settings. Topics include scientific inquiry; chemical aspects of life; cell structure and function; energy and metabolism; cell division; molecular genetics; inheritance; population genetics; mechanisms of evolution; and evidence for evolution.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): MATH-0955 Beginning Algebra or appropriate Math placement score and eligibility for ENG-1010 College Composition I.

OAN Approved: OSC003

BIO-150H Honors Principles of Biology I**04 Semester Credits**

Honors Course designed for science majors with exploration of the molecular and cellular basis of life through an introduction to cell biology, molecular biology, genetics and evolution with a strong focus on inquiry-based learning as the basis of scholarly research.

Emphasis on evolution as the unifying theory in biology.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): ENG-1010 College Composition I with grade of "B" or higher; or ENG-101H Honors College Composition I; and MATH-0955 Beginning Algebra or appropriate Math placement score.

OAN Approved: OSC003

BIO-1510 Principles of Biology II**04 Semester Credits**

Designed for science majors. The diversity of life, animals, plants, and ecology are explored in both lecture and laboratory settings. Topics include the origin and evolution of life, systematics, classification, structural and functional variations in animals and plants, populations, communities, and ecosystems.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): BIO-1500 Principles of Biology I, or BIO-150H Honors Principles of Biology I, or departmental approval.

OAN Approved: OSC004

BIO-151H Honors Principles of Biology II**04 Semester Credits**

Honors course designed for science majors. The diversity of life, animals, plants, and ecology are explored in both lecture and laboratory settings. Topics include the origin and evolution of life, systematics, classification, structural and functional variations in animals and plants, populations, communities, and ecosystems. Emphasis on evolution as the unifying theory in biology. Strong focus on inquiry-based learning.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): BIO-150H Honors Principles of Biology I or BIO-1500 Principles of Biology I.

BIO-1700 Introduction to Biotechnology**03 Semester Credits**

Designed for science majors interested in a biotechnology career. History and fundamental principles of biotechnology, including molecular biological, genetic, and immunological foundations. Theory and practice of recombinant DNA methodologies highlighted. Past, present and promising future applications of biotechnology. Ethical, political, and economic impacts of biotechnology, including patents, presented.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BIO-1500 Principles of Biology I and CHEM-1010 Introduction to Inorganic Chemistry.

BIO-2010 Field Botany**03 Semester Credits**

Study of the plant kingdom, emphasis on collection, identification, classification and ecology of local flora.

Field trips required.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Completion of any 1000-level science course.

BIO-2020 Tropical Biology**04 Semester Credits**

Introduction to biology of the tropics. Topics include major tropical biomes, biodiversity, conservation, sustainability, and consequences of human impact on the tropics. Studies include identification of flora and fauna and adaptations of tropical organisms. In addition to on-campus lecture/lab during an academic term, students are required to participate and travel to a tropical location for a real-world learning experience. Field trip requires additional costs.

Lecture 03 hours. Laboratory 03 hours.

Other Required Hours: A portion of the laboratory hours will be completed during the mandatory field trip to a tropical ecosystem.

Prerequisite(s): Departmental approval and any 1000-level science course.

BIO-2050 Field Zoology**03 Semester Credits**

Study of the animal kingdom, emphasis on location, identification, classification and ecology of local fauna.

Field trips required.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Completion of any 1000-level science course.

BIO-2060 Principles of Genetics**03 Semester Credits**

Introductory level course. Topics include: structure and function of DNA, patterns of inheritance, gene expression and mutations, population genetics and gene technology.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BIO-1040 The Cell and DNA, or BIO-1420 Anatomy and Physiology of Domestic Animals II, or BIO-2341 Anatomy and Physiology II, or BIO-1500 Principles of Biology I.

BIO-2070 Techniques in Molecular Genetics**03 Semester Credits**

Advanced study of structure and function of DNA with emphasis on laboratory techniques used in molecular biology. Laboratory practices and applications of sterile techniques, gel electrophoresis, DNA isolation, RFLP analysis, plasmids, and recombinant DNA. Protein structure and methods of protein purification explored.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): BIO-1040 The Cell and DNA, or BIO-2341 Anatomy and Physiology II, or BIO-1500 Principles of Biology I.

BIO-2100 Biology of Aging**03 Semester Credits**

Exploration of current biological theories of aging with emphasis on humans. Fundamental concepts of cell biology and physiology will be used to study extrinsic and intrinsic factors of aging. Topics will include normal age related changes and pathology in body systems, senescence, genetics, life expectancy, and improving longevity.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BIO-1040 The Cell and DNA, or BIO-1050 Human Biology, or BIO-1500 Principles of Biology I, or BIO-2331 Anatomy and Physiology I.

BIO-2150 Environmental Science**03 Semester Credits**

Fundamental ecological concepts and their application to environmental issues emphasizing the impact of human activity on the biosphere. Topics include natural resources, air, water and land pollution, energy, and populations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BIO-1060 Environment, Ecology and Evolution; or BIO-1510 Principles of Biology II.

BIO-2200 Radiobiology**02 Semester Credits**

Theories of the biological effects of ionizing radiation, quantities and units of measurement, proper protective measures for patient and personnel, effective dose equivalents radiation absorption processes and shielding, exposure monitoring devices.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): BIO-1221 Anatomy and Physiology for Diagnostic Medical Imaging and departmental approval: admission to the Radiography program.

BIO-2331 Anatomy and Physiology I**04 Semester Credits**

Study of structure and function of human body. Focus on fundamental concepts of cellular structure, tissues, organs, and systems. Considers structure, function, and terminology of skeletal, muscular, integumentary, nervous and endocrine systems. Laboratory experiences include demonstrations, microscopic observations, anatomic models, and videos related to topics.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): Sufficient score on Biology Placement Test or BIO-1100 Introduction to Biological Chemistry; or CHEM-1010 Introduction to Inorganic Chemistry and CHEM-1020 Introduction to Organic Chemistry and Biochemistry, or BIO-1500 Principles of Biology I.

BIO-233A Anatomy and Physiology I: Skeletal and Muscular Systems**02 Semester Credits**

Study of structure and function of human body. Focus on fundamental concepts of cellular structure, tissues, organs, and systems. Considers structure, function, and terminology of skeletal and muscular systems. Laboratory experiences include demonstrations, microscopic observations, anatomic models, and videos related to topics.

Lecture 1.5 hours. Laboratory 1.5 hours.

Prerequisite(s): Sufficient score on Biology Placement Test or BIO-1100 Introduction to Biological Chemistry; or CHEM-1010 Introduction to Inorganic Chemistry and CHEM-1020 Introduction to Organic Chemistry and Biochemistry.

BIO-233B Anatomy and Physiology I: Nervous, Integumentary, and Endocrine Systems**02 Semester Credits**

Study of structure and function of the human body. Focus on structure, functions, and terminology of the nervous, integumentary, and endocrine systems. Laboratory experiences include demonstrations, microscopic observations, anatomic models, and videos related to topics.

Lecture 1.5 hours. Laboratory 1.5 hours.

Prerequisite(s): BIO-233A Anatomy and Physiology I: Skeletal and Muscular Systems or BIO-2330 Anatomy and Physiology I.

BIO-2341 Anatomy and Physiology II**04 Semester Credits**

Structure and function of cells, tissues, and organs of the human cardiovascular, lymphatic/immune, respiratory, urinary, digestive, and reproductive systems. Cellular division, embryological and fetal development, classical genetics and genetic technology considered. Laboratory may include demonstrations, microscopic observations, anatomical models, and videos.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): BIO-2331 Anatomy and Physiology I; or BIO-233A Anatomy and Physiology I: Skeletal and Muscular Systems and BIO-233B Anatomy and Physiology I: Nervous, Integumentary, and Endocrine Systems.

BIO-234A Anatomy and Physiology II: Cardiovascular, Lymphatic, Respiratory, and Urinary Systems**02 Semester Credits**

Study of structure and function of human body. Considers structure, function, and terminology of cardiovascular, lymphatic, respiratory, and urinary systems. Laboratory experiences include demonstrations, microscopic observations, anatomic models, and videos related to topics.

Lecture 1.5 hours. Laboratory 1.5 hours.

Prerequisite(s): BIO-2331 Anatomy and Physiology I; or BIO-233A Anatomy and Physiology I: Skeletal and Muscular Systems and BIO-233B Anatomy and Physiology I: Nervous, Integumentary, and Endocrine Systems; or departmental approval: comparable knowledge/skills.

BIO-234B Anatomy and Physiology II: Digestive, Immune, Reproductive Systems**02 Semester Credits**

Study of structure and function of the human body. Focus on structure, functions, and terminology of digestive and reproductive systems. Immunology, cellular division, embryological and fetal development, classical genetics and genetic technology considered. Laboratory experiences include demonstrations, microscopic observations, anatomic models, and videos related to topics.

Lecture 1.5 hours. Laboratory 1.5 hours.

Prerequisite(s): BIO-2331 Anatomy and Physiology I; or BIO-233A Anatomy and Physiology I: Skeletal and Muscular Systems and BIO-233B Anatomy and Physiology I: Nervous, Integumentary, and Endocrine Systems.

BIO-2500 Microbiology**04 Semester Credits**

The diversity of the microbial world is explored through subjects including microbial ecology and evolution, structure and function of microorganisms, metabolism and genetics, control of microorganisms, and host-microbe interactions.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): BIO-1410 Anatomy and Physiology of Domestic Animals I; or BIO-2331 Anatomy and Physiology I; or BIO-1500 Principles of Biology I; or BIO-1050 Human Biology and BIO-105L Human Biology Laboratory and BIO-1100 Introduction to Biological Chemistry; or departmental approval: comparable knowledge or skills.

BIO-2600 Pathophysiology

03 Semester Credits

General mechanisms of disease processes and health problems including inflammation, degeneration, immunity, congenital, hereditary, neoplasia as well as diseases caused by deficiencies or excesses. The most commonly occurring diseases of body systems are surveyed.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BIO-2341 Anatomy and Physiology II.

OAN Approved: OHL019

BUSINESS ADMINISTRATION - BADM

BADM-1000 Business Language Skills

02 Semester Credits

Fundamentals of business language with emphasis on grammatical correctness, acceptable usage, spelling, vocabulary, punctuation, capitalization, correct number usage, and proofreading. Limited writing involves choice of correct word usage, effective sentence structure, and paragraph construction.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment.

BADM-1020 Introduction to Business

03 Semester Credits

Introductions to the functions of business in the global marketplace, including comparison of the various forms of business domestically and globally, constructing personnel management and leadership skills, and identifying financial, marketing and management skills in the business environment.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

BADM-1040 Principles & Practices of Customer Service

03 Semester Credits

How to create customer satisfaction and loyalty: developing and using questions, building rapport, using conflict resolution techniques, making basic business calculations and using business decision-making model to convey information and solve customer problems.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

BADM-1050 Professional Success Strategy

03 Semester Credits

Apply knowledge of the corporate environment, diversity, ethics, teamwork and professionalism to manage interpersonal challenges and maximize relationships. Facilitate a meeting, set goals, use a time management

system and effective verbal and written communications.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

BADM-1070 Introduction to Project Management

03 Semester Credits

Application of project management process, principles, and techniques that can be employed when implementing a project. Emphasis on project startup and definition, project planning and design, project management and project monitoring and evaluation methods.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

BADM-1121 Principles of Management and Organizational Behavior

04 Semester Credits

Introduction to management and organizational behavior principles, concepts, and skills employed in the operation of a business organization. Emphasis on planning, organizing, leading, controlling and decision making. Also includes organizational structures, organizational communication, and organizational performance.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): BADM-1020 Introduction to Business; or departmental approval: previous coursework and/or experience.

BADM-1210 Labor-Management Relations

03 Semester Credits

Historical, legal, and structural environments which influence management-labor relations. Rights and responsibilities of unions and management; negotiation and administration of labor agreement; results of labor relations process and collective bargaining issues. Review and application of the labor relations process.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

BADM-1300 Small Business Management

04 Semester Credits

Introduction to entrepreneurial concepts of business management, including components needed to develop an effective business plan and/or skills needed to effectively manage a small business. The course includes the principles needed to operate a small business and is also beneficiary for those who desire to upgrade their skills in business management.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): None.

BADM-1460 Workers' Compensation Law**03 Semester Credits**

[This course is crosslisted as PL-1460. Credit can only be earned once for either course.] Study of Ohio Bureau of Workers' Compensation and Industrial Commission of Ohio, with emphasis on claims and procedures involving injured workers and benefits available. Preparation of injured worker forms and employer forms. Practice in calculating compensation for injuries, determining and preparing employer defenses, and determining and creating both injured worker and employer appeals.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

BADM-2010 Business Communications**03 Semester Credits**

Study of oral, written and electronic business communication theory. Includes business correspondence writing, job preparation, research techniques, and formal and informal report preparation.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment.

OAN Approved: OBU005

BADM-201H Honors Business Communications**03 Semester Credits**

Critical analysis, application and study of oral, written and electronic business communication theory. Includes business correspondence writing, job preparation, research techniques, and formal and informal report preparation.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-101H Honors College Composition I or concurrent enrollment; or ENG-1010 College Composition I with a grade of "B" or higher.

BADM-2110 Production/Operations Management**03 Semester Credits**

Overview of manufacturing and service operations covering such topics as: flow, bottleneck, balance, quality, workplace contribution, planning, materials requirement planning, inventory management procurement, logistics, floor shop control, just-in-time (JIT), capacity changes, technology and design, vertical integration, and operation strategy.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BADM-1020 Introduction to Business, or BADM-2160 Introduction to Purchasing.

BADM-2120 Logistics Management**03 Semester Credits**

Logistics Management is the study of planning, executing, and controlling the flow and storage of goods, services, and information from the point of origin to the point of consumption for the purpose of meeting the customer's needs. Topics covered will include warehousing,

transportation, inventory, materials handling, operations, and supply management.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BADM-2160 Introduction to Purchasing, or concurrent enrollment, or departmental approval: comparable knowledge and skill.

BADM-2150 Business Law**04 Semester Credits**

Study of legal process as it relates to society, government, business and the individual; the law as it relates to legal system, ethics and social responsibility, contracts, sales, agency, business organizations, debtor-creditor relations, and governmental regulation of business.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): BADM-1121 Principles of Management and Organizational Behavior or BADM-1020 Introduction to Business.

OAN Approved: OBU004

BADM-2160 Introduction to Purchasing**03 Semester Credits**

Analysis of purchasing role in an industrial organization. Description of quality, specifications and standardization, supplier selection, international sourcing, pricing principles, types of contracts, negotiation techniques, make or buy, computer based system; EDI, capital equipment, services and value analysis, and legal and ethical aspects of purchasing.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BADM-1020 Introduction to Business or concurrent enrollment, or departmental approval: comparable knowledge or skills.

BADM-2180 Purchasing Management**03 Semester Credits**

Capstone course in Purchasing Management program. Focuses on purchasing management process, including functions of planning, organizing, directing, motivating, and controlling the work and purchasing staff to help achieve organizational objectives. Purchasing systems and documentation discussed.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BADM-2160 Introduction to Purchasing, or departmental approval: comparable knowledge or skills.

BADM-2240 Negotiations**03 Semester Credits**

Principles, techniques, and skills needed in interpersonal, buyer-seller, transportation, and labor management negotiations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BADM-1020 Introduction to Business, or BADM-2160 Introduction to Purchasing.

BADM-2330 Human Resource Management **03 Semester Credits**

Overview of human resource function consisting of recruitment, staffing, training, development, compensation and evaluation. Employment practices including legal and ethical issues.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

BADM-2340 Human Resource Law and Application **03 Semester Credits**

Analyze basic employment law necessary to develop practical understanding of legal framework critical to human resource function and effectiveness. Employment law and application expanded in employment relationships and areas critical to human resource function such as staffing, Equal Employment Opportunity (EEO), Affirmative Action, Americans with Disabilities Act (ADA), Family and Medical Leave Act (FMLA), benefits, and safety. Explores impact of employment law, including current developments to human resource function and business.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BADM-2330 Human Resource Management, and eligibility for ENG-1010 College Composition I.

BADM-2390 Advanced Human Resource Practices **03 Semester Credits**

Capstone course in Human Resource Management program. Explores application of human resource (HR) concepts and practices in organization context. Cases and scenarios advance learning through systems and operational application of HR competencies. HR planning, staffing, benefits, Equal Employment Opportunity (EEO), safety, performance management, compensation, and change management will be explored in light of advancing organizational effectiveness. Contemporary human resource issues confronting business also analyzed.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BADM-2330 Human Resource Management and eligibility for ENG-1010 College Composition I.

BADM-2450 New Business Development **05 Semester Credits**

Capstone course in Small Business Management program. Complete business plan. Reflects generally accepted practice. Designed for student who wants to start a business.

Lecture 03 hours. Laboratory 04 hours.

Prerequisite(s): BADM-1300 Small Business Management, or departmental approval: comparable knowledge or skills.

BADM-2470 Marketing Techniques for Small Business **03 Semester Credits**

Marketing research and other marketing activities; market segmentation, product development, advertising, sales promotion, personal selling, and pricing.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BADM-1300 Small Business Management, or MARK-2010 Principles of Marketing, or departmental approval: comparable knowledge or skills.

BADM-2501 Business Strategies **03 Semester Credits**

Capstone course for Accounting, Business Management (basic program) and Marketing degrees. Critical analysis and application of business, marketing, accounting and financial concepts to determine alternatives and best course of action to maximize organizational performance.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: 20 credit hours of any combination of business administration, accounting or marketing courses.

BADM-2510 Import/Export Documentation and Transportation **01 Semester Credit**

Processing documentation for import and export of goods and services, and study of transportation modes used in international shipments. Includes intermediaries, international shipment documentation and processing, uses of freight forwarders, U.S. Customs regulations, and foreign import requirements. Selection of optimum transportation methods for international shipments discussed.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval.

BADM-2520 Operational Issues in International Business **02 Semester Credits**

Analysis of overall concept of global operations and development of global operations strategy. Methods of differentiating among market entry options – indirect exporting, direct exporting, licensing, franchising, contract manufacturing and assembly, and full-scale integrated manufacturing studied. Study of various ownership strategies: wholly owned subsidiaries, joint ventures, or strategic alliances. Global human resource issues and intellectual property laws discussed.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval.

BADM-2530 International Sourcing and Logistics
02 Semester Credits

Demystifies the purchasing and logistical elements involved with importing. Areas of examination include terminology, sourcing process, addressing cultural and ethical issues, required documents, negotiations, logistics enablers, customs, duties and legal considerations. Special attention paid to identification and utilization of resources. Comparison of International Purchasing versus a Global Sourcing strategy will be offered.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval.

BADM-2600 Introduction to World Trade
03 Semester Credits

Overview of world trade with examination of foreign environments (economic, cultural, and legal) in which global companies operate. Study of documents and procedures required to import and export goods; international transportation modes; and payments and collection.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MARK-2010 Principles of Marketing or concurrent enrollment, or departmental approval: previous coursework and/or experience.

BADM-2610 Cross Cultural Communications
01 Semester Credit

Main components of communicative events across different cultures, main logistic approaches to analyzing them, and difficulties the differences can create in intercultural and cross-gender communication. Covers historical perspective, political and economic philosophy, social structure, religion, language and education, body language, titles, and respect, turn-taking and turn maintenance. Narrative structuring, intonation, requests, disagreements and criticism, information seeking, politeness, and business negotiation discussed.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval.

BADM-2620 International Trade Finance and Insurance
02 Semester Credits

Comparison of international trade finance options. Techniques, terminology, philosophies, and approaches to international export-import financing. Methods of structuring letters of credit, sight drafts, time drafts and alternative financing options are detailed and applied to case studies. Includes how to obtain financing from domestic, foreign, private, government, and international organization sources.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval: previous coursework or experience.

BADM-2630 Legal Issues in International Business
01 Semester Credit

Examination of the legal underpinnings of global business environment. U.S., foreign, and international legal systems affecting U.S. companies conducting global business. Customs, taxation and global employment regulations are identified. Key U.S. regulations applied extraterritorially are analyzed as they impact the conduct of international business.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval: previous coursework and/or equivalent experience.

BADM-2710 Global Marketing
02 Semester Credits

Overview of international marketing strategies and decisions, including choice of markets, mode of entry, appropriate organization for international expansion, and degree of adaptation/standardization/globalization of marketing mix elements. Researching international market opportunities, and examining available information sources. Strategic approach to international marketing management decision stressing economic, political, legal, and cultural characteristics of business abroad.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval: previous coursework and/or experience.

BADM-2720 International Market Research
02 Semester Credits

Tools needed to decide what markets to enter, methods to enter them, and successful strategies to exploit opportunities they offer. In contrast to market research that focuses on domestic business opportunities, international research covers different environments and cultures. Understanding of various market research techniques that are effective within a particular culture's frame of reference. Review of traditional research techniques, parameters for country screening and risk analysis, examination of impact of culture on research alternatives, and review of many sources accessible for accurate secondary data on international markets, industries, and legal/regulatory precedents.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

BADM-2730 Channels of Distribution in International Markets

01 Semester Credit

Structure of the global distribution system. Development of global distribution system discussed along with factors influencing selection of channel members and methods of locating and selecting channel partners. Managing the global logistics system includes setting expectations, formulating entry strategy, recruiting distributors, motivating channel participants, and monitoring sales activities.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): BADM-2600 Introduction to World Trade, or departmental approval.

BADM-2790 International Business Strategy and Application

04 Semester Credits

Capstone course in International Business. Application of knowledge and skills obtained in international marketing, trade documentation, transportation, finance and cultural awareness to real world international business scenarios. Includes in-class, comprehensive analytical/decision-making case studies. Student concomitantly involved in an international internship experience that provides on-the-job exposure to international business activities.

Lecture 03 hours. Laboratory 00 hours.

Other Required Hours: Field experience: 12 hours per week.

Prerequisite(s): BADM-2600 Introduction to World Trade, or concurrent enrollment, and departmental approval: 12 additional credit hours of technical courses.

BADM-2830 Cooperative Field Experience

01-03 Semester Credits

Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): Formal application into the Cooperative Education Program.

CAPTIONING AND COURT REPORTING - C&CR

C&CR-1000 Introduction to Court Reporting

01 Semester Credit

Comprehensive survey of field of court reporting. Examination of history of reporting, diversity, equipment needs and technological trends, role of the working

reporter within the legal system, corporate environment, and educational system.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

C&CR-1100 Introduction to Voice Captioning

01 Semester Credit

Introduction to voice captioning technology and the employment opportunities in this field.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

C&CR-1200 Voicewriting I

02 Semester Credits

Instruction in the use of voice-recognition software and technology. Application of such technology enables users to create and edit documents, send email, access the Internet and perform other functions all in a hands-free manner.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): C&CR-1100 Introduction to Voice Captioning or concurrent enrollment; or departmental approval.

C&CR-1210 Voicewriting II

02 Semester Credits

Study of speech-to-text technology and the use of voice-recognition software while developing increased dictation speed, learn to dictate while listening to dictation, and create various documents including Excel spreadsheets, and particular legal and medical documents.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): C&CR-1200 Voicewriting I.

C&CR-1220 Voicewriting III

04 Semester Credits

Realtime translation of legal proceedings, broadcasts, and other voice-to-text environments using voice writing captioning-specific software in addition to speech-recognition software.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): C&CR-1210 Voicewriting II.

C&CR-1300 Realtime Theory I

04 Semester Credits

Focus on principles of writing on stenotype machine. On-line instruction of machine shorthand keyboard, arbitraries, phrases, word beginnings and endings. Emphasis on reading, writing, and reporter English skills in preparation for speedbuilding and transcription.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): C&CR-1000 Introduction to Court Reporting or concurrent enrollment; and eligibility for ENG-1010 College Composition I; or departmental approval.

C&CR-1330 Realtime Theory II

02 Semester Credits

This course is a continuation of Realtime Theory. Students will complete study of theory principles.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): C&CR-1300 Realtime Theory I.

C&CR-1340 Realtime Theory III

02 Semester Credits

Introduces students to the varied styles of writing in the court reporting profession including question and answer, literary, and jury charge format. Instruction in advanced principles of brief forms and phrases in speedbuilding development.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): C&CR-1330 Realtime Theory II or concurrent enrollment.

C&CR-1350 Legal Terminology

03 Semester Credits

Provides students with broad legal vocabulary, useful in any law related field. Emphasis on spelling, definition, and usage of legal terms.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

C&CR-1401 Speedbuilding and Transcription at 100 WPM

03 Semester Credits

Speedbuilding at 80-100 wpm level. Utilization and expansion of machine-writing theory. Practical procedures on stenotype machine to develop beginning skill levels. Minimum exit speed is 100 wpm.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): C&CR-1340 Realtime Theory III.

C&CR-1410 Precision Writing I -- Using Brief Forms

01 Semester Credit

Designed to enhance writing skills on steno machine or with voicewriting technology. Emphasis on brief forms and specific phrases found in everyday vocabulary. Accuracy of outlines emphasized as well as use of specific brief forms. Course serves as a companion to speedbuilding curriculum.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): C&CR-1220 Voicewriting III or C&CR-1340 Realtime Theory III; and C&CR-1450 Speedbuilding and Transcription at 140 WPM, or C&CR-2400 Speedbuilding and Transcription at 180 WPM, or C&CR-2450 Speedbuilding and Transcription at 225 WPM.

C&CR-1420 Precision Writing II -- Arbitraries in Legal Vocabulary

01 Semester Credit

Enhancement of writing skills on steno machine or voicewriting software. Emphasis on brief forms or voice codes for specific phrases found within jury charge and other legal material. Accuracy of outlines or voice codes

emphasized as well as use of specific brief forms. Course serves as companion to speedbuilding curriculum.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): C&CR-1220 Voicewriting III, or C&CR-1340 Realtime Theory III; and C&CR-1450 Speedbuilding and Transcription at 140 WPM, or C&CR-2400 Speedbuilding and Transcription at 180 WPM, or C&CR-2450 Speedbuilding and Transcription at 225 WPM.

C&CR-1430 Precision Writing III -- Numeric and Alphabetic Accuracy

01 Semester Credit

Improve writing skills on steno machine or utilizing voicewriting software. Emphasis on numeric material and proper names. Accuracy of "letter spelling", phonetic steno or voicewriting of names with verification of name emphasized, as well as the ability to steno or voicewrite numbers fluently. Course serves as companion to speedbuilding courses.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): C&CR-1220 Voicewriting III, or C&CR-1340 Realtime Theory III; and C&CR-1450 Speedbuilding and Transcription at 140 WPM, or C&CR-2400 Speedbuilding and Transcription at 180 WPM, or C&CR-2450 Speedbuilding and Transcription at 225 WPM.

C&CR-1451 Speedbuilding and Transcription at 140 WPM

03 Semester Credits

Speedbuilding at 120-140 wpm level. Utilization and expansion of machine-writing or voicewriting theory. Practical procedures on stenotype machine or utilizing voicewriting technology to develop skill levels on question and answer testimony, jury charge and literary materials. Minimum exit speed is 140 wpm.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): C&CR-1220 Voicewriting III, or C&CR-1340 Realtime Theory III.

C&CR-1460 Literary Writing

02 Semester Credits

Focuses on the skills of literary writing using court reporting technology. Emphasizes accuracy and writing development for the judicial, Communication Access Real-time Transcription (CART), and captioning environments.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): C&CR-1450 Speedbuilding and Transcription at 140 WPM, or concurrent enrollment.

C&CR-1521 Realtime Theory Reinforcement

02 Semester Credits

Focus on principles of writing on stenotype machine. Review of machine shorthand theory principles introduced CCR 1300 and 1330. Emphasis on reducing hesitation while writing, reading steno outlines, and building speed on the steno machine.

Lecture 00 hours. Laboratory 04 hours.

Prerequisite(s): C&CR-1330 Realtime Theory II, or concurrent enrollment.

C&CR-1601 Court Reporting Technology

04 Semester Credits

Basics of computer aided transcription. Emphasis on court reporting software, dictionary development, and transcript production. Development of scoping skills and research techniques.

Lecture 02 hours. Laboratory 06 hours.

Prerequisite(s): C&CR-1220 Voicewriting III, or C&CR-1330 Realtime Theory II.

C&CR-2200 Medical Terminology for Captioning and Court Reporting

03 Semester Credits

Study of basic medical terminology utilized in the captioning and court reporting profession. Emphasis on definition and usage of the medical terms, and research practices for transcript production.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): C&CR-1340 Realtime Theory III or concurrent enrollment; or C&CR-1220 Voicewriting III or concurrent enrollment.

C&CR-2300 Court Procedures

03 Semester Credits

Emphasizes role of official and freelance reporter including communications skills, professional image and business etiquette. Preparation of deposition/court transcripts, marking and handling of exhibits, indexing and storing notes, reporting techniques and ethics, including NCRA Code of Ethics.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): C&CR-1200 Voicewriting I or C&CR-1300 Realtime Theory.

C&CR-2350 Editing Legal Documents

02 Semester Credits

To develop understanding of parts of speech, sentence structure, proofreading, and management of other people's spoken words. Rules of punctuation and grammar go beyond the basics and are modified to accommodate ambiguous, clumsy, incongruous, and incorrect English frequently found in legal transcripts.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

C&CR-2360 Proofreading Skill Development

02 Semester Credits

Focuses on applying proofreading and editing skills to legal transcripts, jury charges, and literary materials. Accuracy of editing with regard to the placement of punctuation marks and spelling.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): C&CR-2350 Editing Legal Documents.

C&CR-2401 Speedbuilding and Transcription at 180 WPM

03 Semester Credits

Speedbuilding at 160-180 wpm level. Utilization and expansion of machine-writing or voicewriting theory. Practical procedures on stenotype machine or utilizing voicewriting technology to develop skill levels on question and answer testimony, jury charge and literary materials. Minimum exit speed is 180 wpm.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): C&CR-1451 Speedbuilding and Transcription at 140 WPM or C&CR-1210 Voicewriting II.

C&CR-2451 Speedbuilding and Transcription at 225 WPM

03 Semester Credits

Speedbuilding at speed levels of 225 wpm Question and Answer test material, 200 wpm Jury Charge material and 180 wpm Literary. Utilization and expansion of machine-writing or voice-writing theory. Practical procedures on stenotype machine or voicewriting software and technology to develop skill levels on question and answer testimony, jury charge and literary materials.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): C&CR-2401 Speedbuilding and Transcription at 180 WPM.

C&CR-2460 Speed Enhancement

02 Semester Credits

Course devoted to speed development and problem solving. Provides support for individualized steno or voicewriting progress utilizing the department's software programs, digital dictation, and other pertinent resources as available.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): C&CR-1220 Voicewriting III or C&CR-1340 Realtime Theory III; and concurrent enrollment in C&CR-1610 Speed Development I, or concurrent enrollment in C&CR-1620 Speed Development II, or concurrent enrollment in C&CR-1630 Speed Development III.

C&CR-2470 Advanced Technology

03 Semester Credits

Capstone course in Court Reporting and Captioning. Students apply technology and format applications to produce transcripts in preparation for initial employment. Concentrated, production-oriented class with employment related projects, deposition projects, and realtime projects.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): C&CR-1451 Speedbuilding and Transcription at 140 WPM, and C&CR-1601 Court Reporting Technology; or C&CR-1220 Voicewriting III.

C&CR-2480 Using Captioning Technology

03 Semester Credits

Students apply steno or voice technology and format applications to produce captioning simulations in preparation for initial employment. A concentrated, production-oriented class with employment related projects from the captioning environment.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): C&CR-2401 Speedbuilding and Transcription at 180 WPM; or concurrent enrollment in C&CR-2451 Speedbuilding and Transcription at 225 WPM, and C&CR-2470 Advanced Technology.

C&CR-2490 Speedbuilding and Transcription at 250 WPM

02 Semester Credits

Speedbuilding at speed levels of 250 wpm Question and Answer test material, 225 Jury Charge test material, and 200 wpm Literary test material. Utilization and expansion of steno writing and voicewriting theory and technology. Practical procedures on stenotype machine or voicewriting software and technology to develop skill levels on question and answer testimony, jury charge and literary materials.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): C&CR-2450 Speedbuilding and Transcription at 225 WPM, or departmental approval.

C&CR-2510 CART Production

03 Semester Credits

Focus on realtime writing and dictionary management for use in the Communications Access Realtime Translation (CART) environment.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): C&CR-1601 Court Reporting Technology and C&CR-1450 Speedbuilding and Transcription at 140 WPM or departmental approval.

C&CR-2520 Captioning Production

03 Semester Credits

Focus on the production of captions using steno or voicewriting technology. Build endurance and accuracy in realtime writing.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): C&CR-2480 Using Captioning Technology or departmental approval.

C&CR-2550 Writing for Captioning and CART

02 Semester Credits

Focuses on building realtime writing endurance in the captioning and Communication Access Real-time Transcription (CART) environments. Centers on accurate realtime translation and display of English text.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): C&CR-2510 CART Production and C&CR-2520 Captioning Production or departmental approval.

C&CR-2602 Technical Terminology

03 Semester Credits

Designed to expose students to much of the subject matter court reporters encounter. Emphasis on medical and technical testimony with material duplicated from real-life situations.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): C&CR-1451 Speedbuilding and Transcription at 140 WPM, or concurrent enrollment.

C&CR-2660 Registered Professional Reporter Examination Preparation

01 Semester Credit

Provides preparation for national certification exam. Speedbuilding at 160-180 wpm level. Utilization and expansion of machine-writing theory. Practical procedures on stenotype machine to develop skill levels on questions and answer testimony, jury charge and literary materials. Minimum exit speed is 180 wpm. Stenotype machines and access to a computer with Internet is required.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): C&CR-1300 Realtime Theory, or departmental approval.

C&CR-2840 Internship

01 Semester Credit

Provides student with 75 hours of actual writing time during on-the-job training using voicewriting technology or machine shorthand technology.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 5 hours per week.

Prerequisite(s): C&CR-2401 Speedbuilding and Transcription at 180 WPM; or concurrent enrollment in C&CR-2451 Speedbuilding and Transcription at 225 WPM, and C&CR-2470 Advanced Technology.

C&CR-2910 Internship for Captioning and CART

01 Semester Credit

Provides student with 50 hours of actual writing time during on-the-job training using voicewriting technology or machine shorthand technology in the Captioning and Communication Access Real-time Transcription (CART) environment. Provides student with 30 hours of research and dictionary preparation during on-the-job training in Captioning and CART environments.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 80 hours per semester (5 hours per week for 16 weeks).

Prerequisite(s): C&CR-2450 Speedbuilding and Transcription at 225 WPM or concurrent enrollment; and C&CR-2520 Captioning Production, and C&CR-2510 CART Production.

CHEMISTRY - CHEM**CHEM-1000 Everyday Chemistry****03 Semester Credits**

[This course is cross-listed as PSCI-1020. Credit can only be earned once for either course.] Survey of chemistry as related to environment, health and nutrition, and applications that affect quality of life. Basic concepts and applications of chemistry: consumer chemistry, acids and bases, medicines and drugs, pollution and conservation. Intended for non-science majors. To fulfill laboratory science requirement, student should enroll in related laboratory course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990-Language Fundamentals II; or departmental approval.

CHEM-100L Everyday Chemistry Laboratory**01 Semester Credit**

[This course is cross-listed as PSCI-102L. Credit can only be earned once for either course] Intended for non-science majors. Exercises on measurements, separation and synthesis methods, reaction rates, water analysis, household chemistry, forensic and environmental issues, and other related chemistry topics. Laboratory activities complement and enrich related lecture course.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): CHEM-1000 Everyday Chemistry or concurrent enrollment.

CHEM-1010 Introduction to Inorganic Chemistry**04 Semester Credits**

Introduction to atomic structure and bonding as basis for understanding valence, formulas, compounds and chemical reactions. Measurement, stoichiometry, states of matter, solutions, ionization, equilibria, acids, bases and pH, and health careers, scientific studies, and applications in daily life.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): MATH-0955 Beginning Algebra, or appropriate score on Math Placement Test.

CHEM-101H Honors Introduction to Inorganic Chemistry**04 Semester Credits**

Introduction to the fundamental principles of chemistry including states of matter, atomic structure, bonding, chemical reactions, thermodynamics, ionization, equilibria, gas laws, solutions, acid-base chemistry, and nuclear chemistry. The principles of chemistry will be applied to medicine, nutrition, and the environment. Laboratory work will illustrate chemical theories.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): ENG-101H Honors College Composition I; and MATH-0955 Beginning Algebra, or appropriate score on Math Placement Test; or departmental approval.

CHEM-1020 Introduction to Organic Chemistry and Biochemistry**04 Semester Credits**

Structure and properties of representative carbon compounds and applications to everyday life. Nature and metabolism of biochemical compounds and relationship of nucleic acids to protein synthesis.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): CHEM-1010 Introduction to Inorganic Chemistry or CHEM-101H Honors Introduction to Inorganic Chemistry or sufficient score on Chemistry Assessment test.

CHEM-102H Honors Introduction to Organic Chemistry and Biochemistry**04 Semester Credits**

Study of the structure, properties, and function of carbon-based compounds. Introduction to biochemistry including structure, properties, and metabolism of proteins, carbohydrates, and lipids. Roles and structures of enzymes, vitamins, chemical messengers, deoxyribonucleic acid (DNA), and ribonucleic acid (RNA) in cellular function. Principles of structure and function will apply to medicine and nutrition.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): CHEM-101H Honors Introduction to Inorganic Chemistry, or departmental approval.

CHEM-1080 Herbal Medicines and Natural Products**03 Semester Credits**

The course is designed for those interested in education in the areas of natural products and herbal remedies. Definition of the term "natural product", the regulatory dilemma and the marketing of herbal products, the use, risk and safety of herbal preparations, common herbs found in the market and their efficacy and interactions are covered. How to make and guide a rational decision regarding the choice and use of natural herbal products is covered.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I, or appropriate score on assessment test or departmental approval.

CHEM-1300 General Chemistry I**04 Semester Credits**

Study of fundamental principles of chemistry emphasizing atomic theory and structure, chemical bonding, thermochemistry, solutions, stoichiometry, and state of matter. To fulfill laboratory science requirement, students should enroll in related laboratory course.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): CHEM-1010 Introduction to Inorganic Chemistry, or sufficient score on Chemistry assessment test; and MATH-0965 Intermediate Algebra, or sufficient score on Math assessment test; or departmental approval: equivalent knowledge or skills.

OAN Approved: OSC008 (1 of 2 courses, both must be taken)

CHEM-130L General Chemistry Laboratory I
01 Semester Credit

Basic laboratory experiments which correlate with chemical concepts, principles and processes of General Chemistry II. Emphasis on techniques and procedures.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): CHEM-1300 General Chemistry I or concurrent enrollment; or departmental approval: equivalent knowledge or skills.

OAN Approved: OSC008 (2 of 2 courses, both must be taken)

CHEM-130H Honors General Chemistry I
05 Semester Credits

Study of fundamental principles of chemistry emphasizing atomic theory, periodic trends, structure and bonding, chemical reaction and stoichiometry, energy, and the states of matter. Perform laboratory experiments designed to demonstrate chemical concepts and support theoretical phenomena. Honors General Chemistry I combines lecture and laboratory into one course.

Lecture 04 hours. Laboratory 03 hours.

Prerequisite(s): CHEM-1010 Introduction to Inorganic Chemistry, or CHEM-101H Honors Introduction to Inorganic Chemistry, or sufficient score on Chemistry assessment test; and MATH-1530 College Algebra, and MATH-1540 Trigonometry; or MATH-1580 Precalculus, or sufficient score on Math assessment test; or departmental approval: equivalent knowledge or skills.

OAN Approved: OSC008

CHEM-1310 General Chemistry II
04 Semester Credits

Emphasis on kinetics, equilibrium concepts, electrochemistry, nuclear chemistry, thermodynamics, coordination chemistry and organic chemistry. To fulfill laboratory science requirement, students should enroll in related laboratory course.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): CHEM-1300 General Chemistry I, or departmental approval: equivalent knowledge or skills.

OAN Approved: OSC009 (1 of 2 courses, both must be taken)

CHEM-131L General Chemistry Laboratory II
01 Semester Credit

Basic laboratory experiments which correlate with chemical concepts, principles and processes of General Chemistry. Emphasis on technique and procedures.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): CHEM-130L General Chemistry Laboratory I, and CHEM-1310 General Chemistry II or concurrent enrollment; or departmental approval: equivalent knowledge or skills.

OAN Approved: OSC009 (2 of 2 courses, both must be taken)

CHEM-131H Honors General Chemistry II
05 Semester Credits

Study of the fundamental principles of chemistry emphasizing chemical and nuclear kinetics, thermodynamics, and equilibrium. Introduction and study into the specific branches of chemistry: electrochemistry, coordination, organic, nuclear, and environmental chemistry. Perform laboratory experiments designed to demonstrate chemical principles and support theoretical phenomena. Honors General Chemistry II combines lecture and laboratory into one course.

Lecture 04 hours. Laboratory 03 hours.

Prerequisite(s): CHEM-130H Honors General Chemistry I, or departmental approval: equivalent knowledge or skills.

OAN Approved: OSC009

CHEM-2000 Analytical Chemistry
05 Semester Credits

An introduction to the theoretical principles of quantitative and instrumental analysis. Emphasis on experimental methods, sampling techniques, statistics, error theory, chemical equilibrium, stoichiometry, and volumetric and gravimetric procedures as applied to quantitative determinations. Provides an introduction to spectroscopic, electroanalytical, and chromatographic methods of analyses. Provides hands-on experience to students by completion of laboratory experiments related to these principles. Emphasis on development of laboratory technique.

Lecture 03 hours. Laboratory 06 hours.

Prerequisite(s): CHEM-1310 General Chemistry II and CHEM-131L General Chemistry Laboratory II.

CHEM-2300 Organic Chemistry I
05 Semester Credits

Functional group chemistry of aliphatic compounds covering nomenclature, structural-reactivity, and synthetic reactions. Theoretical concepts, structural bonding, stereochemistry and reaction mechanisms emphasized. Use of various spectrometric techniques for identification of compounds introduced.

Lecture 03 hours. Laboratory 06 hours.

Prerequisite(s): CHEM-1310 General Chemistry II, and CHEM-131L General Chemistry Laboratory II or CHEM-131H Honors General Chemistry II; or departmental approval: equivalent knowledge or skills.

OAN Approved: OSC010 (1 of 2 courses, both must be taken)

CHEM-2310 Organic Chemistry II

05 Semester Credits

Continuation of Organic Chemistry I. Common functional groups with emphasis on aromatic and carbonyl containing molecules, and selected topics such as heterocyclic compounds, macromolecules, and biomolecules introduced.

Lecture 03 hours. Laboratory 06 hours.

Prerequisite(s): CHEM-2300 Organic Chemistry I.

OAN Approved: OSC010 (2 of 2 courses, both must be taken)

CHINESE - CHIN

CHIN-1011 Beginning Chinese Language and Culture I

04 Semester Credits

Introduction to standard spoken Chinese (Mandarin) through listening, speaking and using Chinese software on computer. Emphasis on becoming familiar with four tones of Chinese language.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): None.

CHIN-1021 Beginning Chinese Language and Culture II

04 Semester Credits

Continued study of standard Chinese with expansion of vocabulary. Practice in conversation on given subjects and transition from speaking to reading.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): CHIN-1011 Beginning Chinese Language and Culture I, or departmental approval.

CONSTRUCTION ENGINEERING TECHNOLOGY - CNST

CNST-1281 Construction Engineering Orientation

03 Semester Credits

Introduction to construction objectives and opportunities. Recognition of professional practices, current issues and developments in construction, including Green Building. Overview of construction project operations, trade journals, and associations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

CNST-1410 Architectural CAD I

03 Semester Credits

Working drawing techniques of domestic structures using computer-aided drafting software. Floor plans, foundation plans, wall-sections, elevations, site plans and

dimensioning techniques will be the core concepts.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): CNST-1731 Construction Print Reading, or departmental approval.

CNST-1510 Green Building & Sustainability I

03 Semester Credits

Introduction to Green Building and sustainability issues. Study of current practices, systems, and materials used in the construction of Green buildings. Recognition of planning and design features that enhance the energy efficiency of a building and its environment. Overview of Green Building Rating Systems.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

CNST-1731 Construction Print Reading

03 Semester Credits

Overview of construction drawings for the major construction disciplines to understand presentation methods, interpretation, sequence of preparation, bid submittal processes, revision control, and code requirements. Commercial building, structural, and civil drawings utilized.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

CNST-1740 Fundamentals of Geographic Information Science

03 Semester Credits

Introduction to geographic information science with a focus on learning Geographic Information Systems (GIS) software. Topics include: introduction to map interpretation and analysis, coordinate systems, map projections, scales, topographic mapping, accuracy versus precision, spatial analysis techniques, types of thematic mapping, sources of data, basic database management, and an introduction to applications in engineering and engineering technology.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MATH-1530 College Algebra; and IT-1010 Introduction to Microcomputer Applications, or MET-1120 Computer Applications and Programming; or departmental approval.

CNST-1750 Construction Safety

03 Semester Credits

The theories and principles of construction safety and health applied to real-world setting. Upon completion of course materials and required attendance hours, students receive their OSHA 30 certification.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

CNST-2110 Basic Survey Practices**03 Semester Credits**

Study of construction site engineering using survey instruments for elevation contours, drainage, and grading for construction. Laser-levels, transits, and total stations will be utilized. Emphasis on instrument applications and field data recording.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MATH-1540 Trigonometry; and CNST-1731 Construction Print Reading; or departmental approval.

OAN Approved: OET015

CNST-2130 Construction Methods, Materials and Equipment**03 Semester Credits**

Study of common construction approaches including pre-fabrication practices, modularization, and traditional site erection means. Construction materials and properties; testing methods; equipment usage, attributes, cost, and availability discussed. Includes 10-hour OSHA training program.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): CNST-1731 Construction Print Reading; and MATH-0910 or appropriate score on Math placement test to enroll in MATH-0955; or departmental approval.

OAN Approved: OET016; CTAN Approved: CTCON003

CNST-2150 Building Enclosures**03 Semester Credits**

Analysis of wall, roof, and floor assemblies for residential and light commercial construction with a concentration in thermal, air, and moisture control. Includes laboratory activities for constructing a building enclosure with non-traditional techniques and materials, including structural insulated panels, engineered lumber, fiber cement siding, composite decking, and insulated concrete forms.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): CNST-2130 Construction Methods, Materials and Equipment, or departmental approval.

CNST-2200 Architectural Building Information Modeling**03 Semester Credits**

Introduction into building information modeling (BIM) for architectural building envelope design. Autodesk Revit software will be used to generate a commercial building, and produce related drawings used in a set of contract documents.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): CNST-1731 Construction Print Reading.

CNST-2210 Mechanical & Electrical Systems**03 Semester Credits**

Study of mechanical and electrical systems for building construction, water supply, waste and sanitation. Heat loss, heat gain and hydronic heating systems; forced air and solar heating systems used in buildings; electrical

systems of power distribution and lighting for commercial buildings among the topics covered.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): CNST-2130 Construction Methods, Materials and Equipment or concurrent enrollment; and MATH-0910 Basic Arithmetic and Pre-Algebra or appropriate score on Math placement test to enroll in MATH-0955, or departmental approval.

CNST-2250 Advanced Construction Print Reading**03 Semester Credits**

Advanced print reading for commercial construction drawings. Interpreting drawing details in accordance to project manual, and material quantity take-off.

Constructability review processes will be used to determine effective design and sustainability.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): CNST-1731 Construction Print Reading, or departmental approval.

CNST-2330 Construction Scheduling**03 Semester Credits**

Time management of construction activities by implementing Gantt charts, activity on arrow diagrams, PERT techniques, and critical path method. Computer scheduling software will be used throughout the course.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): CNST-2130 Construction Methods, Materials and Equipment, or departmental approval.

CNST-2410 Principles of Structural Design**03 Semester Credits**

Study of building design structural systems. Topics include steel beams, columns, base plates, fasteners and weldments. Emphasis on tension and compression for engineered building products and concrete structures.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MET-1601 Technical Statics, or departmental approval.

CNST-2510 Introduction to Asset Management**03 Semester Credits**

Introduction to asset management with a focus on utility systems spread over a geographic region. Principles of cartography and presentation of geographic information to be utilized in presenting information. Coordinate systems, map projections, scale, topographic mapping, thematic mapping, spacial analysis methods, and mapping accuracy are introduced. Use Geographic Information Systems (GIS) to analyze and model engineering systems. Probability models and ways to achieve levels of service within an overall system. Laboratory element with case studies incorporated.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MET-2430 Engineering Probability and Statistics; and CNST-2110 Basic Survey Practices, or CNST-1410 Architectural CAD I, or CNST-1730 Construction Print Reading.

CNST-2631 Construction Management Systems

03 Semester Credits

Study of construction management practices including general contracting, subcontracting, project delivery, cost control, change processes and procurement. Introduction into lien implications, safety, quality and jobsite labor relations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): CNST-2130 Construction Methods, Materials and Equipment.

CNST-2830 Cooperative Field Experience

01-03 Semester Credits

Limited to students in Cooperative Education Program. Employment in an approved construction/engineering company under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): Formal application into the Cooperative Education Program.

CNST-2990 Construction Estimating & Cost Analysis

03 Semester Credits

Capstone course in Construction Engineering Technology program. Includes construction cost estimates, cost forecasting, and cost reports for a construction project using computer software.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): Concurrent enrollment in CNST-2130 Construction Methods, Materials and Equipment.

CRIMINAL JUSTICE - CJ

CJ-1000 Introduction to Criminal Justice

03 Semester Credits

History and philosophy of criminal justice in America; review system, identification of the subsystems, role expectations, and relationships. Theory of crime, punishment, and rehabilitation. Ethics, education, and training required in law enforcement, nature of formal and informal decision making in criminal justice, sociology, politics, economics, and law of criminal justice.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment.

OAN Approved: OSS031

CJ-1010 Computers in Criminal Justice

02 Semester Credits

Introduction to uses and applications of computer technology in criminal justice field. Includes discussions of basic terminology; common applications in database,

word processing, and spreadsheet uses; and an introduction to the World Wide Web. Comprehensive examination of computer crimes and procedures, techniques, and legal constraints which apply.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

CJ-1020 Introduction to Homeland Security

02 Semester Credits

As part of the Basic Police Academy certified by the Ohio Peace Officer Training Commission, this course will provide a basic overview into the topic of Homeland Security. Topics will include Hazmat and WMD Awareness for the First Responder and Bombs, Explosives and Incendiary Devices.

Lecture 02 hours. Laboratory 00 hours.

Departmental approval: Admitted to OPOTA Basic Police Academy.

CJ-1050 Introduction to Security

02 Semester Credits

Historical perspective on development of security with definition of current role and function. Studies in fundamental principles of risk assessment, physical plant security, defense systems, internal security, fire prevention and disaster preparedness in security field.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

CJ-1070 Introduction to Corrections

03 Semester Credits

Introduction to processes, procedures and issues in contemporary corrections. History and evolution of various elements of juvenile and adult correction systems.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OSS033

CJ-1111 Constitutional Law for Police

03 Semester Credits

Development of the Federal Constitution and history of Bill of Rights. In-depth analysis of First, Fourth, Fifth, Sixth, Eighth and Fourteenth Amendments. Impact of recent court decisions on these amendments and their implications for criminal justice officials.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

CJ-1120 Criminal Court Procedure

02 Semester Credits

Exploration of U.S. adversary system of criminal justice. Examines components including legislature, police, prosecution, courts and corrections. Comprehensive review of procedures, beginning with arrest through post-trial motions and sentencing.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

CJ-1130 Criminal Evidence**02 Semester Credits**

Overview of trial procedures: classification of evidence, proof, presumptions, relevance, eyewitness identification, testimonial privileges, character, hearsay, impeachment, scientific evidence, collection and preservation of evidence.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

CJ-1200 Economic Crime Investigation**03 Semester Credits**

Examines conduct of individuals, corporations, institutions and government agencies as it relates to economic crime. Ethical dilemmas will be analyzed using critical thinking to build and manage criminal cases for successful prosecution.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1000 Introduction to Criminal Justice.

CJ-1300 Patrol Operations**04 Semester Credits**

Examination of techniques required in performing patrol operations. Covers preparation, vehicle patrol, foot patrol, crimes in progress, prowler calls, building searches, performance of stops and approaches, vehicle identification, and prisoner booking and handling. Incorporates report writing required of police officers. Discussion of various types of forms and reports necessary and methods for accurate completion. Use and structure of field notes, investigative report form and content, and use of proper grammar in narrative reports.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1000 Introduction to Criminal Justice or departmental approval: comparable knowledge or skills.

CTAN Approved: CTBPO

CJ-1310 Traffic Enforcement and Investigation**03 Semester Credits**

Examination of traffic accident investigation, motor vehicle law enforcement, crimes, and other control procedures utilized in highway transportation system. Comprehensive study of enforcement principles, problems, and procedures and how accident investigation relates to overall community safety.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1000 Introduction to Criminal Justice or departmental approval: comparable knowledge or skills.

CTAN Approved: CTBPO

CJ-1320 Ethics in Criminal Justice**02 Semester Credits**

Police conduct is examined relative to ethical and legal principles. Application of federal and state civil, criminal and administrative law. Sources of potential ethical lapses for law enforcement are analyzed and strategies are

formulated to address them both proactively and administratively.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment.

CJ-1330 Criminal Law**03 Semester Credits**

Nature of the criminal act, essential elements for prosecution and defense, legal theories of responsibility, overview of common law offenses, and identification of emerging trends in law.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

CJ-1400 Assets Protection**04 Semester Credits**

In-depth study of principles of loss prevention with emphasis on risk management. Examination of concepts of physical security with management systems; physical security requirements; alarm systems; planning and vulnerability assessments and interaction with law enforcement.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I.

CJ-1500 Community Intervention Resources**04 Semester Credits**

Analysis of community-based resources designed for intervention, prevention and control or rehabilitation of juvenile or adult offender.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1000 Introduction to Criminal Justice.

CJ-2200 Interviews & Interrogations**03 Semester Credits**

Development of the skills necessary to elicit information from potential witnesses and/or offenders. Topics include deception detection, the art of interviewing, and the use of proven interrogation techniques.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1000 Introduction to Criminal Justice.

CJ-2210 Organized Crime**03 Semester Credits**

History and legal analysis of criminal enterprises in America, including their pragmatic operation and the criminal justice response using investigative techniques, and court sentencing to disrupt illegal operations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1000 Introduction to Criminal Justice.

CJ-2230 Undercover Operations

03 Semester Credits

History and techniques of undercover operations, both long and short term infiltration. Includes theoretical aspects of undercover work as well as the practical aspects via role-playing and actual field exercises.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1000 Introduction to Criminal Justice.

CJ-2300 Juvenile Delinquency

02 Semester Credits

Juvenile delinquency as it negatively affects a family, community and how the police and court structure and reintegrate youthful offenders into society.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1000 Introduction to Criminal Justice, or departmental approval: comparable skills.

CJ-2350 Special Issues in Criminal Justice

02 Semester Credits

Review of special and contemporary issues in the field of criminal justice. Discussion of varying viewpoints and aspects of problems faced in these fields. Critical and analytical approach used to understand role and relationship of the criminal justice system in today's society.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1000 Introduction to Criminal Justice, or departmental approval.

CJ-2360 Community Oriented Policing

03 Semester Credits

Analysis and effectiveness of neighborhood style policing efforts to reduce crime and disorder.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1000 Introduction to Criminal Justice, or departmental approval.

CJ-2370 Fire Arms Techniques

03 Semester Credits

Units of study include safety techniques, handgun and related equipment, basic fundamentals of pistol craft, one-hand techniques, multiple targets, low light level conditions, use of protective cover, and shotgun training.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval: successful completion of Basic Police Academy at Cuyahoga Community College.

CTAN Approved: CTBPO

CJ-2380 Defensive Driving

02 Semester Credits

Emergency vehicle operation under strenuous conditions for law enforcement.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): CJ-1000 Introduction to Criminal Justice, and departmental approval.

CTAN Approved: CTBPO

CJ-2390 The Investigative Process

04 Semester Credits

Overview of investigative methods including databases and background checks. In-depth look at the criminal investigation process with focus on crime scene, reports and evidence identification. Specific investigative methods for particular crime types are analyzed.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1000 Introduction to Criminal Justice, or departmental approval.

CJ-2400 Security Management

04 Semester Credits

Comprehensive examination of the organization, staffing, supervision and administration of the security function. Focuses on general security management, supervision and operational management along with public relations.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1050 Introduction to Security, or departmental approval: prior knowledge or experience.

CJ-2410 Security Investigation

03 Semester Credits

Intensive examination of investigative function as it relates to private security. Criminal and non-criminal investigations. Study of databanks, surveillance methods, interviews, backgrounds, and report preparation.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1050 Introduction to Security, or departmental approval: prior knowledge or experience.

CJ-2420 Legal Aspects of Private Security

03 Semester Credits

Study of various Federal and State laws and impact on security management process. In-depth examination of state criminal code as applied to private security.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1050 Introduction to Security, or departmental approval: prior knowledge or experience.

CJ-2440 Protection Services

02 Semester Credits

Examine the role of those tasked with protecting assets, including critical infrastructure identified by the Department of Homeland Security and other public and private property.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1000 Introduction to Criminal Justice or departmental approval: prior equivalent experience.

CJ-2510 Community Supervision and Aftercare
04 Semester Credits

Examine various aspects of contemporary community-based corrections practices and aftercare programs to reintegrate criminal offenders into society in a constructive way.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1070 Introduction to Corrections or departmental approval: comparable knowledge and skills.

CJ-2530 Correctional Case Management
03 Semester Credits

Application of counseling techniques applicable to the correctional offender involving field and clinical situations simulation for students to gain experience in interviewing, chronological recording, report writing, and oral presentation of cases.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): CJ-1070 Introduction to Corrections departmental approval: comparable knowledge or skills.

CJ-2830 Cooperative Field Experience
01-03 Semester Credits

Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): Formal application into the Cooperative Education Program.

CJ-2840 Corrections: Principles and Practices
03 Semester Credits

Students placed in appropriate criminal justice agency facility under guidance of experienced practitioner with a focus on application of corrections principles.

Lecture 01 hour. Laboratory 00 hours.

Other Required Hours: Practicum: 8 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): CJ-2510 Community Supervision and Aftercare.

CJ-2990 Issues in Supervision
04 Semester Credits

Capstone course in Law Enforcement. Comprehensive review of law enforcement processes, accomplished by looking at role of supervisor and his/her responsibility to the department and community. Further application of law enforcement principles by use of current readings in criminal justice.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: completed 20 credits in Criminal Justice.

DANCE - DANC

DANC-1100 Dance Appreciation
03 Semester Credits

Introduction to elements and styles of the art of dance.

Increase student's ability to identify and understand stage, movie and video dance styles through visual and movement concepts. Various performing artists and choreography studied in cultural and historical context.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

DANC-1200 Conditioning for the Performing Artist I
01 Semester Credit

Introduce and practice basic physical conditioning techniques and exercises to support training and performance. Focus on correct practice, experiential anatomy, alignment, control, balance, breath, and integrating the mind and body (somatics). Exercises are practiced on the floor, sitting, standing, and throughout the studio. Special equipment: Pilates/yoga mat and towel. May be repeated up to four times for credit.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

DANC-1220 Theatre Dance/Stage Movement
03 Semester Credits

Basic stage geography, and theatre dance: jazz, latin, waltz, polka, and musical staging for singers and actors. Non-theatre majors learn techniques to analyze and control non-verbal communication (body language). Control and organization of space, energy and time, including basic stage combat, applied to group activities.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

DANC-1401 African Dance I
01 Semester Credit

First in a two-course sequence. Introduction to the fundamentals and basic movements of dances from West Africa. Experience traditional dances that celebrate rites of passage, harvest, courtship and healing/celebration of life. Through these traditional dances and rhythms, dancers will understand the commonalities of dance and music in world cultures and build mutually supportive relationships, reflective of actual dance in West African villages. Community is achieved through dance and collective work towards a final presentation. May be repeated up to four times for credit.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): None.

DANC-1501 Dance Fundamentals

03 Semester Credits

Introduction and practice of fundamental ballet, modern/contemporary, and jazz dance techniques. Creative exploration through basic dance improvisation and choreography. Emphasis on development of body and spatial awareness, strength, flexibility, and coordination within various dance forms. Exercises and basic dance combinations performed on the floor, at the ballet barre, and traveling through the studio space. Reflection on cultural and historical context. Discussion of related topics.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

DANC-1510 Dance II

03 Semester Credits

Further study of secondary techniques of modern dance. Stresses dance as artistic form of self expression. Students identify variety of rhythms and perform secondary and intermediate dance combinations.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): DANC-1500 Dance I, or departmental approval: comparable knowledge or skills.

OAN Approved: OAH013

DANC-1520 Ballet I

01 Semester Credit

First in a three-course sequence. Covers the fundamentals of classical ballet to prepare students for further training in ballet. Emphasis on developing strength, flexibility, postural alignment, and endurance in the area of ballet technique and conditioning. Follows a typical ballet class structure with an emphasis on mastering basic barre exercises. May be repeated up to four times for credit.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): DANC-1501 Dance Fundamentals or permission of instructor.

DANC-1530 Contemporary/Modern Dance I

02 Semester Credits

First in a three-course sequence. Introduction and practice of fundamental movement vocabulary and concepts of modern/contemporary dance. Warm up, center, and traveling movement sequences practiced on the floor, standing, and through studio space. Emphasis on body awareness, spatial awareness, and musicality. Discover the body as an expressive instrument. Build biomechanical, aesthetic, and historical foundations for further contemporary/modern dance training. May be repeated up to four times for credit.

Lecture 00 hours. Laboratory 04 hours.

Prerequisite(s): DANC-1501 Dance Fundamentals.

DANC-1540 Jazz Dance I

01 Semester Credit

First in a two course sequence. Introduces principles of jazz dance technique and styles. Covers the fundamentals through basic physical skills, terminology, and history. Taught in progression, teaching basics in the beginning and each week building upon that foundation.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): DANC-1501 Dance Fundamentals; or departmental approval permission of instructor.

DANC-1600 Choreography and Production

02 Semester Credits

Student learns to make solo and group dances by exploring choreography process: content, form, technique and projection. Through formal and informal dance performances, student learns elements of lighting, costuming, public relations and promotion.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): DANC-1501 Dance I, or departmental approval: comparable knowledge or skills.

DANC-2300 Dance III: Technique

02 Semester Credits

Intermediate dance techniques, concepts and theories. Studio work challenges and nurtures student's creative and interpretive ability and performance techniques.

Lecture 00 hours. Laboratory 04 hours.

Prerequisite(s): DANC-1510 Dance II, or departmental approval: comparable knowledge or skills.

DANC-2310 Dance IV: Technique

02 Semester Credits

Advanced dance techniques emphasizing dynamic variety and challenging physical limitations and movement memory. Exploration of different modern techniques and dance accompaniment applied to studio work.

Lecture 00 hours. Laboratory 04 hours.

Prerequisite(s): DANC-2300 Dance III: Technique, or departmental approval: comparable knowledge or skills.

DANC-2400 African Dance II**01 Semester Credit**

Provides a deeper exploration of the fundamentals and basic movements of dances from West Africa. Experience traditional dances that celebrate rites of passage, harvest, courtship and healing/celebration of life. Through these traditional dances and rhythms, dancers will gain deeper understanding of the commonalities of dance and music in world cultures and build mutually supportive relationships. Dancers assume leadership and increase individual contributions to community by working towards a final presentation. May be repeated up to four times for credit.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): DANC-1401 African Dance I.

DANC-2520 Ballet II**01 Semester Credit**

Second in a three-course sequence. Covers intermediate classical ballet technique to prepare students for more advanced training in ballet. Emphasis will be placed on mastery of fundamental ballet exercises at the barre, with intermediate level execution of center floor combinations. Students will follow a typical ballet class structure with an emphasis on clarity of movement, and increased speed, and proper technique. May be repeated up to four times for credit.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): DANC-1520 Ballet I.

DANC-2530 Contemporary/Modern Dance II**02 Semester Credits**

Second in a three-course sequence. Continued practice of fundamental movement vocabulary and concepts of contemporary/modern dance. Warm up, center, and traveling movement sequences practiced on the floor, standing, and through studio space. Further emphasis on body awareness, spatial awareness, musicality, and clarity. Develop the body as an expressive instrument. Build biomechanical, aesthetic, and historical foundations for further contemporary/modern dance training. May be repeated up to four times for credit.

Lecture 00 hours. Laboratory 04 hours.

Prerequisite(s): DANC-1530 Contemporary/Modern Dance I, or departmental approval.

DANC-2540 Jazz Dance II**01 Semester Credit**

Second in a two-course sequence. Continuation of the principles of jazz dance technique and styles. Students will further explore the principles of basic physical skills, terminology, and history of jazz at an intermediate level. The course is taught in progression, teaching basics in the beginning and each week building upon that foundation. May be repeated up to four times for credit.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): DANC-1540 Jazz Dance I.

DANC-2620 Ballet III**01 Semester Credit**

Final class in a three-course sequence. Building on the fundamentals of prior classes, students will apply technique to the execution of performing complex combinations across the floor. Development of spatial awareness, musicality, strength, and flexibility will be incorporated with additional emphasis on movement dynamics. Proper jumping, leaping, and turning techniques will be emphasized. May be repeated up to four times for credit.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): DANC-2520 Ballet II.

DANC-2630 Contemporary/Modern Dance III**02 Semester Credits**

Last in a three-course sequence. Further practice of movement vocabulary and concepts of contemporary/modern dance with emphasis on increasing physical competence and application. Warm up, center, and traveling movement sequences practiced on the floor, standing, and through studio space. Further emphasis on body awareness, spatial awareness, musicality, clarity, and quality of movement. Utilize the body as an expressive instrument. Build biomechanical, aesthetic, and historical foundations for further contemporary dance training. May be repeated up to four times for credit.

Lecture 00 hours. Laboratory 04 hours.

Prerequisite(s): DANC-2530 Contemporary/Modern Dance II, or departmental approval.

DANC-2730 Teaching Dance**03 Semester Credits**

Introduction to the techniques, principles, philosophies, and methodologies of teaching dance. Covers the fundamentals of teaching dance in various settings. Recommended for individuals who have an interest in teaching dance.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): DANC-1100 Dance Appreciation, and DANC-1520 Ballet I, and DANC-1530 Contemporary/Modern Dance I; and DANC-1540 Jazz Dance I, or DANC-1401 African Dance I.

DANC-2940 Field Experience

01-03 Semester Credits

Experience in an approved work activity under supervision of worksite supervisor and faculty member or program manager. Work activity may be paid or unpaid and must be related to a student's learning or occupational objectives. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 12 hours per week of field experience per credit for 15 weeks. 180 hours total per credit hour.

Prerequisite(s): Departmental approval.

DEAF INTERPRETIVE SERVICES - DIS

DIS-1300 Interpreting Fundamentals

03 Semester Credits

History of interpreting and survey of the profession. Introduction to Registry of Interpreters of the Deaf's (RID) Code of Ethics, and certification process. Orientation to Deaf community, language and culture. Introduction to basic interpreting settings. Research into variety of topics about the profession. Present the cognitive model of interpreting.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

DIS-1310 Interpreting I

02 Semester Credits

First in two-course sequence. Theoretical and practical approach to sign language interpreting, including platform and interview-style interpreting. Practical application in rendering spoken messages into American Sign Language. Role-playing in various basic interpreting situations. Exposure to other communication systems.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): DIS-1300 Interpreting Fundamentals and departmental approval: admission to the program.

DIS-1402 American Sign Language Linguistics

03 Semester Credits

Study of linguistic principles of American Sign Language (ASL) by comparing lexicon and syntax of ASL to other sign systems and English. Analysis of current research in the areas of phonology, morphology, semantics, syntax and sociolinguistic structure of ASL. Comparison of two major systems for describing signs and how they are used in the language, the Stokoe System and the Liddell/Johnson Model. Study sociolinguistic aspects of

ASL as it is used among Deaf individuals. Analysis of linguistic structures within ASL.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to program.

DIS-1740 Field Experience Lab I

01 Semester Credit

First in a two-course sequence. Companion course to Field Experience I. Practical approach to sign language interpreting, in a lab setting, with emphasis on the various and unique situations that occur in the field of interpreting. Analysis of interpreting skills and ethical choices as they relate to distinct scenarios and the Registry of Interpreters for the Deaf (RID) Code of Professional Conduct.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): ASL-2420 Advanced American Sign Language II, and DIS-2310 Interpreting II, and DIS-2320 Educational Interpreting, and THEA-1500 Acting I; and concurrent enrollment in DIS-1940 Field Experience I; and concurrent enrollment in DIS-1971 Field Experience Seminar I.

DIS-1940 Field Experience I

01 Semester Credit

First in two-course sequence. Experience a variety of situations and concepts in actual work settings through observational and practical interpreting experiences. K-12 educational and community-based experiences required. Supervision by college-approved interpreters.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 12 hours per week for 15 weeks (180 hours total).

Prerequisite(s): ASL-2420 Advanced American Sign Language II, and DIS-2310 Interpreting II, and DIS-2320 Educational Interpreting; and concurrent enrollment in DIS-1740 Field Experience Lab I; and concurrent enrollment in DIS-1971 Field Experience Seminar I.

DIS-1971 Field Experience Seminar I

01 Semester Credit

First in a two-course sequence. Companion seminar to Field Experience I. Provides opportunities for sharing educational and community-based practicum experiences through log entries, videotapes, and group discussions. Includes preparation for national certification examination. Current issues in the interpreting field are discussed.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Seminar: 1 hour per week.

Prerequisite(s): ASL-2420 Advanced American Sign Language II, and DIS-2310 Interpreting II, and DIS-2320 Educational Interpreting; and concurrent enrollment in DIS-1740 Field Experience Lab I; and concurrent enrollment in DIS-1940 Field Experience I.

DIS-2300 Transliterating**02 Semester Credits**

Theoretical and practical approach to process of sign language transliterating. Render spoken English messages into signed English, as well as signed English syntax into spoken English through role-play. Role-playing and vocabulary-building in English structures, including idiomatic phrasing.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): ASL-2412 Advanced American Sign Language I, and DIS-1310 Interpreting I.

DIS-2310 Interpreting II**02 Semester Credits**

Development of techniques learned in Interpreting I. Various types and situations in interpreting and public speaking also discussed and performed. Application of the Registry of Interpreters for the DEAF (RID) Code of Ethics and the Educational Interpreter's Code of Conduct.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): ASL-2412 Advanced American Sign Language I, and DIS-1310 Interpreting I, and PHIL-1000 Critical Thinking.

DIS-2320 Educational Interpreting**03 Semester Credits**

Analysis and monitoring of students' understanding of interpreting/transliterating in educational setting. Application of Educational Code of Ethics, Ohio Guidelines for Educational Interpreters, manual code systems, and technical vocabulary. Study of history of Deaf Education, educational laws and support services, child development, and best practices in educational setting.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): DIS-1300 Interpreting Fundamentals, and DIS-1310 Interpreting I.

DIS-2410 Voicing**02 Semester Credits**

Development of voicing skills needed in voice-to-sign interpreting for people who are deaf, with emphasis on public speaking, signing and performance techniques. Emphasis on vocabulary selection, vocal inflection, and register in multiple settings, as well as various sign systems.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): ASL-2420 Advanced American Sign Language II, and DIS-2300 Transliterating, and DIS-2310 Interpreting II, and SPCH-1010 Fundamentals of Speech Communication.

DIS-2420 Advanced Voicing**02 Semester Credits**

Advanced development of voicing skills needed in voice-to-sign interpreting for people who are deaf, with emphasis on public speaking, signing and performance techniques. Emphasis on in-depth analysis of vocabulary selection, vocal inflection, and register in multiple settings, as well as various sign systems.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): DIS-2410 Voicing, and DIS-2300 Transliterating, and DIS-2310 Interpreting II, and ASL-2420 Advanced American Sign Language II.

DIS-2740 Field Experience Lab II**01 Semester Credit**

Second in a two-course sequence. Companion course Field Experience II. Practical approach to advanced sign language interpreting, in a lab setting, with emphasis on the various and unique situations that occur in the field of interpreting. In-depth analysis of advanced interpreting skills and ethical choices as they relate to distinct scenarios and the Registry of Interpreters for the Deaf (RID) Code of Professional Conduct.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): ASL-2420 Advanced American Sign Language II, and DIS-2310 Interpreting II, and DIS-2320 Educational Interpreting, and DIS-2410 Voicing; and concurrent enrollment in DIS-2940 Field Experience II; and concurrent enrollment in DIS-2971 Field Experience Seminar II.

DIS-2940 Field Experience II**01 Semester Credit**

Second in two-course sequence. Experience a variety of situations and concepts in actual work settings through observational and practical interpreting experiences. K-12 educational and community-based experiences required. Supervision by college-approved interpreters.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 12 hours per week for 15 weeks (180 hours total)

Prerequisite(s): ASL-2420 Advanced American Sign Language II, and DIS-1402 American Sign Language Linguistics, and DIS-2310 Interpreting II, and DIS-2410 Voicing, and DIS-2320 Educational Interpreting; and concurrent enrollment in DIS-2740 Field Experience Lab II; and concurrent enrollment in DIS-2971 Field Experience Seminar II.

DIS-2971 Field Experience Seminar II

01 Semester Credit

Capstone course in Deaf Interpretive Services, and companion seminar to Field Experience II. Supplements practicum experience by providing opportunities for sharing experiences through log entries, videotapes, and group discussions. Continued preparation for national certification examination. Resume writing and professional development opportunities. Stress management and health issues.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Seminar: 1 hour a week.

Prerequisite(s): ASL-2420 Advanced American Sign Language II, and DIS-2300 Transliterating, and DIS-2310 Interpreting II, and DIS-2410 Voicing, and DIS-2320 Educational Interpreting; and concurrent enrollment in DIS-2740 Field Experience Lab II; and concurrent enrollment in DIS-2940 Field Experience II.

DENTAL HYGIENE - DENT

DENT-1300 Preventive Oral Health Services I

04 Semester Credits

Introduction to dental hygiene practice including professionalism, infection control, medical history, vital signs, oral inspection, preventive oral health, oral accretions, technique for the oral prophylaxis and medical emergencies.

Lecture 02 hours. Laboratory 06 hours.

Prerequisite(s): Departmental approval: admission to program.

DENT-1311 Dental Anatomy, Histology & Embryology

02 Semester Credits

Study of the form, function and comparative anatomy of primary and permanent teeth, tooth numbering, and dentition periods. Embryologic development of the face, neck, orofacial structures and teeth. Histologic study of the gingiva, oral mucosa and attachment apparatus.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Concurrent enrollment in DENT-1300 Preventive Oral Health Services I.

DENT-1320 Dental Hygiene Fundamentals

01 Semester Credit

Reinforcement of first term clinical skills with an emphasis on radiographic technique, principles of instrumentation and patient assessment.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): Concurrent enrollment in DENT-1300 Preventive Oral Health Services I; and concurrent enrollment in DENT-1330 Radiology; and concurrent enrollment in DENT-1311 Dental Anatomy, Histology & Embryology, and departmental approval.

DENT-1330 Radiology

03 Semester Credits

History and development of the x-ray, its nature and properties. Safety precautions and uses of x-rays in dentistry. Theory and practice in the fundamentals of oral radiographic technique. Image receptor placement, tube angulation, processing, scanning, mounting and interpretation of images. Film, digital sensor, phosphor plate and panoramic exposures. Students will expose image receptors on a manikin. Consists of lecture modules of instruction correlated with weekly laboratory modules.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Concurrent enrollment in DENT-1300 Preventive Oral Health Services I.

DENT-1341 Foundational Principles of Dental Hygiene Practice

01 Semester Credit

Study of ethical, moral and professional topics in Dental Hygiene. Introduction to ethical theories and principles related to patient care and decision-making models. Exploration of ethical dilemmas through applied case scenarios. Discussion and application of required policies and procedures related to the health and safety of the dental hygienist and patient.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval, or acceptance to the Dental Hygiene program.

DENT-1400 Preventive Oral Health Services II

05 Semester Credits

Implementation of preventive oral health. Students provide oral health treatments to clients in the dental hygiene clinic. Topics include the special needs of patients with oral rehabilitation, pain management, geriatric concerns, oral cancer, handicaps, mental disorders, cardiovascular disease and diabetes.

Lecture 01 hour. Laboratory 12 hours.

Prerequisite(s): DENT-1300 Preventive Oral Health Services I.

DENT-1410 Current Concepts in Dental Materials

02 Semester Credits

Physical properties of dental materials and basic principles of their preparation. Application of principles of dental materials by manipulating gypsum, cements, bases, liners, resin, amalgam, impression materials, and pit and fissure sealant materials in the laboratory and/or clinical setting.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): DENT-1300 Preventive Oral Health Services I.

DENT-1420 Periodontics I**02 Semester Credits**

Study of the anatomy and histology of the periodontium in health and disease. Focus on the pathogenesis of the various classifications of gingival and periodontal diseases: microbiological, host response, local and systemic risk factors. Contemporary periodontal adjuncts considered. Major research paper required.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): DENT-1300 Preventive Oral Health Services I.

DENT-1431 Head and Neck Anatomy**02 Semester Credits**

Study of structure and function of head and neck. General anatomy of the skull, related muscles, vascular and nerve supply and lymphatics of the region considered. Focus on muscles of mastication and their relationship to the temporomandibular joint; facial and trigeminal nerves and their relationship with dental injections. Discussion on spread of infection and its clinical manifestations.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): DENT-1300 Preventive Oral Health Services I.

DENT-1440 General and Oral Pathology**02 Semester Credits**

General principles of pathology including, inflammation, neoplasia, metabolic and endocrine disturbances, and other systemic diseases affecting the general and oral health of the patient.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): DENT-1311 Dental Anatomy, Histology & Embryology and DENT-1300 Preventive Oral Health Services I.

DENT-2100 Dental Hygiene Clinical Skills**Reinforcement****01-02 Semester Credits**

Designed for students desiring to improve dental hygiene clinical skills. Emphasis on the reinforcement of assessment, instrumentation, calculus detection and removal, radiographic techniques and medical emergency situations. Possible offsite clinical outreach experience included. Also appropriate for licensed hygienists returning to the workforce or students requiring remediation of skills prior to sitting for a clinical board examination.

Lecture 00 hours. Laboratory 03-06 hours.

Prerequisite(s): DENT-1300 Preventive Oral Health Services I, or departmental approval.

DENT-2200 Local Anesthesia and Pain Management**02 Semester Credits**

Study of the anatomy, pharmacological and psychological aspects, systemic complications and medical emergencies related to pain management in the dental environment. Laboratory experience in the administration of local anesthesia.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): DENT-1431 Head and Neck Anatomy, or departmental approval.

DENT-2300 Preventive Oral Health Services III**05 Semester Credits**

Continuation of the study and clinical application of the principles involved in the provision of oral prophylaxis and periodontal treatment, exposure of radiographs, application of preventive therapeutics and the development of individualized self-care education plans. Case Presentation in verbal and written form.

Lecture 01 hour. Laboratory 12 hours.

Prerequisite(s): DENT-1400 Preventive Oral Health Services II.

DENT-2320 Periodontics II**02 Semester Credits**

Study of advanced non-surgical and surgical treatment modalities for periodontal diseases. Discussion of soft tissue management, dental implants and periodontal emergencies. Presentation on human immunodeficiency virus and its clinical manifestations. Laboratory provides practicum experience with non-surgical treatment of periodontally involved clients.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): DENT-1420 Periodontics I, and BIO-2500 Microbiology, or departmental approval.

DENT-2332 Pharmacology and Therapeutics**02 Semester Credits**

Discussion of pharmacological effects of drugs and anesthetics, adverse reactions, and their usual indications and contraindications for preoperative and postoperative client care. Overview of agents used specifically for pain management and medical emergencies presented, referencing the health history and dental hygiene assessment for treatment protocols.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): DENT-1400 Preventive Oral Health Services II, and BIO-2500 Microbiology.

DENT-2340 Community Oral Health I
01 Semester Credit

Study of principles of public health dentistry. Research design as it relates to scientific journal articles. Concepts of biostatistics, public health promotion, prevention of oral disease, and dental health education. Review of special needs programs and public health dental care approach to preventive dentistry. Eight hours of community service.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DENT-1400 Preventive Oral Health Services II.

DENT-2400 Preventive Oral Health Services IV
05 Semester Credits

Continuation of clinical experience integrating social and basic sciences within the scope of dental hygiene practice. Emphasis on professionalism, time management, and advanced dental hygiene techniques. Incorporation of nutritional counseling procedures.
Lecture 01 hour. Laboratory 12 hours.
Prerequisite(s): DENT-2300 Preventive Oral Health Services III and DIET-1220 Nutrition for Dental Hygiene.

DENT-2440 Community Oral Health II
01 Semester Credit

Review of concepts introduced in Community Oral Health I. Revision of principles of public health dentistry. Concepts of program planning, epidemiology, and organization of dental care delivery system. Research design as it relates to the planning, implementing, and evaluating a community outreach project. Eight hours of community service.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DENT-2340 Community Oral Health I.

DENT-2990 Dental Hygiene Practice
01 Semester Credit

Capstone course in Dental Hygiene. Preparation for entry into the dental hygiene profession. Topics include seeking and preparing for employment, obtaining a dental hygiene license, legal and ethical concerns of dental hygiene practice, aspects of practice management and planning for the future.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): DENT-2300 Preventive Oral Health Services III.

DIAGNOSTIC MEDICAL SONOGRAPHY - DMS

DMS-1071 Concepts of Physics in Diagnostic Sonography
02 Semester Credits

Introduction to general physical concepts and related mathematics. Motion, major laws of physics, properties of matter, thermodynamics, basic electricity and electromagnetism, light properties, sound properties, and nuclear physics and their relation to diagnostic ultrasound discussed.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0965 Intermediate Algebra or appropriate score on Math Placement Test to enroll in MATH-1530 College Algebra, and eligibility for ENG-1010 College Composition I.

DMS-1303 Introduction to Sonography
02 Semester Credits

Introduction to the profession of Diagnostic Medical Sonography. Topics focus on professionalism, sonographic terminology, anatomical scanning planes, standard presentation and annotation of ultrasound images, body mechanics, and ergonomics with an overview of diagnostic related imaging specialties.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BIO-2331 Anatomy and Physiology I, or concurrent enrollment; and eligibility for ENG-1010 College Composition I.

DMS-1311 Initial Sonographic Scanning
02 Semester Credits

Application of transducer manipulations, instrumentation controls, body mechanics, sonographic scanning techniques, interpersonal communication, recognition of anatomic structures, and practice of patient care skills in laboratory setting under personal supervision of Registered Diagnostic Medical Sonographer.
Lecture 00 hours. Laboratory 06 hours.
Prerequisite(s): DMS-1401 Abdominal Sonography I, or DMS-1500 Gynecologic and Obstetrical Sonography; or DMS-1602 Echocardiography I, or DMS-1701 Vascular Sonography I, and MA-1010 Introduction to Medical Terminology or concurrent enrollment or MA-1020 Medical Terminology I or concurrent enrollment or departmental approval: admission to Diagnostic Medical Sonography program.

DMS-1320 Introduction to Sonographic Scanning

01 Semester Credit

Introduction to and evaluation of dexterity, visual acuity and sensitivity required to create a sonographic image essential to Diagnostic Medical Sonography.

Demonstration through the application and manipulation of instrumentation, body mechanics, image annotation and recognition of anatomic structures.

Lecture 0.5 hours. Laboratory 1.5 hours.

Prerequisite(s): DMS-1071 Concepts of Physics in Diagnostic Sonography, or concurrent enrollment; and DMS-1303 Introduction to Sonography, or concurrent enrollment.

DMS-1351 Patient Care Skills

01 Semester Credit

Discussion, demonstration and practice of patient care skills and practical application of basic medical techniques in a lab setting. Introducing principles of patient care including professional communication with diverse populations, safe transferring skills, assessing and attending to patient needs and infection control.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment.

DMS-1381 Cardiac Diagnostic Procedures

03 Semester Credits

Theory and laboratory practice of entry-level cardiovascular procedures of electrocardiography (ECG). Interpretation practice from 12 lead ECG tracings.

Fundamentals of Holter monitoring, and pacemakers.

Emphasis on technical accuracy in operational, problem solving and quality control skills.

Lecture 2.5 hours. Laboratory 1.5 hours.

Prerequisite(s): None.

DMS-1401 Abdominal Sonography I

04 Semester Credits

Study of adult and pediatric normal anatomy and anatomic variants, physiology, pathology, and pathophysiology of the upper abdomen, peritoneal and retroperitoneal cavity including potential spaces, non-cardiac chest, liver, gallbladder, pancreas, urinary system, gastrointestinal system, and abdominal vasculature as visualized by ultrasound. Doppler and color Doppler applications for the liver, gallbladder, pancreas, urinary system, gastrointestinal system, portal system, and great vessels. Correlation to other imaging modalities.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Concurrent enrollment in DMS-1311 Initial Sonographic Scanning.

DMS-1500 Gynecologic and Obstetrical Sonography

04 Semester Credits

Study of normal anatomy and anatomic variants, physiology, pathology, and pathophysiology of female pelvis (non-pregnant, post-partum and postmenopausal) and female reproductive system as related to sonography.

Includes monitoring infertile patient. Anatomy, physiology, anomalies, and pathology of maternal, embryo, and fetal anatomic structures during the first trimester studied. Delineates purpose and appropriateness of transabdominal versus transvaginal scanning approaches with associated patient and ethical issues.

Doppler and color Doppler applications and biometrics of non-gravid uterus and ovaries discussed. Includes demonstration of transabdominal examination.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Concurrent enrollment in DMS-1311 Initial Sonographic Scanning.

DMS-1602 Echocardiography I

04 Semester Credits

Theory of echocardiography. Study of normal anatomy, anatomic variants, physiology, pathology, and pathophysiology of the heart with ultrasound. Visual pathology recognition and identification on transthoracic examination with an understanding of etiologies of cardiovascular diseases and their affects. Basic understanding of physical concepts and how ultrasound is created and used in an echocardiogram.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Concurrent enrollment in DMS-1311 Initial Sonographic Scanning.

DMS-1701 Vascular Sonography I

04 Semester Credits

Specialized study of cerebrovascular and peripheral arterial vascular system as related to ultrasound imaging.

Focus on anatomy, hemodynamics, pathology and sonographic appearance of normal and diseased arteries.

Discussion of direct/indirect testing methods and the sonographic findings. Explanation of medical and surgical interventions used in the treatment of vascular disease.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Concurrent enrollment in DMS-1311 Initial Sonographic Scanning.

DMS-1940 Field Experience I

01 Semester Credit

Supervised practical application of sonography scanning techniques in clinical setting under personal supervision of registered diagnostic medical sonographer or qualified physician. Emphasis on simple-level scanning skills. Student develops skills related to departmental processes, procedures, protocols, and patient care. Clinical experience in an ultrasound lab.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 192 hours per semester offering.

Prerequisite(s): DMS-1311 Initial Sonographic Scanning.

DMS-1950 Field Experience II

02 Semester Credits

Supervised practical application of sonography scanning techniques in clinical setting under personal and direct supervision of registered diagnostic medical sonographer or qualified physician. Emphasis on intermediate-level scanning skills. Continued performance of basic-level procedures. Student continues skill development related to departmental processes, procedures, protocols, and patient care. Clinical experience in an ultrasound lab.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 360 hours per semester offering.

Prerequisite(s): DMS-1940 Field Experience I.

DMS-2301 Intermediate Sonographic Scanning

02 Semester Credits

Advanced application of transducer manipulations, body mechanics, sonographic scanning techniques, interpersonal communication, recognition of anatomic structures, and practice of patient care skills in laboratory setting under personal supervision of Registered Diagnostic Medical Sonographer. Continued competency in scanning basic exams. Developing scanning skills of intermediate level sonographic procedures.

Lecture 00 hours. Laboratory 06 hours.

Prerequisite(s): DMS-1311 Initial Sonographic Scanning; and concurrent enrollment in DMS-2401 Abdominal Sonography II and concurrent enrollment in DMS-2500 Obstetrical Sonography; or concurrent enrollment in DMS-2602 Echocardiography II; or concurrent enrollment in DMS-2702 Vascular Sonography II.

DMS-2330 Sonographic Pathology

03 Semester Credits

Specialized study of common disease processes relevant to sonographic imaging. Discussion of differences between inflammatory and infectious diseases, congenital, acquired, and hereditary diseases, and benign, malignant, and metastatic neoplasia in the cardiovascular, digestive, endocrine, lymphatic, respiratory, reproductive, and urinary systems.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BIO-2341 Anatomy and Physiology II; and DMS-1303 Introduction to Sonography; and MA-1010 Introduction to Medical Terminology, or MA-1020 Medical Terminology I; and eligibility for ENG-1010 College Composition I.

DMS-2350 Sonographic Instruments and Physics

03 Semester Credits

Physics and related mathematics as applied to ultrasound including the study of acoustical principles, sound transmission, signal processing, transducer construction, ultrasound instrumentation, quality assurance, and bioeffects of diagnostic ultrasound on soft tissue. Study of resolution, display modes, hemodynamics, Doppler principles and related instrumentation as it relates to

ultrasound. Modular courses DMS-235A and DMS-235B will also meet the requirements for this course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): DMS-1071 Concepts of Physics in Diagnostic Sonography and eligibility for ENG-1010 College Composition I.

DMS-235A Sonographic Principles, Performance, and Safety

02 Semester Credits

Physics and related mathematics as applied to ultrasound including the study of acoustical principles, sound transmission, signal processing, transducer construction, ultrasound instrumentation, quality assurance, and bioeffects of diagnostic ultrasound on soft tissue.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): DMS-1071 Concepts of Physics in Diagnostic Sonography and eligibility for ENG-1010 College Composition I.

DMS-235B Doppler Principles and Instrumentation

01 Semester Credit

Study of resolution, display modes, hemodynamics, Doppler principles and related instrumentation as it relates to ultrasound.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): DMS-1071 Concepts of Physics in Diagnostic Sonography and eligibility for ENG-1010 College Composition I.

DMS-2401 Abdominal Sonography II

04 Semester Credits

Continuation of normal anatomy and anatomic variants, physiology, pathology, and pathophysiology of the abdominal cavity and the retroperitoneum to include renal, adrenal, splenic, and lymphatic, as it pertains to diagnostic ultrasound. Normal anatomy and anatomic variants, physiology, pathology and pathophysiology of superficial structures to include the breast, neck, thyroid, and male reproductive system. Study of Doppler and Color Flow vascular applications of above mentioned organs and systems. Introduction to scanning of the carotid artery and lower extremity venous vasculature.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): DMS-1401 Abdominal Sonography I; and concurrent enrollment in DMS-2301 Intermediate Sonographic Scanning.

DMS-2450 Breast Sonography

02 Semester Credits

In-depth study of breast sonography. Study of breast anatomy and physiology as it pertains to medical ultrasound. Detailed discussion of breast pathologies, anatomic variants, benign and malignant lesions, and their sonographic appearances. Sonographic physics pertinent to the breast ultrasound exam will be incorporated.

Overview of related breast imaging modalities, breast surgical procedures, and breast pathology treatments.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): DMS-1950 Field Experience II.

DMS-2500 Obstetrical Sonography

04 Semester Credits

Study of normal anatomy and anatomic variants, physiology, pathology and pathophysiology of the gravid pelvis and fetus during second and third trimesters as related to sonography. Focus on fetal biometry, fetal size and age assessment, fetal maturity of second and third trimester, conditions involving multiple gestations, fetal abnormalities, and effects of maternal disease on the pregnancy. Also includes sonographic procedures for amniocentesis, chorionic villus sampling, Doppler and color Doppler applications of uterine artery, umbilical cord and fetal aorta. Ethical issues in obstetric sonography and support of parental-fetal bonding discussed.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): DMS-1500 Gynecologic and Obstetrical Sonography; and concurrent enrollment in DMS-2301 Intermediate Sonographic Scanning.

DMS-2602 Echocardiography II

04 Semester Credits

Introduction to physical signs symptoms, and indications for an echocardiogram reviewed for each major pathology. History and physical examination, laboratory tests, invasive and non-invasive hemodynamic evaluations used to assess various cardiovascular pathologies. Theory and manipulation of Doppler echocardiography with an introduction to interrogation of technical findings.

Determination of blood flow within the normal and diseased heart using Doppler echocardiography and applying principles of hemodynamic effects learned. Color and spectral Doppler techniques discussed as applied to clinical transthoracic and transesophageal echocardiographic examinations as well as stress echocardiography.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): DMS-1602 Echocardiography I; and concurrent enrollment in DMS-2301 Intermediate Sonographic Scanning.

DMS-2650 Pediatric Cardiac Sonography

03 Semester Credits

Study of normal and abnormal cardiac anatomy, fetal heart development and perinatal circulation specific to congenital cardiovascular defects. Focus on pediatric echo protocol, exam considerations for the patient population

with congenital heart abnormalities (pediatric and adults). Discussion and case study review of simple to complex congenital heart abnormalities. Sonographer's role in the operating room and catheterization lab.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): DMS-1950 Field Experience II or departmental approval.

DMS-2702 Vascular Sonography II

04 Semester Credits

Specialized study of peripheral venous system and abdominal vessels as related to ultrasound imaging. Focus on anatomy, venous hemodynamics, pathology, sonographic appearance of normal and diseased vessels, testing methods and sonographic impressions. Discussion of penile sonography, test validation/statistics and the correlation of related diagnostic imaging modalities.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): DMS-1701 Vascular Sonography I; and concurrent enrollment in DMS-2301 Intermediate Sonographic Scanning.

DMS-2750 Principles of Vascular Imaging for Abdomen and Cardiac Sonographers

03 Semester Credits

Course designed for sonographers experienced in scanning abdomen and cardiac ultrasound exams. Specialized advanced study of selected vascular examinations in the cerebrovascular, peripheral arterial and peripheral venous systems. Examinations include: carotid, arterial physiologic lower extremity, venous duplex upper and lower extremity. Focus on anatomy, hemodynamics, pathology, sonographic appearance of normal and diseased vessels, specific testing methods and sonographic impressions. This course is not intended to fulfill the requirements necessary to take the credentialing examination for vascular technology.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): DMS-1950 Field Experience II, or departmental approval.

DMS-2760 Transcranial Doppler Sonography

01 Semester Credit

Specialized advance study of intracranial circulation using Transcranial Doppler (TCD) and Transcranial Duplex Imaging (TCI). Focus on anatomy, pathology, applications of TCD/TCI, sonographic scanning technique and interpretation of TCD and TCI.

Lecture .5 hour. Laboratory 1.5 hours.

Prerequisite(s): DMS-2301 Intermediate Sonographic Scanning or concurrent enrollment.

DMS-2940 Field Experience III
03 Semester Credits

Supervised practical application of sonography scanning techniques in clinical setting under direct supervision of registered diagnostic medical sonographer or qualified physician. Independent scanning of all levels of procedures with emphasis on accuracy and exam duration. Student focuses skill development of professional and technical accuracy and speed. Clinical experience in an ultrasound lab.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 576 hours per semester offering.

Prerequisite(s): DMS-1950 Field Experience II.

DMS-2950 Field Experience IV
01 Semester Credit

Supervised practical application of sonography scanning techniques in clinical setting under direct supervision of registered diagnostic medical sonographer or qualified physician. Independent scanning of all levels of procedures with emphasis on accuracy and exam duration. Student focuses skill development of professional and technical accuracy and speed. Clinical experience in an ultrasound lab.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 192 hours per semester.

Prerequisite(s): DMS-2940 Field Experience III.

DMS-2960 Supplemental Field Experience
02 Semester Credits

Supervised practical application of sonography scanning techniques in clinical setting under personal supervision of registered diagnostic medical sonographer or qualified physician. Emphasis on intermediate scanning skills in the supplemental sonographic specialty. Student develops skills specific to the specialty as related to departmental processes, procedures, protocols, and patient care. Experience in a clinical sonography lab setting.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 360 hours per semester offering.

Prerequisite(s): DMS-2950 Field Experience IV.

DMS-2981 Specialty Registry Review
01 Semester Credit

Global review of anatomy, physiology, and pathology in relation to sonography. Test taking skills, image identification, and procedural scenarios covered. Special focus on exam content outline topics to assist student preparing to take national credentialing examinations for sonography.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): DMS-2301 Intermediate Sonographic Scanning.

DMS-2983 Supplemental Specialty Registry Review
01 Semester Credit

Global review of anatomy, physiology, and pathology in relation to the specific sonographic specialty. Test taking skills, image identification, and procedural scenarios covered. Special focus on the specialty exam content outline topics to assist student preparing to take supplemental national credentialing examinations for sonography.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): DMS-2301 Intermediate Sonographic Scanning.

DMS-2985 Physics Review
01 Semester Credit

Global review of physics in relation to sonography. Test taking skills, image identification, and physical concept scenarios covered. Special focus on exam content outline topics to assist student preparing to take national credentialing examinations for sonography.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): DMS-235A Sonographic Principles, Performance, and Safety or concurrent enrollment; and DMS-235B Doppler Principles and Instrumentation or concurrent enrollment, or DMS-2350 Sonographic Instruments and Physics or concurrent enrollment.

DMS-2991 Sonography Capstone
01 Semester Credit

Capstone course in Diagnostic Medical Sonography. Assessment of one's integration of the coursework, knowledge, experience and skills as Diagnostic Medical Sonography student. Preparation for employment interview and presentation of qualifications through a portfolio. Importance of credentialing, profession involvement and continuing education stressed.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): DMS-1950 Field Experience II.

DIETETIC TECHNOLOGY - DIET

DIET-1050 Sports Nutrition
03 Semester Credits

Nutrition implications for human physical and athletic performance including energy and specific nutrients. Emphasis on food selection to enhance performance and nutrition recommendations with regard to varying athletic activities. Calculation of individual energy needs based on weight and activity level. Assessment of body composition and appropriate use of ergogenic aids. Designed for the casual exerciser, elite athlete, coaches, trainers, and persons recognizing the importance of nutrition to fitness.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

DIET-1070 Weight Management Techniques for Fitness Trainers**01 Semester Credit**

Fitness trainers will learn appropriate weight management techniques used to teach clients weight management strategies. Determining healthy weight, energy balance, role of exercise and popular weight loss diets discussed. Topics such as eating disorders and the female athlete included.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

DIET-1200 Basic Nutrition**03 Semester Credits**

A scientific study of nutrition designed for nursing, other health care providers and educators. Students will investigate the roles of the nutrients in the functioning of the human body. Overview of nutrient recommendations, food sources and functions of the nutrients, energy requirements, weight control, vegetarianism, and supplement use. Dietary recommendations and food patterns applied to culture, and prevention of nutrition related diseases in a changing society.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I. OAN Approved: OHL016

DIET-1220 Nutrition for Dental Hygiene**02 Semester Credits**

Nutrition principles related to personal and client care. Dental hygiene students will learn how to apply sound nutrition principles to assessing, diagnosing, planning, implementing and evaluating total care of clients, and how to contribute to nutrition well-being of client.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

DIET-1310 Introduction to Dietetics**02 Semester Credits**

Explore information literacy, professionalism, ethics, educational requirements, and governance of the dietetics profession. Includes application of communication, research, and self-assessment practices.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

DIET-1320 Nutrition Applications**01 Semester Credit**

Apply nutrition information to variety of activities to demonstrate competency at dietetic technology student level. The Food Guide Pyramid and Exchange System used to write a variety of menus: low fat, high fiber, low calorie, high protein and vegetarian. Medical terminology and abbreviations used in patient charting included.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I, and DIET-1200 Basic Nutrition or concurrent enrollment.

DIET-1331 Fundamentals of Food Production**04 Semester Credits**

Application of scientific principles, techniques, and methods of food production for normal and therapeutic meals. Use of food production equipment appropriate for different food service systems. Application of nutrition criteria and quality assurance standards.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): MATH-1100 Mathematical Explorations or higher, and DIET-1200 Basic Nutrition, and DIET-1320 Nutrition Applications.

DIET-1580 Cost Control Procedures**01 Semester Credit**

Study of basic food cost control procedures, financial statements and budget preparation as they relate to nutrition services.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): MATH-0955 Beginning Algebra or appropriate Math Placement Score.

DIET-1590 Purchasing Procedures**01 Semester Credit**

Applied Management principles required to deliver food and nutrition programs and services including continuous quality management of food and nutrition services. Topics include: food specifications, procurement systems, and receiving and inventory processes.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): MATH-0955 Beginning Algebra or appropriate math placement test score to enroll in 1000-level Mathematics.

DIET-1600 Introduction to Supervision**03 Semester Credits**

Analysis of food service supervision through use of theories, principles and terminology. Emphasis on management theories, supervision practices, performance/quality improvement, customer satisfactions and outcomes.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, and departmental approval: admission to Dietetic Technology Program.

DIET-1850 Food and Nutrition Systems Practicum 04 Semester Credits

Application of techniques in food production; equipment use and care; employee management; information flow; documentation; sanitation regulations; food service personnel recruitment, training and retention; and quality assurance in a health care facility. Activities provide students opportunity to demonstrate application of knowledge acquired in previous and concurrent nutrition and diet therapy courses.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 14 hours per week.

Seminar: 2 hours per week.

Prerequisite(s): DIET-1200 Basic Nutrition, and DIET-1320 Nutrition Applications; or DIET-1331 Fundamentals of Food Production.

DIET-1940 Dietary Managers Field Experience 01 Semester Credit

Supervised work experience. Twelve clock hours per week gaining practical hands-on-work experience supervising a food service department and conducting initial nutritional assessments on patients. Program manager and/or dietetic technology instructor must approve the student work experience sites. The student spends a minimum of 50 hours under the direct supervision of a registered dietitian. Recommended for healthcare food and nutrition personnel.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 12 clock hours per week.

Prerequisite(s): Departmental approval.

DIET-2301 Medical Nutrition Therapy I 03 Semester Credits

Basic nutrition knowledge applied to medical nutrition therapy and the nutrition care process. Apply medical nutrition therapy using evidence based practice with practice cases.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): DIET-1200 Basic Nutrition, and DIET-1320 Nutrition Applications.

DIET-2311 Medical Nutrition Therapy II 03 Semester Credits

Application of nutrition knowledge to specialized medical nutrition therapy. Moderate to high nutrition risk factors examined. Internal medical and renal disease examined.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): DIET-2301 Medical Nutrition Therapy I.

DIET-2320 Medical Nutrition Therapy III 02 Semester Credits

Application of evidence based practice of medical nutrition therapy in cardiovascular disease and diabetes.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): DIET-2311 Medical Nutrition Therapy II, or concurrent enrollment or departmental approval.

DIET-2410 Life Cycle Nutrition - Pregnancy and Lactation

01 Semester Credit

The study of special nutritional needs, physiology, and health concerns during preconception, pregnancy, lactation, and infancy. Examine evidence-based practices and nutrition tools, promotion of health, and nutrition intervention to reduce risk of nutrition-related concerns during each of the life cycle phases.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

DIET-2420 Life Cycle Nutrition - Nutrition for Children 01 Semester Credit

The study of special nutritional needs, physiology, and nutrition related health concerns: the toddler years through adolescence. Examine evidence based practices and nutrition tools, promotion of health, and nutrition intervention to reduce risk of nutrition-related concerns.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

DIET-2430 Life Cycle Nutrition - Nutrition through Adulthood

01 Semester Credit

Explore the adulthood nutrition life cycle. Includes assessments, health concerns, including cardiovascular disease and diabetes, alternative and complementary care, community nutrition programs and support for low income persons. Introduction to geriatric nutrition and nutritional requirements for the elderly.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): DIET-1200 Basic Nutrition.

DIET-2501 Nutrition Applications in Long Term Care 02 Semester Credits

Concepts and application of nutrition care management processes in the long term care setting. Assessment and documentation of nutritional status according to current regulatory standards. Discussion of quality of life issues specific to nutritional care of long term care resident. Other topics include food/drug interactions, special feeding, alternative feeding, and the interdisciplinary team approach to care.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): DIET-2311 Medical Nutrition Therapy II, and concurrent enrollment in DIET-2862 Geriatric Nutrition Practicum.

**DIET-2850 Medical Nutrition Care Practicum
02 Semester Credits**

Application of dietetic technician skills required in medical nutrition care of patients or residents in acute or long-term care facilities under supervision of registered dietitian. Application and documentation of care plans and patient education. Course provides forum for discussion of practicum experience.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 7 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): DIET-1850 Food and Nutrition Systems Practicum; and concurrent enrollment in DIET-2311 Medical Nutrition Therapy II.

**DIET-2862 Geriatric Nutrition Practicum
02 Semester Credits**

Practicum experience under the supervision of a registered dietitian. Delivery of nutrition care services in a long term care setting. Nutrition assessment, intervention and health promotion.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 7 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): Concurrent enrollment in DIET-2501 Nutrition Applications in Long Term Care, and DIET-2430 Life Cycle Nutrition - Nutrition through Adulthood or concurrent enrollment.

**DIET-2863 Community Nutrition Practicum
02 Semester Credits**

Practicum experience under the supervision of a registered dietitian. Delivery of nutrition care services to community based agencies, ambulatory health settings, or social service agencies. Nutrition intervention, assessment and health promotion.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 7 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): DIET-2410 Life Cycle Nutrition - Pregnancy and Lactation, or concurrent enrollment, DIET-2420 Life Cycle Nutrition - Nutrition for Children, and DIET-2430 Life Cycle Nutrition - Nutrition through Adulthood.

**DIET-2863 Community Nutrition Practicum
02 Semester Credits**

Practicum experience under the supervision of a registered dietitian. Delivery of nutrition care services to community based agencies, ambulatory health settings, or social service agencies. Nutrition intervention, assessment and health promotion.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 7 hours per week.

(112 hours total)

Seminar: 1 hour per week.

Prerequisite(s): DIET-2410 Life Cycle Nutrition - Pregnancy and Lactation, or concurrent enrollment, DIET-2420 Life Cycle Nutrition - Nutrition for Children, and DIET-2430 Life Cycle Nutrition - Nutrition through Adulthood.

**DIET-2990 Dietetic Technology Professional
Development Skills****02 Semester Credits**

Capstone course in Dietetic Technology. Integration of knowledge acquired in basic, technical and non-technical areas in preparation for professional roles and life-long professional growth and development.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): DIET-2501 Nutrition Applications in Long Term Care, or concurrent enrollment.

EARLY CHILDHOOD EDUCATION - ECED**ECED-1010 Introduction to Early Childhood Education:
Children's Development and Programs****04 Semester Credits**

Introduction to child development and philosophy of early childhood education, including developmentally appropriate practices in a variety of child care settings. Identification of effective multicultural and inclusive early childhood learning environments. Recognition of the importance of integrated curriculum as teaching strategy for young children. Introduction to role of the early childhood teacher as facilitator, and the development of effective family/center relationships. Observations in early childhood education settings. Modular courses ECED-101A, ECED-101B, ECED-101C and ECED-101D together will also meet degree requirements for this course.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment.

OAN Approved: OED005

**ECED-1301 Language and Literacy in an Integrated
Curriculum****03 Semester Credits**

Overview of spoken and written language development of young children. Theories and research related to language and literacy development and the role of the teacher in facilitating this development. Planning, implementing, and evaluating developmentally appropriate multicultural materials and experiences for language discovery and learning. Selection and integration of appropriate inclusive literature in early childhood settings. Students participate in lecture/lab setting learning how to listen, talk and read to young children. Five hours of Service Learning required.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs.

Early Childhood Education

ECED-1311 Art and Creative Expression in an Integrated Curriculum

03 Semester Credits

Exploration of planning, organizing, implementing, and evaluating a developmentally appropriate curriculum that fosters the creative and aesthetic development of young children. Preparation, organization, and maintenance of early childhood environment emphasized. Students in lecture/lab setting experience extensive variety of art media suitable for young children. Five hours of service learning required.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ENG-1010 College Composition I and ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs.

ECED-1321 Math and Science Inquiry in an Integrated Curriculum

03 Semester Credits

Introduction to extensive variety of curricular experiences which enhance young children's intellectual curiosity and critical thinking skills. Role of teacher in facilitating science, math, problem solving experiences, scientific methods/learning process and constructivist theory explored. Students participate in lecture/lab setting with variety of hands on problem solving activities. Five hours of Service Learning required.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ENG-1010 College Composition I and ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs.

ECED-1331 Music & Movement in an Integrated Curriculum

03 Semester Credits

Exploration of appropriate methods and materials for implementation of music in early childhood curriculum. Impact of music experience on cognitive, socio-emotional and physical/motor development examined. Connections between emergent literacy, music and brain development and constructivism explored. Includes creative self expression using movement, sounds, songs, musical instruments, selection of recordings, multicultural experiences in music and use of community resources. Five hours of service learning required.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ENG-1010 College Composition I and ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs.

ECED-1400 Administration and Leadership in Early Childhood

04 Semester Credits

Overview of major administrative principles, types of child care centers, legislative mandates, center policies and procedures, insurance ramifications, design of physical facilities, purchasing, budgeting, recordkeeping, and professional public relations. Programmatic formats as

related to philosophical assumptions, educational theories and environmental design with respect to infants, toddlers, preschool and school age settings. Modes of staff support and management including problem solving and conflict resolution surveyed.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs or concurrent enrollment.

ECED-1860 Experience with Young Children in Early Childhood Settings

03 Semester Credits

Practice within diverse early childhood settings. Students introduced to developmentally appropriate care and education of young children within assigned setting. Preparation, organization and maintenance of an educational environment, responsive interaction and communication strategies, and planning and presentation of experiences for young children emphasized. Experience provided in relating to wide array of individuality among children. Cultural, familial and developmental diversity, adjustment of children to group setting and development of positive work relationships emphasized.

Lecture 01 hour. Laboratory 00 hours.

Other Required Hours: Practicum: 7 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): ENG-1010 College Composition I and ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs and ECED-1301 Language and Literacy in an Integrated Curriculum and departmental approval.

ECED-2300 Child Behavior and Guidance

03 Semester Credits

Examination of positive strategies to guide young children, based on developmentally appropriate practices. Emphasis on preparing, organizing and maintaining physically and psychologically safe environments that support children's pro-social behavior. Course study includes appropriate behavioral expectations based on child development, strategies for supporting children's social and emotional development and the consequences of stress and trauma on child development and behavior. Skills strengthened include observing and assessing child behavior. Observations in a childcare center required.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs.

ECED-2401 Families, Communities & Schools
03 Semester Credits

Develop skills to work with families in fostering optimal development and growth of their children. Emphasis on interpersonal techniques that will promote positive relationships with families, schools, and community. Explore various models for family involvement. Focus on working with socially, culturally, and linguistically diverse families.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I; and ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs.

OAN Approved: OED006

ECED-2500 Infant/Toddler Development, Relationships, and Programs

03 Semester Credits

Comprehensive coverage of broad areas of infant and toddler development and care with special emphasis on developmentally appropriate practices for adults who work with children ages birth to three. Major developmental milestones in infant and toddler growth; creation of safe, healthy, and supportive learning environments for children under three. Selection of materials and equipment for center or home-based care; analysis of professional standards for high quality interactions between adults and very young children. Observations in early childhood education settings.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, and ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs.

ECED-2600 CDA Professional Portfolio

01 Semester Credit

Focus on professional development and learning experiences that are demonstrated through a collection of resources, reflective statements of competence, and written professional philosophy to utilize as a tool throughout early childhood education career.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I; and ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs.

ECED-2700 Including Children with Special Needs

03 Semester Credits

Survey course focusing on children with special needs and their families. Emphasis on observation, identification, referral and adaptations of the environment for inclusion of children with disabilities. Family centered interventions, community resources, legal mandates and communication skills necessary to work with families,

children, and specialists in a variety of settings included.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I and ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs.

ECED-2870 Early Childhood Education Student Teaching Practicum

02 Semester Credits

Capstone course in early childhood education. Participation in assigned early childhood education settings under college supervision to develop effective skills with young children, families, and staff. Integration of principles of child development in designing and implementing developmentally appropriate curriculum, assessment and professionalism. Creation of inclusive environments through physical design and respectful, sensitive interactions. Each student will spend 240 hours per semester in field experience.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 16 hours per week.

Prerequisite(s): ECED-1311 Art and Creative Expression in an Integrated Curriculum, ECED-1321 Math and Science Inquiry in an Integrated Curriculum, ECED-1331 Music & Movement in an Integrated Curriculum, ECED-1860 Experience with Young Children in Early Childhood Settings; concurrent enrollment in ECED-2990 Early Childhood Education Student Teaching Seminar, and departmental approval: students must meet with a faculty coordinator prior to registration.

ECED-2990 Early Childhood Education Student Teaching Seminar

03 Semester Credits

Capstone course in early childhood education. Student will focus on consolidation and integration of the knowledge, skills and dispositions associated with becoming an effective, knowledgeable lead/group teacher of young children. Focus includes planning, implementing and assessing curriculum, creating appropriate learning environments, developing professional conduct, and recognizing ethical issues.

Lecture 02 hours. Laboratory 00 hours.

Other Required Hours: Seminar: 1 hour per week.

Prerequisite(s): ECED-2300 Child Behavior and Guidance, or concurrent enrollment; ECED-2401 Families, Communities & Schools, or concurrent enrollment; ECED-2500 Infant/Toddler Development, Relationships, and Programs, ECED-2870 Early Childhood Education Student Teaching Practicum, and students must meet with a faculty coordinator prior to registration or departmental approval.

EARTH SCIENCE - ESCI

**ESCI-1030 Survey of Earth Science
03 Semester Credits**

[This course is cross-listed as PSCI-1030. Credit can only be earned once for either course.] Survey of geology of Earth and its impact on the environment. Earth's structure and composition, earthquakes, plate tectonics, hydrologic cycle, weather, resources and energy alternatives, and current related issues. Intended for non-science majors. To fulfill laboratory science requirements, students should enroll in related laboratory course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

**ESCI-103L Survey of Earth Science Laboratory
01 Semester Credit**

[This course is cross-listed as PSCI-103L. Credit can only be earned once for either course.] Intended for non-science majors. Exercises on rocks and minerals, soils, weather, plate tectonics, energy and may include other related earth science activities. Laboratory activities complement and enrich related lecture course.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): ESCI-1030 Survey of Earth Science or concurrent enrollment.

**ESCI-1040 Weather Studies
03 Semester Credits**

An integrated science course that covers current facts, theories, and technological methods regarding the study of the weather and climate. Weather prediction and real-time weather data analyses are important facets of this course.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

**ESCI-1310 Physical Geography
03 Semester Credits**

Introductory study of physical elements of geography. Includes Earth-Sun relationships, maps, atmospheric components and interactions, elements and controls of weather and climate, water resources and their distribution, vegetation associations, animal associations, ecological relationships, soil types, landforms, and plate tectonics. World distribution, causal relationships and significance to man stressed. To fulfill laboratory science requirements, students should also enroll in related laboratory course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

OAN Approved: OSS006 (1 of 2 courses, both must be taken)

**ESCI-131L Laboratory in Physical Geography
01 Semester Credit**

Laboratory studies include the scientific method, map interpretation and construction, remote sensing, energy transfers, weather components, climate classification, hydrology, pedology, ecology, plant and animal geography, and plate tectonics.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): ESCI-1310 Physical Geography or concurrent enrollment.

OAN Approved: OSS006 (2 of 2 courses, both must be taken)

**ESCI-1410 Physical Geology
03 Semester Credits**

Topics include materials and structures of the Earth; processes and agencies which change Earth's crust. Mineral composition of rocks; work of gravity, water, winds, and glaciers as agents of erosion; volcanoes and earthquakes as forces which change Earth's surface. To fulfill laboratory science requirements, students should also enroll in related laboratory course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

OAN Approved: OSC011 (1 of 2 courses, both must be taken)

**ESCI-141L Laboratory in Physical Geology
01 Semester Credit**

Laboratory studies include minerals, rocks, volcanoes, geologic dating, topographic maps and determination of depositional and erosional features, earthquake epicenter locations, folds and faults, interpretation of geologic maps, plate tectonic processes and boundaries, and field work to become familiar with local geology. Regularly scheduled field trips are integral part of this course.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): ESCI-1410 Physical Geology or concurrent enrollment.

OAN Approved: OSC011 (2 of 2 courses, both must be taken)

**ESCI-141H Honors Physical Geology
03 Semester Credits**

Honors course in Physical Geology. Materials and structures of the Earth; processes and agencies by which the Earth's crust has been and is being changed; rocks and their mineral composition. Work of gravity, water, winds, and glaciers as agents of erosion; volcanoes and earthquakes as forces which change the surface of the Earth. Emphasis on the effects geological events and resources have had on human civilization. To fulfill laboratory science requirements, students should also enroll in Laboratory in Physical Geology.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-101H Honors College Composition I.

ESCI-1510 Historical Geology**03 Semester Credits**

Geologic history of the earth and biota. Special emphasis on North America. Topics include plate tectonics, relative and absolute dating, rocks and their significance as indicators of environment, interpretation of geologic maps, evolution, fossilization, and major groups of fossils. To fulfill laboratory science requirement, students should also enroll in related laboratory course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

OAN Approved: OSC012 (1 of 2 courses, both must be taken)

ESCI-151L Laboratory in Historical Geology**01 Semester Credit**

Laboratory studies include mineral and rock identification, significance of rock type, relative and absolute dating, stratigraphy, fossilization, fossil identification and significance, evolutionary patterns, cladistics, geology and paleontology of the major geologic time divisions, and field work. Required field work is integral part of this course.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): ESCI-1510 Historical Geology or concurrent enrollment.

OAN Approved: OSC012 (2 of 2 courses, both must be taken)

ESCI-1610 Geology of the National Parks**03 Semester Credits**

Studies of each park will include reasons why each area was set apart as a park, its geologic history, its present lithology and topography, and influences of lithology and topography on climatic and biotic factors (and vice versa). Ecological and geologic problems that have arisen because of presence of humans in parks or in adjacent areas also considered. To fulfill laboratory science requirement, students should also enroll in related laboratory course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

ESCI-161L Laboratory in Geology of the National Parks**01 Semester Credit**

Laboratory studies include use of topographic maps, aerial photos, remote sensing images, and geologic maps; volcanism and earthquakes, physiographic provinces; identification of igneous, sedimentary and metamorphic rocks and structures; studies of depositional and erosional features of streams, winds, glaciers, and waves; fossil identification; analyses of climatic and biological data; plate tectonics; investigations into ecological problems of many of national parks. Field work is required.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): ESCI-1610 Geology of the National Parks or concurrent enrollment.

ECONOMICS - ECON**ECON-1210 Survey of Economics****03 Semester Credits**

Overview of economic principles and problems designed to provide general understanding of structure, organization and operation of our economy. Relationship of economy to our social and political welfare and its determination of the fundamental standard of living, on both macro and micro levels.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

ECON-1220 Economic Development of the American Economy**03 Semester Credits**

Evolutionary development of American economic system. Review of changes in economic and organizational structure, emphasizing application of fundamental economic explanation of change.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

ECON-2610 Principles of Macroeconomics**04 Semester Credits**

Non-sequential course which introduces language, tools, methods and topics of economic analysis. Study of broad economy including measurement and analysis of economic activity, government and its roles in a market system, the banking system, monetary policy, economic growth and international economics.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0955 Beginning Algebra or appropriate score on Math Placement Test to enroll in a 1000-level Mathematics course.

OAN Approved: OSS005

ECON-2620 Principles of Microeconomics**04 Semester Credits**

Non-sequential course which introduces language, tools, methods and topics of economic analysis. Study of detailed economy at the firm and industry level with emphasis on market theory (supply/demand), production, and price and output determination as they vary by market structure, and includes current problems and policy concerns.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0955 Beginning Algebra or appropriate score on Math placement test to enroll in a 1000-level Mathematics course.

OAN Approved: OSS004

ECON-2700 The Economics of Money, Banking, and Financial Markets

03 Semester Credits

Examines the economic roles played by financial markets, financial institutions, and money in the determination of business and consumer behavior, personal wealth, and the performance of the economy. Studies key markets, including the bond and stock markets; key institutions, including banks and the Federal Reserve. Monetary theory and policy discussed.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ECON-2610 Principles of Macroeconomics, and ECON-2620 Principles of Microeconomics.

EDUCATION - EDUC

EDUC-1011 Introduction to Education

03 Semester Credits

Designed to introduce the student to the broad and complex field of public education. Emphasis on personal and professional characteristics required for successful teaching. This course also requires 18 hours of field observation in primary and/or secondary school classrooms within the term.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.
OAN Approved: OED001; CTAN Approved: CTED001

EDUC-1020 Educational Technology

03 Semester Credits

Identify, select, evaluate, use, and troubleshoot instructional technology, electronic media, operating and utility software to meet curricular goals. Use instructional design and integration strategies to design and produce developmentally and culturally appropriate materials that align with PRAXIS II and INTASC/Ohio standards.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OED002

EDUC-1411 Individuals with Exceptionalities

03 Semester Credits

Survey course covering the identification, developmental characteristics, and intervention strategies for exceptional children and youth across education and community settings. Attitudes toward exceptional students, parenting exceptional children, and public laws and policies will be defined and discussed. Five hours of service learning in a special education setting required.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): EDUC-1011 Introduction to Education.

OAN Approved: OED004

EDUC-2050 Human Diversity in Education

03 Semester Credits

Relationships between a variety of socio-cultural patterns of students and communities and abilities to instruct.

Development of strategies for increasing the educational potential of all students.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): EDUC-1011 Introduction to Education, or ECED-1010 Introduction to Early Childhood Education: Children's Development and Programs.

ELECTRICAL/ELECTRONIC ENGINEERING TECHNOLOGY - EET

EET-1015 Introduction to Computer Maintenance and Repair

03 Semester Credits

Introduction to the field of personal computer maintenance and repair. Overview of hardware and software components associated with personal computer systems. Survey of techniques and methods used by technicians to maintain, repair, troubleshoot and upgrade personal computers. Coverage of both interpersonal as well as technical abilities necessary for success in this industry. Survey of the history and evolution of the personal computer.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, or concurrent enrollment.

CTAN Approved: CTIT003

EET-1035 Operating Systems and Software for PC Technicians

04 Semester Credits

Hands-on course provides both theoretical and practical training with computer operating system setup, maintenance, upgrading, troubleshooting and support. Lab activities provide direct experience with techniques and tools used to install, configure, operate, secure and troubleshoot operating system software in desktop and mobile devices. Fundamental career training for computer service technicians.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): EET-1015 Introduction to Computer Maintenance and Repair, or concurrent enrollment.

EET-1055 Computer Hardware Support

04 Semester Credits

Assemble computer components, install, configure and maintain devices and PCs, properly and safely diagnose, resolve and document common hardware issues while applying troubleshooting skills. Focuses on providing appropriate customer support. Designed in conjunction with industry standard training and certification guidelines.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): EET-1015 Introduction to Computer Maintenance and Repair.

EET-1081 Computer User Support**01 Semester Credit**

Overview of techniques and skills necessary for career opportunities in computer user support fields, with particular emphasis on process of microcomputer service and repair. Coverage of both interpersonal and technical abilities necessary for success in this industry. Problem-solving strategies for common user support issues, customer service skills, help desk operation, documentation requirements and information resources for user support.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Recommend IT-1010 Introduction to Microcomputer or proficiency in Windows and MSOffice.

EET-1100 Introduction to Robotics**02 Semester Credits**

Introduction to direct current circuits, binary and hexadecimal numbering systems, signed numbers and elementary programming language statements (confined to programming a robot in laboratory component).

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

EET-1130 Basic Audio Electronics**03 Semester Credits**

Basic DC and AC circuits, amplifier theory, audio distortion, electronic test equipment operation and soldering techniques. Designed for non-EET majors.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MATH-1100 Mathematical Explorations or higher level math, or departmental approval.

EET-1140 Productivity Tools for Engineering**02 Semester Credits**

Productivity Tools for Engineering exposes the students to word processing, spread sheets and CAD (Computer Aided Design) programs directed at the electronic engineering technology environment.

Lecture 00 hours. Laboratory 04 hours.

Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment, and MATH-0955 Beginning Algebra or appropriate Math placement score; or departmental approval.

EET-1150 Basic Robotics with Math**02 Semester Credits**

Course provides an introduction to robotic principles using C programming with an emphasis on math.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

EET-1161 Direct Current Circuits**03 Semester Credits**

Introduction to Direct Current circuits that includes engineering notation, the meaning of voltage, current, resistance (including color code), electrical units, power dissipation, the American Wire Gauge (AWG) table, Ohms law, Kirchoff's Voltage Law (KVL), Kirchoff's Current Law

(KCL), series circuits, parallel circuits, series/parallel circuits, component troubleshooting, resistance capacitance (RC) and resistance inductance (RL) circuits (charge, discharge and time constants). Circuit theorems include Thevenin and Norton equivalent circuits, mesh and nodal analysis.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MATH-0965 Intermediate Algebra or MATH-1530 College Algebra or concurrent enrollment; or MATH-153H Honors College Algebra or concurrent enrollment; or departmental approval.

OAN Approved: OET001; CTAN Approved: CTEET003

EET-1180 Surface Mount Soldering**01 Semester Credit**

Develop skills using surface mount soldering equipment and techniques to facilitate design, construction and rework of circuit boards.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

EET-1190 Printed Circuit Layout**02 Semester Credits**

Examines use of contemporary program(s) to lay out printed circuit board in single and multiple layers. Design rules, current return paths, crosstalk and other anomalous conditions are explored.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): EET-1161 Direct Current Circuits or concurrent enrollment.

EET-1210 AC Electric Circuits**03 Semester Credits**

Fundamentals of alternating current (AC) circuits involving resistance, capacitance, and inductance. Sinusoidal voltage, current power, phase, resonance, and frequency response of basic circuit elements in series, parallel, and series-parallel connections as analyzed using Kirchoff's laws, Mesh, Nodal, and Bridge Network analysis, Delta-Wye conversions, Superposition, Thevenin's, Norton's and Maximum Power Transfer theorems. Decibels, filters, Bode plots, Fourier series, polyphase transformers, and system analysis are studied. Computer simulation and practical laboratory experience using AC instrumentation for measuring series-parallel networks to observe and verify theory and concepts presented during lectures.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-1161 Direct Current Circuits, and MATH-1530 College Algebra or concurrent enrollment; or MATH-153H Honors College Algebra or concurrent enrollment; or departmental approval.

OAN Approved: OET003

EET-1220 Circuits and Electronics

03 Semester Credits

An introductory course to practical electricity that involves Direct-Current (DC) and Alternating-Current (AC) circuit fundamentals and supporting topics. An emphasis is placed on practical applications found in residential and commercial locations. Additionally motors, transformer, lighting, high voltage and low voltage circuits are included with emphasis on safety.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MATH-1530 College Algebra or concurrent enrollment; or MATH-153H Honors College Algebra or concurrent enrollment; or departmental approval.

EET-1241 Digital Fundamentals

03 Semester Credits

Introductory course to digital circuits. Logic and arithmetic operations are studied, designed and tested in a laboratory environment using discrete integrated circuit gates and programmable logic devices (PLD). Base 2 (binary) and base 16 (hexadecimal) number systems are used in conjunction with Boolean algebra and other theorems. Foundation for continued study of microprocessors/microcontrollers.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-1161 Direct Current Circuits, or concurrent enrollment or departmental approval.

EET-1302 Cisco I: Basic Networking Technologies

03 Semester Credits

Introduction to architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum which enables students to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes to provide a foundation for the curriculum.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ITNT-2310 TCP/IP.

CTAN Approved: CTIT007

EET-1312 Cisco II: Basic Routing and Switching

03 Semester Credits

Covers the architecture, components, and operations of routers and switches in a small network. Ability to configure a router and a switch for basic functionality, including preparing students to troubleshoot and resolve common issues with RIPv1, RIPv2, single-area and multi-area OSPF, virtual LANs, and inter-VLAN routing, in both IPv4 and IPv6 networks.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-1302 Cisco I: Basic Networking Technologies, or concurrent enrollment.

CTAN Approved: CTIT008

EET-1910 Directed Practice Electric Utility Technology I

04 Semester Credits

Supervised field practice of electrical overhead lineman job duties in a setting under direct supervision of electric company personnel. Focuses on the installation of services, street lighting, and secondary circuits. Includes various pole framing techniques and guying methods as well as an overview of transmission and distribution of electrical systems, rigging safety awareness, Occupational Safety and Health Administration (OSHA) training and first-aid certification. Safety requirements emphasized throughout the course.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 20 hours per week on site (300 hours per semester).

Prerequisite(s): EET-1161 Direct Current Circuits, or concurrent enrollment and departmental approval: admission to the Electric Utility Technology program.

EET-1915 Directed Practice Substation Utility Technology I

04 Semester Credits

Supervised practical applications of electrical substation worker job duties in a setting under direct supervision of electric company personnel. Emphasis on safety practices and regulations, using substation vehicles and equipment, and procedures and tasks related to use and maintenance of an electrical substation.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 20 hours per week on site (300 hours per semester).

Prerequisite(s): Concurrent enrollment in ISET-1410 Applied Electricity I, and departmental approval: admission to Electrical Utility Technology Program.

EET-1920 Directed Practice Electric Utility Technology II

04 Semester Credits

Supervised practical applications of electrical overhead line worker job duties in a setting under personal supervision of electric company personnel. Emphasis on skills required to perform work on secondary voltage circuits. Emphasis on the installation of services, street lighting, and secondary circuits, bucket truck familiarization and bucket rescue. Overview of distribution electrical systems, and Occupational Safety and Health Administration (OSHA) rules. Safety topics include: Work Zone Traffic Control; Minimum Approach Distances; Rubber Protective Equipment; and Knowledge of UD Excavation/Trenching/Shoring.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed practice: 20 hours per week on site (300 hours per semester).

Prerequisite(s): EET-1910 Directed Practice Electric Utility Technology I, and EET-1210 AC Electric Circuits, or concurrent enrollment or departmental approval.

EET-1925 Directed Practice Substation Utility Technology II**04 Semester Credits**

Second in a four part series providing the student with a broader skill set as well as enhanced knowledge and skill level necessary to safely assist in the performance of routine repairs on distribution and power transformers, bushings, circuit breakers, disconnect switches, control equipment and other de-energized electrical equipment used in the distribution of electrical energy.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 20 hours per week at site (300 hours per semester).

Prerequisite(s): EET-1915 Directed Practice Substation Utility Technology I, and concurrent enrollment in ISET-1420 Applied Electricity II.

EET-2111 Industrial Electronics I**03 Semester Credits**

Construction, theory of operation, performance characteristics and application of DC motors, DC auxiliary devices, AC single phase transformers, AC three phase transformers, AC three phase motors. Specification and characteristics of power switching devices like triacs, Metal Oxide Semiconductor Field Effect Transistors (MOSFETs), Insulated Gate Bipolar Transistors (IGBTs), opto-isolators, switching power supplies and applicable safety standards.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-1210 AC Electric Circuits, or departmental approval.

EET-2120 Electronics I**03 Semester Credits**

Course includes the most common solid-state devices used in electronic circuits: silicon and germanium diodes, zener diodes, Light Emitting Diodes (LEDs) Bipolar Junction Transistors (BJTs), and Field Effect Transistors (FETS). Graphical and analytical DC and AC analysis of various electronic circuits used. Computer circuit analysis program MultiSim used to predict DC voltages and currents and frequency response of different circuits.

Laboratory experiments reinforce topics studied in lecture. *Lecture 02 hours. Laboratory 02 hours.*

Prerequisite(s): EET-1210 AC Electric Circuits, and MATH-1540 Trigonometry; or ATTC-1340 AC Circuits/Telephony, or departmental approval.

EET-2131 Digital Communication Fundamentals**03 Semester Credits**

A continuation of Signal Analysis course that expands on elementary digital modulation techniques, types of binary signals, speech coding, signal analysis and network theory. Topics include sampling, coding, bandwidth for baseband digital signals, data communications protocol

including TCP/IP and error correction/detection techniques.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-2170 Signal Analysis, or concurrent enrollment.

EET-2170 Signal Analysis**03 Semester Credits**

Introduces bandwidth, frequency response, noise, modulation, spectrum analysis and distortion and how they apply to design, troubleshooting and circuit operation.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-1210 AC Electric Circuits, or departmental approval.

EET-2180 EET Applied Calculus**03 Semester Credits**

An introductory course to calculus with an emphasis on electrical/electronic applications. Topics include: limits; differentiation and graphical applications of the derivative; and indefinite and definite integration and applications. Emphasis on technology as a tool through use of graphing calculator/computer.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): EET-2120 Electronics I, and MATH-1540 Trigonometry; or MATH-154H Honors Trigonometry.

EET-2220 Electronics II**03 Semester Credits**

Continuation of electronic circuits. Includes study of difference amplifier used in operational amplifiers. Additional topics include various uses of operational amplifier, voltage comparator, digital-to-analog converter (DAC), analog-to-digital converter (ADC), active filter circuits, oscillators and sample hold circuits.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-2120 Electronics I.

EET-2231 Wired and Wireless Communications**03 Semester Credits**

Final course in electronic communication series. Provides an in-depth study of fiber optic, microwave, broadband wired and cellular communication systems.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-2131 Digital Communication Fundamentals.

EET-2242 C and ASM Programming with Embedded Applications

03 Semester Credits

Introduces microprocessor and microcontroller internal and external hardware components. Assembly language (ASM) programming is introduced to illustrate the internal working of a microcontroller. The C programming language is taught in a regular and embedded environment that comprises most of the course.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-1241 Digital Fundamentals, or departmental approval.

EET-2290 Electrical Design Project

02 Semester Credits

Capstone course for Electrical-Electronic Engineering basic program. Designed to allow students opportunity to demonstrate and apply capabilities and skills acquired during previous engineering technology coursework. Students choose approved electronic project compatible with their interest and background. Project includes research, documentation, construction and testing, and concludes with a report and presentation of results.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): EET-2242 C and ASM Programming with Embedded Applications, or departmental approval.

EET-2302 Cisco III Intermediate Routing and Switching

03 Semester Credits

Covers the architecture, components, and operations of routers and switches in a larger and more complex network. Includes how to configure routers and switches for advanced functionality. Configuration and troubleshooting routers and switches to resolve common issues with OSPF, EIGRP, STP, and VTP in both IPv4 and IPv6 networks. Develop the knowledge and skills needed to implement DHCP and DNS operations in a network.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-1312 Cisco II Basic Routing and Switching.

CTAN Approved: CTIT009

EET-2312 Cisco IV Basic WAN Technologies

03 Semester Credits

The WAN technologies and network services required by converged applications in a complex network.

Understanding the selection criteria of network devices and WAN technologies to meet network requirements. Configure and troubleshoot network devices and resolve common issues with data link protocols. Develop the knowledge and skills needed to implement IPsec and virtual private network (VPN) operations in a complex network.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-2302 Cisco III Intermediate Routing and Switching, or concurrent enrollment.

CTAN Approved: CTIT010

EET-2400 Biomedical Instrumentation I

03 Semester Credits

Introduction to biomedical program and to organization of hospital and/or health facilities. Study of anatomy and physiology as pertaining to safety checking, servicing and maintaining biomedical electronic equipment (such as ECG, EEG, electro-surgery units, defibrillators, infusion pumps, patient monitors, and other monitoring and diagnostic equipment). Hospital electrical safety and interaction with nursing staff and physicians continuously emphasized. Laboratory experiments on centrifuges, infusion pumps and electrosurgery units.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-2120 Electronics I or concurrent enrollment.

EET-2410 Biomedical Instrumentation II

03 Semester Credits

Continuation of biomedical program. Study of general hospital equipment such as EKG machines, defibrillators, automated medtesters, patient monitors and ventilator. Emphasis on using various technical service manuals to repair these and other biomedical equipment. Safety checks performed on all biomedical equipment used in the laboratory.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-2400 Biomedical Instrumentation I, and EET-2220 Electronics II or concurrent enrollment.

EET-2490 Biomedical Design Project

02 Semester Credits

Capstone course for Biomedical Engineering program. Designed to allow students to demonstrate and apply capabilities and skills acquired during their previous engineering technology coursework. Students are provided with a biomedical project compatible with their interest and background. Project includes research, documentation, construction and testing, and concludes with a report and a presentation of the results.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): EET-2220 Electronics II, or concurrent enrollment, and EET-2410 Biomedical Instrumentation II or concurrent enrollment.

EET-2500 Instrumentation and Control

03 Semester Credits

Concepts and practice in measurement and control of mechanical process variables in industry. Introduction to methods of instrumentation, characteristics of instruments, sensors, data acquisition and presentation, measurement and analysis of basic dimensions, force, motion, pressure, temperature, fluid flow and fluid viscosity.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): EET-1220 Circuits and Electronics, or EET-2120 Electronics I; or departmental approval.

EET-2520 Programmable Logic Controllers**03 Semester Credits**

Introduction to programmable logic controller terminology, architecture, input/output modules and memory. Relay schematics and ladder logic diagrams and programming of programmable logic controllers are covered and reinforced in practical laboratory experiments. Sensing devices as limit switches, on/off electrical devices, temperature switches, timing and counting devices as well as event-driven and time-driven sequences are also included.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-1220 Circuits and Electronics, or EET-1210 AC Electric Circuits; and EET-1241 Digital Fundamentals, or departmental approval.

CTAN Approved: CTEET003

EET-2530 Unmanned Aerial Vehicles**03 Semester Credits**

Addresses the emerging market for unmanned aerial vehicle (drones), their ethical use, safety issues, legal issues, electrical and mechanical components, on-board control systems, software and remote control.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-1100 Introduction to Robotics, or EET-1150 Basic Robotics with Math, or EET-2242 C and ASM Programming with Embedded Applications or concurrent enrollment, or departmental approval.

EET-2591 Communications Design Project**02 Semester Credits**

Capstone course for the Digital Communications concentration in the Electronic Engineering Technology program. Designed to allow students to demonstrate and apply capabilities and skills acquired during previous engineering technology coursework. Students choose approved communications project compatible with their interest and background or can use a default project. Project includes research, documentation, construction and testing, and concludes with a report and an oral presentation of results.

Lecture 00 hours. Laboratory 04 hours.

Prerequisite(s): EET-1180 Surface Mount Soldering, and EET-1241 Digital Fundamentals, and EET-2220 Electronics II, or concurrent enrollment; and EET-2231 Wired and Wireless Communications or concurrent enrollment.

EET-2710 Solar Power, Energy Storage and Conversion**03 Semester Credits**

Presents photovoltaic power (PEV) generation, sun farm steam turbine generation and related issues in a contemporary environment. Energy storage using various battery chemistries, Electrochemical (super) capacitors and feed-the-grid using rotary and solid state converters covered in detail. Pro and cons, as it effects the environment, of the total cost from manufacture to

disposal discussed. Most lecture topics supported by laboratory experiments.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): EET-2111 Industrial Electronics I and concurrent enrollment in EET-2120 Electronics I.

EET-2830 Cooperative Field Experience**01-03 Semester Credits**

Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): Formal application into the Cooperative Education Program.

EET-2901 Clinical Internship**03 Semester Credits**

Internship where student is expected to perform 360 hours of service at a local hospital or other biomedical facility. Student is expected to perform activities related to their biomedical technology field including but not limited to repair of biomedical equipment, safety inspections, and calibration.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 360. Practicum 360 hours per semester/36 hours per week for 10 weeks.

Prerequisite(s): EET-2410 Biomedical Instrumentation II, and EET-2220 Electronics II.

EET-2910 Directed Practice Electric Utility Technology III**04 Semester Credits**

Supervised practical applications of electrical overhead line worker job duties in a setting under personal supervision of electric company personnel. Emphasis on skills required to identify, install, and maintain primary underground residential distribution (URD) equipment, including various methods of troubleshooting URD primary and secondary circuits. Grounding distribution circuits will also be learned. Students will develop the knowledge and skill to safely perform rubber gloving assignments utilizing the insulate and isolate techniques, will perform various tasks while working on an energized three-phase circuit under controlled conditions. Safety topics include: fire extinguisher safety, temporary protective grounds, stored energy devices, and utilities protective service.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 20 hours per week on site (300 hours per semester).

Prerequisite(s): EET-1920 Directed Practice Electric Utility Technology II.

EET-2915 Directed Practice Substation Utility Technology III

04 Semester Credits

Third in a four part series providing the student with the advanced knowledge and skills necessary to safely work in a supervised capacity on energized equipment and in an unsupervised capacity on de-energized equipment employed in the production and distribution of electrical energy. This course also introduces the student to power transformer testing, troubleshooting, alarm systems, circuit breaker troubleshooting, reclosers and sectionalizers, OCB maintenance and voltage regulators.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 20 hours per week on site (300 hours per semester).

Prerequisite(s): EET-1925 Directed Practice Substation Utility Technology II, and concurrent enrollment in ISET-2240 Applied National Electric Code.

EET-2920 Directed Practice Electric Utility Technology IV

04 Semester Credits

Supervised practical applications of skills required to safely climb transmission support towers and H structures to achieve qualified status. Emphasis on intermediate tasks while aloft pertinent structures. Also develops students understanding of substation equipment and one-line drawings; recognizing energized equipment, minimum approach distances, and substation safety; lock-out-tagout procedures; and powered industrial vehicle certifications.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 20 hours per week on site (300 hours per semester).

Prerequisite(s): EET-2910 Directed Practice Electric Utility Technology III.

EET-2925 Directed Practice Substation Utility Technology IV

04 Semester Credits

Fourth in a four part series providing the student with the knowledge and skills to work safely and competently in a supervised or unsupervised capacity. The fourth series is the culmination of prior courses with the introduction of advanced knowledge and skills related to Motor Operates Air Brake Switch, electronic recloser controls, SF6 gas breakers, ACB maintenance, OCB timing and travel tests, calibration of various substation equipment, PT testing, phasing, switching procedures and the performance of energized primary work.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 20 hours per week on site (300 hours per semester).

Prerequisite(s): EET-2910 Directed Practice Electrical Utility Technology III.

ELECTRONEURODIAGNOSTIC TECHNOLOGY- END

END-1300 Introduction to Electroneurodiagnostic Technology

02 Semester Credits

Introduction and orientation to health careers in field of electroneurodiagnostic including specific duties, certifications and licensure requirements, work setting and conditions, and career ladder opportunities. Overview of standards of practice of clinical neurophysiology with emphasis on neuroscience technique, instrumentation, terminology of electroneurodiagnostic practices and recording/monitoring techniques utilized in determination of treatment plans for neurological disorders, and basic medical terminology.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

END-1310 Cardiopulmonary Physiology of Sleep

03 Semester Credits

Physiology of cardiovascular and pulmonary systems with emphasis on electrophysiology of the heart, electrocardiography interpretation, blood flow characteristics and hemodynamics. Pulmonary system emphasis on lung volumes, dynamics of ventilation, pulmonary function tests, diffusion, gas transport, oxygenation studies and control of ventilation.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BIO-2331 Anatomy and Physiology I; and admission to the program.

END-1350 Introduction to Electroencephalography (EEG)

03 Semester Credits

Provides basic knowledge of electroencephalography, understanding EEG concepts utilized for diagnosis of various cerebral disorders. Includes history, development, basic neurophysiology concepts of EEG, normal and abnormal brain wave patterns in adults and children, with emphasis on instrumentation and recording techniques.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): BIO-2331 Anatomy and Physiology I or concurrent enrollment; or BIO-233A or concurrent enrollment, and BIO-233B or concurrent enrollment; and concurrent enrollment in END-1300 Introduction to Electroneurodiagnostic Technology, and departmental approval: admission to program.

END-1410 Beginning Polysomnography**02 Semester Credits**

Overview of the field of Polysomnography including job responsibilities, credentialing, medical ethics and patient confidentiality. Normal and abnormal sleep disorders, integrating the physiologic functions of the nervous, respiratory and cardiovascular systems. Emphasis on basic sleep sciences, physiology, monitoring, electrical safety, diagnosis and treatment of sleep disorders.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): BIO-2331 Anatomy and Physiology I, and admission to the program.

END-1421 Intermediate Polysomnography I**02 Semester Credits**

Basic discussion of recording sleep apnea montage. Emphasis on equipment, principle of operation, associated activity related to normal and abnormal stages of sleep, and placement and calibration of the following: electroencephalography (EEG), electro-oculography (EOG), electrocardiography (ECG), electromyography (EMG), pulse oximetry (SpO₂), inductive plethysmography and airflow thermocouple. To fulfill program laboratory requirements, students should enroll in the related laboratory course.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): END-1410 Beginning Polysomnography, and END-1310 Cardiopulmonary Physiology of Sleep, and concurrent enrollment in END-142L Intermediate Polysomnography-I Lab.

END-142L Intermediate Polysomnography-I Lab**01 Semester Credit**

Laboratory course examines the recording of sleep apnea montage. Includes equipment, and principle of operation. Placement and calibration of the following: electroencephalography (EEG), electro-oculography (EOG), electrocardiography (ECG), electromyography (EMG), pulse oximetry (SpO₂), inductive plethysmography and airflow thermocouple. Designed to illustrate concepts covered in END-1421.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): END-1410 Beginning Polysomnography, and concurrent enrollment in END-1421 Intermediate Polysomnography I.

END-1430 Intermediate Polysomnography-II**03 Semester Credits**

Presentation and discussion of cognitive and psychomotor practices related to interpretation of the polysomnogram for adult and pediatric patients. Emphasis on continuous positive airway pressure (CPAP) and bilevel positive airway pressures (BiPAP) equipment, artifact and troubleshooting of sleep montage results. Includes digital data acquisition, parasomnias, scoring, MSLTs, MWTs and

nocturnal penile tumescence.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): END-1421 Intermediate Polysomnography I, and END-142L Intermediate Polysomnography-I Lab, and END-1934 Polysomnography Directed Practice-I.

END-1440 Neurophysiology of Sleep**02 Semester Credits**

Basic discussion of the neurophysiology of sleep and role of the autonomic nervous system. Emphasis on respiratory and cardiovascular effects, regulation of sleep, circadian rhythms, and maturation of the sleep stages addressing neonates to adults.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

END-1450 Intermediate Electroencephalography (EEG)**03 Semester Credits**

Discussion of clinical significance of epileptiform patterns, pharmacological effects on EEG recordings; EEG correlation of infection; and vascular and structural disease. Presentation and discussion of criteria for specialized recording techniques used in prolonged EEG recordings, specialized areas of the hospital, such as intensive care and operating room. Discussion of EEG signal analysis.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): END-1350 Introduction to Electroencephalography (EEG), or departmental approval.

END-1500 Basic Evoked Potentials**03 Semester Credits**

Basic discussion of evoked potential recording techniques. Emphasis on equipment, principles of operation, associated waves related to normal and abnormal waveforms, placement and calibration, obtaining clearly resolved and replicated obligated waveforms of brainstem auditory, visual, and somatosensory evoked potentials in adults and pediatric subjects.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): END-1450 Intermediate Electroencephalography (EEG) or concurrent enrollment, or departmental approval.

END-1910 END Directed Practice I**04 Semester Credits**

Clinical electroencephalography experience in a selected neurodiagnostic lab or an affiliated health care facility under the direct supervision of an EEG technologist or physician. Emphasis on EEG concepts. Performance of EEG testing on clinical patients, medical record keeping and clinical history taking.

Lecture 01 hour. Laboratory 00 hours.

Other Required Hours: Directed Practice: 15 hours per week. Prerequisite(s): END-1350 Introduction to Electroencephalography (EEG), and concurrent enrollment in END-1450 Intermediate Electroencephalography (EEG); or departmental approval.

END-1934 Polysomnography Directed Practice-I **03 Semester Credits**

Directed practice in the clinical setting in sleep laboratory or a sleep center. Departmental orientation, policies and procedures, individual body mechanics and patient transfer techniques. Emphasis in overseeing periodic cessation of respiratory activity based on placement and monitoring of the following: electroencephalography (EEG), electro-oculography (EOG), electrocardiography (ECG), electromyography (EMG), pulse oximetry (SpO₂), inductive plethysmography and airflow thermocouple.
Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 18 hours per week.
Prerequisite(s): END-1410 Beginning Polysomnography, END-1310 Cardiopulmonary Physiology of Sleep, concurrent enrollment in END-1421 Intermediate Polysomnography-I, and END-142L Intermediate Polysomnography Lab-I.

END-2300 Nerve Conduction Studies **03 Semester Credits**

Basic discussion of nerve conduction studies and electromyography. Emphasis on equipment, knowledge of placement stimulation sites, sources of error in nerve conduction studies, electronics, pathology (abnormal nerve conduction studies, anatomy as it pertains to entrapment sites and nerve conduction studies), waveforms identification and case presentation.
Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): END-1450 Intermediate Electroencephalography (EEG), and concurrent enrollment in END-2910 END Directed Practice II; or departmental approval.

END-2320 Intermediate Nerve Conduction Studies **03 Semester Credits**

Advanced discussion of nerve conduction studies and electromyography. Emphasis on less routine nerve conduction studies (NCS), anomalous innervations, equipment, knowledge, placement stimulation sites, sources of error in nerve conduction studies, electronics, pathology, waveforms identification and case presentation
Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): END-2300 Nerve Conduction Studies.

END-2350 Fundamentals of Polysomnography **04 Semester Credits**

Overview of field of Polysomnography including job responsibilities and credentialing. Normal and abnormal sleep disorders, integrating the physiologic functions of nervous, respiratory, and cardiovascular systems. Discussion of recording sleep apnea montage, placement and calibration of diagnostic, electrodes, and associated equipment. Emphasis on monitoring, diagnosis, scoring, and treatment of sleep disorders. Continuous Positive Airway Pressure (CPAP) and Bilevel Positive Airway Pressures equipment, artifact and troubleshooting of sleep montage results.
Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): END-2411 Neurophysiology of Electroencephalography/Sleep Disorders, or departmental approval.

END-2400 Intraoperative Monitoring for **Electroneurodiagnostic Technologists** **02 Semester Credits**

Discussion of intraoperative monitoring of CNS (brain, brainstem, spinal cord) function during surgical procedures. Types of recordings, technologist's role, recording parameters, reasons for surgical monitoring, variables affecting monitoring, and outcome of the surgery.
Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): END-1450 Intermediate Electroencephalography (EEG); or END-2910 END Directed Practice II, or concurrent enrollment and END-1500 Basic Evoked Potentials, or departmental approval.

END-2411 Neurophysiology of **Electroencephalography/Sleep Disorders** **03 Semester Credits**

Analysis of the central and peripheral nervous systems, electrophysiology, and nerve conducting velocities in health and disease. Includes discussion of neurophysiology of sleep and the role of the autonomic nervous system. Emphasis on respiratory and cardiovascular effects, regulation of sleep, circadian rhythms and maturation of the sleep stages addressing neonates to adults.
Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BIO-2341 Anatomy and Physiology II, and END-1450 Intermediate Electroencephalography (EEG), or departmental approval.

END-2450 Neonatal/Pediatric Electroneurodiagnostic **03 Semester Credits**

Discussion of recording neonatal and pediatric EEG and polysomnograms. Development of sleep-wake cycle, monitoring the EEG in neonatal and pediatric populations, and differential diagnosis based on polysomnographic variables.
Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): END-1450 Intermediate Electroencephalography (EEG); or departmental approval.

END-2911 END Directed Practice II **02 Semester Credits**

Continuation of directed practice in clinical setting at neurology laboratory or neurodiagnostics department. Departmental orientation, policies and procedures, assist patient setup, performance and discontinuance of neurodiagnostic activities performed at the assigned clinical site.
Lecture 01 hour. Laboratory 00 hours.

Other Required Hours: Directed Practice: 8 hours per week for 10 weeks (80 hours total).

Prerequisite(s): END-1500 Basic Evoked Potentials; and END-1910 END Directed Practice I; or departmental approval.

END-2920 END Directed Practice III

04 Semester Credits

Directed practice in clinical setting at neurology laboratory or neurodiagnostics department. Departmental orientation, policies and procedures, assist patient setup and discontinuance in monitoring of electromyography (EMG) activities. Experience with nerve conduction studies, and continuation of performance of EEG testing.

Lecture 01 hour. Laboratory 00 hours.

Other Required Hours: Directed Practice: 15 hours per week.

Prerequisite(s): END-2300 Nerve Conduction Studies; or departmental approval.

END-2930 END Directed Practice IV

02 Semester Credits

Clinical electroencephalography experience in a selected neurodiagnostic lab in health care facility under direct supervision of an EEG technologist or physician office. Emphasis on EEG testing in neonates, infants and children, medical record keeping and clinical history taking.

Lecture 01 hour. Laboratory 00 hours.

Other Required Hours: Directed Practice: 75 hours per semester.

Prerequisite(s): END-2450 Neonatal/Pediatric Electroneurodiagnostic, or departmental approval.

END-2934 Polysomnography Directed Practice-II

03 Semester Credits

Directed practice in the clinical setting in sleep laboratory or a sleep center. Departmental orientation, policies and procedures. Assist adult and pediatric patient setup and discontinuance in monitoring electroencephalography (EEG), electro-oculography (EOG), electrocardiography (ECG), electromyography (EMG), pulse oximetry (SpO₂), inductive plethysmography and airflow thermocouple. Emphasis on scoring a sleep montage related to respiratory cessation.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 18 hours/week in a sleep center

Prerequisite(s): END-1421 Intermediate Polysomnography I, and END-142L-Intermediate Polysomnography-I Laboratory, and END-1934 Directed Practice-I, and concurrent enrollment in END-1430 Intermediate Polysomnography-II.

END-2990 Electroneurodiagnostic Capstone

01 Semester Credit

Capstone course in Electroneurodiagnostic Technology. Assessment of one's knowledge, experience and skills as electroneurodiagnostic technologist. Preparation and presentation of qualifications through written resume and portfolio. Guidelines and preparation for employment interview. Investigation into electroneurodiagnostic issues.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): END-2920 END Directed Practice III, or departmental approval.

EMERGENCY MEDICAL TECHNOLOGY - EMT

EMT-1302 Emergency Medical Technician - Basic

06 Semester Credits

Comprehensive study of basic life support skills of Emergency Medical Technician-Basic based on the U.S. Department of Transportation National Standard EMT-Basic Curriculum and the National EMS Education Standards, January 2009 or later; and the State of Ohio Emergency Medical Service EMT-Basic curriculum, most current version. Includes recognition of nature and seriousness of patient's condition or extent of injuries; and assessing requirements of emergency care, lifting, moving, handling and transporting patients as part of pre-hospital emergency care system. Successful completion of American Heart Association Basic Life Support for the Healthcare Provider Course component of course required to successfully complete EMT-1302. Successful completion of EMT-1302 and EMT-130L required for NREMT and State of Ohio EMT-Basic certification.

Lecture 05 hours. Laboratory 02 hours.

Prerequisite(s): Eligibility for ENG-0990 Language Fundamentals II and MATH-0910 or appropriate score on Math placement test to enroll in MATH-0955, and departmental approval: admission to the program.

EMT-130L EMT Basic Practical Lab

01 Semester Credit

This course provides the simulation labs and directed practice to complete the requirements for National Registry of EMTs (NREMT) EMT-Basic certification. This is the primary requirement for State of Ohio EMT Basic Certification.

Lecture 00 hours. Laboratory 02 hours.

Other Required Hours: 37 hours of directed practice performed in program approved external sites.

Prerequisite(s): EMT-1302 Emergency Medical Technician - Basic, or concurrent enrollment.

EMT-1310 Cardiopulmonary Resuscitation

01 Semester Credit

[This course is cross-listed as HLTH-1310. Credit can only be earned once for either course.] The CPR for Healthcare Providers teaches the management of respiratory and circulatory emergencies in adults, children, and infants. The Heartsaver First Aid teaches the management of illness and injury in the first few minutes until professional help arrives. Instruction and treatment methods to meet American Heart Association (AHA) or American Red Cross (ARC) standards for CPR.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

EMT-1320 Heavy Rescue

02 Semester Credits

Techniques of heavy rescue, safe management of equipment used in heavy rescue, entrapment and patient extrication.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): Departmental approval: certified EMT-B; emergency workers must be in good health or have physician's verification; must be able to lift 75 pounds.

OAN Approved: CTFPIC02; CTFPII03

EMT-1330 Defensive Driving - EMT

01 Semester Credit

Principles and practices of defensive driving related to emergency rescue vehicles including laws, conditions of accidents and methods of avoiding accidents.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): Departmental approval: admission to program, or certified EMT-B, or working with safety forces; must have valid Ohio driver's license.

OAN Approved: CTFPII03

EMT-1401 Anatomy and Physiology for Paramedics

04 Semester Credits

Basic structure and function of body systems and diseases of these systems to provide a foundation for EMT and paramedic certification.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): None.

EMT-2330 Paramedic Theory I

06 Semester Credits

Principles and practices of paramedic based on the Department of Transportation National EMS scope of practice model and education standards, current to at least 2011, and the State of Ohio Paramedic Curriculum effective 2012. Includes roles and responsibilities, Emergency Medical Services systems, well-being of the paramedic, therapeutic communications, medical/legal considerations, stress management and life span development.

Lecture 04 hours. Laboratory 04 hours.

Prerequisite(s): EMT-1401 Anatomy and Physiology for Paramedics; or BIO-2331 Anatomy and Physiology I, and BIO-2341 Anatomy and Physiology II, and State of Ohio EMT-Basic certification required.

EMT-2340 Paramedic Theory II

06 Semester Credits

Principles and practices of paramedic based on the Department of Transportation National EMS scope of practice model and education standards, current to at least 2011, and the State of Ohio Paramedic Curriculum effective 2012. Includes airway management, physical examination, trauma systems with mechanism of injury, hemorrhage and shock, trauma assessment and

management related to: soft tissue, musculoskeletal, head, face, spinal, thoracic and abdominal injuries including burns.

Lecture 04 hours. Laboratory 03 hours.

Other Required Hours: Directed Practice: 112 hours per semester.

Prerequisite(s): EMT-2350 Paramedic Theory III and departmental approval: current Ohio EMT-B certification.

EMT-2350 Paramedic Theory III

06 Semester Credits

Principles and practices of paramedic based on the Department of Transportation National EMS scope of practice model and education standards, current to at least 2011, and the State of Ohio Paramedic Curriculum effective 2012. Includes anatomy and physiology of the pulmonary system, assessment and treatment of pulmonary emergencies, anatomy and physiology of cardiovascular system, assessment of cardiac and stroke patient, EKG interpretation, cardiac and stroke treatment modalities, cardiac treatment pharmacology, defibrillation, and advanced cardiac life support.

Lecture 04 hours. Laboratory 03 hours.

Other Required Hours: Directed Practice: 112 hours per semester.

Prerequisite(s): EMT-2330 Paramedic Theory I and departmental approval: current Ohio EMT-B Certification.

EMT-2360 Paramedic Theory IV

06 Semester Credits

Principles and practices of paramedic based on the Department of Transportation National EMS scope of practice model and education standards, current to at least 2011, and the State of Ohio Paramedic Curriculum effective 2012. Includes management of endocrine, GI, renal/urological, toxicology, hematology, infectious, environmental and behavioral emergencies. Management of special needs patients, including geriatric, pediatric, and neonatal medical emergencies age groups. Detailed assessment and treatment of the OB/GYN patient and emergency field delivery procedures. Basic orientation in the study of ambulance operations, hazardous materials, rescue awareness and crime scene awareness.

Lecture 04 hours. Laboratory 03 hours.

Other Required Hours: Directed Practice: 112 hours per semester.

Prerequisite(s): EMT-2350 Paramedic Theory III, and current Ohio EMT-Basic certification.

EMT-2370 Paramedic Theory V**05 Semester Credits**

Final course in sequence necessary for NREMT Paramedic Certification and State of Ohio Paramedic certification. Students will integrate knowledge and skills learned in previous courses in order to demonstrate competence in American Heart Association Advanced Cardiac Life Support (ACLS) and Pediatric Advanced Life Support (PALS); and American College of Surgeons or American College of Emergency Physicians approved trauma life support and National Association of EMT (NAEMT) medical life support standards. In the directed practice and field experience environment, they will demonstrate team leadership and integration with medical professionals.

Lecture 03 hours. Laboratory 03 hours.

Other Required Hours: Directed Practice and field experience: 112 hours per semester.

Prerequisite(s): EMT-2360 Paramedic Theory IV, and departmental approval: State of Ohio Certified EMT-Basic.

EMT-2400 Advanced Cardiac Life Support**01 Semester Credit**

Advanced cardiac life support (ACLS) emphasizes the importance of basic life support cardiopulmonary resuscitation (CPR) to patient survival, the integration of effective basic life support with advanced cardiovascular life support interventions, and the importance of effective team interaction and communication during resuscitation. Students engage in simulated clinical scenarios that encourage active, hands-on participation through learning stations where students will practice essential skills individually, as part of a team, and as team leader.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: valid current American Heart Healthcare Provider CPR certification required.

ENGLISH - ENG**ENG-0800 Developmental Special Topics in English****01-03 Semester Credits**

Study of selected developmental topics or current issues in English. Provides student an opportunity to explore various topics in greater detail (see current semester Credit Schedule for offerings). Repeatable for different topics. May not be applied toward elective and/or program graduation degree requirements.

Lecture 01- 03 hours. Laboratory 00 hours.

Prerequisite(s): Faculty counterparts determine appropriate prerequisite/corequisite for each topic.

ENG-0900 Transition to College English**01 Semester Credit**

Intensive practice in writing for the purpose of preparing students for college-level English. Successful completion permits a student to enroll in ENG 1010.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Appropriate placement test score, or departmental approval.

ENG-0960 Reading Improvement**03 Semester Credits**

Designed for those students who need to improve basic comprehension. Emphasis in literal, inferential, and critical comprehension and vocabulary development.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Appropriate placement test score, or departmental approval.

ENG-0980 Language Fundamentals I**06 Semester Credits**

Emphasis on mastery of language fundamentals.

Lecture 06 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0960 Reading Improvement, or appropriate placement test score, or departmental approval.

ENG-0990 Language Fundamentals II**06 Semester Credits**

Emphasis on basic essay writing skills, reading, study and test-taking skills.

Lecture 06 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0980 Language Fundamentals I, or placement by department.

ENG-1001 Intensive College Reading & Writing**03 Semester Credits**

Course provides support for students enrolled in ENG-1010 College Composition I through intensive instruction in academic writing, reading skills, study skills, grammar, mechanics, and test-taking strategies.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Appropriate placement test score, and concurrent enrollment in ENG-1010 College Composition I, or departmental approval.

ENG-1010 College Composition I**03 Semester Credits**

Study and practice in academic writing; reading and interpretation of selected texts. Course may be thematically organized.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Appropriate placement test score; or ENG-0900 Transition to College English; or ENG-0990 Language Fundamentals II; or ESL-1310 English as a Second Language: Grammar for Communication III, and ESL-1321 English as a Second Language: Reading and Writing III, and ESL-1331 English as a Second Language: Speaking and Listening III; or departmental approval.

OAN Approved: TME001

ENG-101H Honors College Composition I**03 Semester Credits**

Study and practice in academic writing; reading and interpretation of selected texts. Requires intensive critical/analytical thinking, writing and speaking. Course may be thematically organized. Note: Course meets ENG-1010 graduation requirements.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Appropriate placement test score, or departmental approval.

ENG-1020 College Composition II**03 Semester Credits**

Study and practice of persuasive and argumentative writing with emphasis on analysis and research; reading and interpretation of selected texts. Course may be thematically organized.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I.

OAN Approved: TME002

ENG-102H Honors College Composition II**03 Semester Credits**

Study and practice of persuasive and argumentative writing with emphasis on analysis and research; reading and interpretation of selected texts. Requires intensive critical/analytical thinking, writing and speaking. Course may be thematically organized. Note: Course meets ENG-1020 graduation requirements.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-101H Honors College Composition I, or ENG-1010 College Composition I; and departmental placement.

ENG-1070 Advanced Reading Improvement**03 Semester Credits**

Instruction in art and skills of efficient reading with emphasis on understanding and critical analysis of college-level material. Strategies to increase comprehension, promote vocabulary development, and improve ability to study and retain text-related information. Application to professional and business-related reading when adaptable.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I, or placement by department.

ENG-179H Honors Contract in English**01 Semester Credit**

Honors Contract complements and exceeds requirements and objectives for an existing ENG 1000-level course through formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete contract, student is required to meet on a regularly scheduled basis with instructor offering the contract for mentor-student

tutorial sessions. May be repeated for a maximum of six credits of different topics.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Must be taken concurrently with a 1000-level honors course in English, whose instructor approves the Honors Contract.

ENG-2010 Creative Writing**03 Semester Credits**

Practice in imaginative writing, exploration of creative potential. Emphasis on sources of creativity and forms of expression in selected literary genres.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2020 Women Writers on the Experiences of Women**03 Semester Credits**

An introduction to women's literature through the study of classic and contemporary readings. Involves analysis of theme, character, plot, setting, dramatic conflict, and writing style. Provides an opportunity to study literature by women authors that are not traditionally covered in most American and British literature survey courses.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II.

ENG-2040 Poetry Workshop**03 Semester Credits**

Practice in imaginative writing, exploration of creative potential. Emphasis on sources of creativity and forms of expression in poetry and its subgenres.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II.

ENG-2050 Introduction to Personal and Reflective Writing**03 Semester Credits**

[This course is cross-listed as WST-2050. Credit may be earned once for either course.] The examination of personal, narrative, and self reflective writing from journals, memoirs, letters, essays, poetry, blogs, autobiographies, biographies and other nonfiction works through discussion, and various formal and informal writing assignments.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I or ENG-101H Honors College Composition I.

ENG-2151 Technical Writing**03 Semester Credits**

The role of writer and audience in the technical communication process; emphasis on the actual writing and evaluation of technical, business, and online documents; includes layout, design principles, and ethical issues as well as writing for diverse audiences. Requires individual and group writing projects and presentations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I, or departmental approval.

ENG-2310 American Literature I**03 Semester Credits**

Study of significant works of American prose and poetry from the pre-Columbian period through 1865.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

OAN Approved: OAH053

ENG-2320 American Literature II**03 Semester Credits**

Study of major works of American prose, poetry, and drama from 1865 to the present.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

OAN Approved: OAH054

ENG-2350 British Literature I**03 Semester Credits**

Survey of major works of British prose, poetry, and drama from early period to 1785.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

OAN Approved: OAH055

ENG-2360 British Literature II**03 Semester Credits**

Survey of major works of British prose, poetry, and drama from 1785 to the present.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

OAN Approved: OAH056

ENG-2410 Introduction to Literature: Poetry**03 Semester Credits**

Critical analysis of selected works of poetry, designed to develop understanding and appreciation of poem as literary form.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2420 Introduction to Literature: Fiction**03 Semester Credits**

Critical analysis of selected works of fiction, designed to develop understanding and appreciation of short story and novel as literary forms.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2430 Introduction to Literature: Drama**03 Semester Credits**

Reading, discussion, interpretation, and critical analysis of a variety of dramatic works. Designed to develop understanding and appreciation of drama as a literary form.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2450 Introduction to Literature: Science Fiction**03 Semester Credits**

Historical roots, literary forms, major works, and subgenres of science fiction literature.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II or ENG-102H Honors College Composition II.

ENG-2510 African-American Literature I**03 Semester Credits**

Study of major works of African-Americans from the colonial period to 1940.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2520 African-American Literature II**03 Semester Credits**

Study of major works of African-Americans from 1940 to the present.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2601 Literature for Children and Adolescents**03 Semester Credits**

Reading, discussion, interpretation, and written analysis of a wide variety of literary works written for children and adolescents.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2700 World Literature

03 Semester Credits

Study of World's major authors, themes, and literary movements from earliest literature to modern literature. Emphasis is on writers from the non-Western world. Some works of Western authors may be used for comparative purposes and to demonstrate interconnectedness of world's various cultures.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2710 Shakespeare

03 Semester Credits

Critical analysis of selected works of Shakespeare.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2720 Survey of Biblical Literature

03 Semester Credits

Study of the Bible as an anthology of ancient Near Eastern literature, focusing on Old Testament narratives, history, prophecy, poetry, and wisdom literature, and New Testament letters, gospels, and apocalyptic literature. Emphasis on the original cultural and historical contexts of the literature as well as Biblical texts that have been influential in literature, art, and popular culture.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II, or departmental approval.

ENG-2730 Exploration of World Mythology

03 Semester Credits

Develops skills for the in-depth exploration of literature. Focuses on reading and interpreting myths from around the world and throughout history, practicing various analytical approaches essential to building interpretive arguments.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors Composition II, or departmental approval.

ENG-2740 Literature and Film

03 Semester Credits

Analyze various interrelated film and literary texts. Examine film and literature as distinct but related media forms, explore thematic relationships between specific films and works of literature, and analyze filmic adaptations of literature.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II or ENG-102H Honors College Composition II.

ENG-2760 Detective Fiction: Mystery, Murder, and Malice

03 Semester Credits

Study of detective fiction as a genre from the nineteenth century to the present day.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II or ENG-102H Honors College Composition II or departmental approval.

ENGLISH AS A SECOND LANGUAGE - ESL

ESL-1020 English as a Second Language: Basic Reading and Writing

06 Semester Credits

English for non-native speakers. Practice in reading beginning material. Practice in writing sentences, short answers, controlled compositions, and responses to picture stories.

Lecture 05 hours. Laboratory 02 hours.

Prerequisite(s): ESL-1030 English as a Second Language: Basic Grammar for Communication, or concurrent enrollment; and placement by ESL assessment exam.

ESL-1030 English as a Second Language: Basic Grammar for Communication

06 Semester Credits

English for non-native speakers. Understanding of basic grammatical forms and functions of American English and practice in producing them. Focus on form, meaning and use in oral communication.

Lecture 05 hours. Laboratory 02 hours.

Prerequisite(s): Placement by ESL assessment exam.

ESL-1110 English as a Second Language: Grammar for Communication I

04 Semester Credits

English for non-native speakers. Understanding of basic grammar structures of American English and practice in producing them. Focus on form, meaning, and use in oral and written communication.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ESL-1030 English as a Second Language: Basic Grammar for Communication, and ESL-1020 English as a Second Language: Basic Reading and Writing; or placement by ESL assessment exam.

ESL-1121 English as a Second Language: Reading and Writing I**04 Semester Credits**

English for non-native speakers. Practice in reading high-beginning texts. Practice in writing narratives and personal expression paragraphs using basic sentence patterns and correct spelling and punctuation.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ESL-1030 English as a Second Language: Basic Grammar for Communication, and ESL-1020 English as a Second Language: Basic Reading and Writing, or placement by ESL assessment exam; and ESL-1110 English as a Second Language: Grammar for Communication I, or concurrent enrollment.

ESL-1131 English as a Second Language: Speaking and Listening I**04 Semester Credits**

High-beginning level communication for non-native speakers. Practice communicating by speaking and listening to American English. Develop competence and confidence in listening comprehension and conversational skills within supportive structured situations. Recognize and produce sounds, rhythm and intonation patterns at a high beginning level.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ESL-1020 English as a Second Language: Basic Reading and Writing, and ESL-1030 English as a Second Language: Basic Grammar for Communication; or Placement by ESL assessment exam; and ESL-1110 English as a Second Language: Grammar for Communication I, or concurrent enrollment.

ESL-1210 English as a Second Language: Grammar for Communication II**04 Semester Credits**

English for non-native speakers. Understanding of intermediate grammar, structures of American English and practice in producing them. Focus on form, meaning, and use in oral and written communication.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ESL-1110 English as a Second Language: Grammar for Communication I, and ESL-1121 English as a Second Language: Reading and Writing I, and ESL-1131 English as a Second Language: Speaking and Listening I; or placement by ESL assessment exam.

ESL-1221 English as a Second Language: Reading and Writing II**04 Semester Credits**

English for non-native speakers. Practice in reading intermediate texts. Practice in writing personal essays and responses to readings, using intermediate sentence patterns and correct spelling and punctuation.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ESL-1131 English as a Second Language: Speaking and Listening I, and ESL-1110 English as a Second Language: Grammar for Communication I, and ESL-1121 English as a Second Language: Reading and Writing I; or placement by ESL assessment exam; and ESL-1210 English as a Second Language: Grammar for Communication II, or concurrent enrollment.

ESL-1231 English as a Second Language: Speaking and Listening II**04 Semester Credits**

Intermediate communication for non-native speakers. Practice communicating by speaking and listening to American English. Develop competence and confidence in listening comprehension, intermediate note-taking, and conversational skills within supportive, structured and non-structured situations. Recognize and produce sounds, rhythm, stress, and intonation patterns at an intermediate level.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ESL-1110 English as a Second Language: Grammar for Communication I, and ESL-1121 English as a Second Language: Reading and Writing I, and ESL-1131 English as a Second Language: Speaking and Listening I; or placement by ESL assessment exam; and ESL-1210 English as a Second Language: Grammar for Communication II, or concurrent enrollment.

ESL-1240 Accent Reduction for Non-Native Speakers**03 Semester Credits**

Intermediate and higher level pronunciation for non-native speakers of English. Improve intelligibility and comprehensibility through reducing or eliminating the features of the student's native language pronunciation which interfere with effective communication. Develop confidence and effectiveness in speaking and pronouncing American English. Emphasis placed on the most distinguishing features of American English, such as rhythm, stress, and intonation, in order to convey emphasis and coherence. May be repeated for up to 9 credits; only 3 credits may be applied to degree requirements.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ESL-1121 English as a Second Language: Reading and Writing I, and ESL-1131 English as a Second Language: Speaking and Listening I, ESL-1110 English as a Second Language: Grammar for Communication I or placement test.

ESL-1250 Introduction to American Culture

03 Semester Credits

Designed for non-native speakers of English placed in level 2 or higher in the ESL program to develop understanding and increase awareness of the culture of the United States. Focuses on traditional mainstream values, how they developed, and how they influence American life today. Attendance to cultural events and other field trips required.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ESL-1121 English as a Second Language: Reading and Writing I, and ESL-1131 English as a Second Language: Speaking and Listening I, and ESL-1110 English as a Second Language: Grammar for Communication I.

ESL-1310 English as a Second Language: Grammar for Communication III

04 Semester Credits

English for non-native speakers. Understanding of advanced grammar structures of American English and practice in producing them. Focus on form, meaning, and use in oral and written communication.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ESL-1210 English as a Second Language: Grammar for Communication II, and ESL-1221 English as a Second Language: Reading and Writing II, and ESL-1231 English as a Second Language: Speaking and Listening II; or placement by ESL assessment exam.

ESL-1321 English as a Second Language: Reading and Writing III

04 Semester Credits

English for non-native speakers. Practice in reading advanced texts and literary material. Practice in writing interpretive essays and personal responses to readings, using advanced sentence patterns and correct spelling and punctuation.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ESL-1210 English as a Second Language: Grammar for Communication II, and ESL-1221 English as a Second Language: Reading and Writing II, and ESL-1231 English as a Second Language: Speaking and Listening II; or placement by ESL assessment exam; and ESL-1310 English as a Second Language: Grammar for Communication III, or concurrent enrollment.

ESL-1331 English as a Second Language: Speaking and Listening III

04 Semester Credits

High-intermediate communication for non-native speakers. Develop critical listening and speaking skills and strategies, and improve pronunciation for academic, professional, and social settings. Develop notetaking skills

and strategies for academic purposes.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ESL-1210 English as a Second Language: Grammar for Communication II, and ESL-1220 English as a Second Language: Reading and Writing II, and ESL-1230 Speaking English as a Second Language II; or placement by ESL assessment exam; and ESL-1310 English as a Second Language: Grammar for Communication III or concurrent enrollment.

ESL-1350 ESL/ESOL Spoken English through Idioms and Phrasal Verbs

03 Semester Credits

This course will familiarize the ESL/ESOL speaker with the informal spoken American English idioms and phrasal verbs.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ESL-1110 English as a Second Language: Grammar for Communication I, and ESL-1121 English as a Second Language: Reading and Writing I, and ESL-1131 English as a Second Language: Speaking and Listening I; or departmental approval.

ESL-1410 English as a Second Language Grammar for Communication IV

04 Semester Credits

English for non-native speakers. Mastering of advanced grammar structures of American English and practice in producing them. Focus on form, meaning and use in oral and written communication.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ESL-1310 English as a Second Language: Grammar for Communication III, and ESL-1320 English as a Second Language: Reading and Writing III, and ESL-1330 Speaking English as a Second Language III, or placement by ESL assessment exam.

ESL-1420 Intensive English Program Writing IV

06 Semester Credits

English for non-native speakers. Designed for students about to begin a graduate or professional degree program or an undergraduate program at the upperclassman level. Practice in the skills needed for analytical writing as well as research writing, including formulating the research question, and finding, evaluating, incorporating, and citing sources. Research practices for a wide variety of academic disciplines covered.

Lecture 06 hours. Laboratory 00 hours.

Prerequisite(s): ESL-1310 English as a Second Language: Grammar for Communication III, ESL-1320 English as a Second Language: Reading and Writing III, and ESL-1330 Speaking English as a Second Language III, or placement by ESL placement Exam.

ESL-1440 Intensive English Program Reading for Speakers of Other Languages
04 Semester Credits

This course for non-native speakers strengthens reading skills in preparation for academic coursework in upper division courses at a four year college or university or in a graduate program.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ESL-1310 English as a Second Language: Grammar for Communication III, and ESL-1320 English as a Second Language: Reading and Writing III, and ESL-1320 English as a Second Language: Reading and Writing III; and ESL-1410 English as a Second Language Grammar for Communication IV or concurrent enrollment; and ESL-1420 Intensive English Program Writing IV or concurrent enrollment; or departmental approval.

ESL-144L Intensive Reading Lab
03 Semester Credits

Intensive reading lab for non-native speakers. Emphasis on developing and practicing reading skills and strategies necessary for building confidence and academic success including increasing speed, vocabulary building, developing and practicing comprehension skills in reading academic texts and extensive reading (reading for pleasure).

Lecture 00 hours. Laboratory 06 hours.

Prerequisite(s): ESL-1320 English as a Second Language: Reading and Writing III.

ESL-1460 ESL/ESOL for Special Purposes - Medicine
02 Semester Credits

Course for English as a Second Language (ESL)/English for Speakers of Other Languages (ESOL) students entering medical fields to strengthen language skills and introduce students to American healthcare situations.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ESL-1330 Speaking English as a Second Language III.

ESL-1480 TOEFL Preparation
03 Semester Credits

English for non-native speakers. Practice in reading advanced texts and literary material in preparation for the Test of English as a Foreign Language (TOEFL). Practice writing essays, using advanced sentence patterns and punctuation. Practice listening to conversations and to lectures and synthesizing information from oral and written passages into organized essays. Practice speaking and formulating extended oral responses to questions.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ESL-1310 English as a Second Language: Grammar for Communication III or concurrent enrollment; and ESL-1320 English as a Second Language: Reading and Writing III or concurrent enrollment; and ESL-1330 Speaking English as a Second Language III or concurrent enrollment; or departmental approval.

ESL-1510 English as a Second Language: Accelerated Grammar II
06 Semester Credits

Accelerated English for non-native speakers.

Understanding and application of intermediate to advanced grammar structures of American English and practice in producing them. Focus on form, meaning, and use in oral and written communication.

Lecture 05 hours. Laboratory 02 hours.

Prerequisite(s): ESL departmental approval.

ESL-1520 English as a Second Language: Accelerated Writing II
03 Semester Credits

Accelerated English for non-native speakers. Intermediate to high intermediate and advanced ESL writing. Writing skills and strategies to prepare students for academic courses with an emphasis on increased comprehension and written communicative skills.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ESL departmental approval.

ESL-1530 English as a Second Language: Accelerated Speaking & Listening II
04 Semester Credits

Accelerated English for non-native speakers. Intermediate to high-intermediate speaking, listening, and note-taking skills. Strategies and practice in oral skills to build fluency, in aural skills to increase comprehension, and in note-taking skills to increase speed and organizational skills.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ESL departmental approval.

ESL-1540 English as a Second Language: Accelerated Reading II
03 Semester Credits

Accelerated English for non-native speakers. Intermediate to high intermediate and advanced reading and ESL writing. Reading Skills and strategies to prepare students for academic courses with an emphasis on increased comprehension in reading skills.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ESL departmental approval.

ENVIRONMENTAL HEALTH AND SAFETY TECHNOLOGY - EHST

EHST-1301 Introduction to Environmental Technology **03 Semester Credits**

Comprehensive overview of topics relating to the environmental technology field. Concentration on developing awareness of the many facets of science, technology and public policy that are involved in environmental management.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

EHST-1310 Introduction to Environmental Law **04 Semester Credits**

Study of U.S. Environmental Protection Agency (EPA) laws and regulations which protect our environment and health. Students learn steps in managing hazardous wastes including production, treatment, transportation, and disposal of hazardous materials. Involves reading, interpreting, and summarizing sections from the Code of Federal Regulations and The United States Code. Coverage includes: National Environmental Policy Act; Occupational Safety and Health Act; Clean Air Act; Clean Water Act; Safe Drinking Water Act; Resource Conservation and Recovery Act; Comprehensive Environmental, Response, Compensation, and Liability Act; Emergency Planning and Community Right-to Know Act; and related toxic laws. Provides overview of roles of judicial and legislative agencies. Modular courses EHST-131A and EHST-131B together will also meet degree requirements for this course.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): None (ENG-1010 College Composition I recommended for students without prior knowledge of law).

EHST-1330 Hazardous Waste Operations and Emergency Response **02 Semester Credits**

Comprehensive instruction in health and safety planning and procedures for: uncontrolled hazardous waste site work; hazardous waste treatment, storage or disposal facilities (TSDFs) work; and emergency responses to hazardous materials releases. Students must complete 40 contact hours of instruction to meet OSHA's certification requirements in training portion of 29 CFR 1910.120 (the "HAZWOPER" standard). Ten additional hours of lecture required to meet OSHA requirements.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

EHST-1350 Health and Safety in the Workplace **03 Semester Credits**

Introduction to occupational safety and health management in general industry. Includes in-depth exploration of Occupational Safety and Health Administration (OSHA) standards, Worker Compensation

programs, and proactive safety promotion such as worker training and integration of safety into quality programs.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

EHST-2220 EH&S Management Systems **02 Semester Credits**

Overview and history of Environmental Health & Safety management systems (MSs), focusing on the International Standards Organization 14000 series and the OHSAS 18000 series. Addresses MS auditing; setting an environmental/safety policy; specifying objectives and targets; risk assessments; waste minimization; the benefits of MS system certification; regulatory and certification requirements; implementing MS programs; monitoring and measuring program results; and reviewing programs to ensure continual improvement. Uses case study to illustrate development of an EH&S management system.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): EHST-1310 Introduction to Environmental Law, or EHST-131A Introduction to Environmental Law - Water and Air, and EHST-131B Introduction to Environmental Law - Remediation, or departmental approval.

EHST-2300 International Environmental Issues **02 Semester Credits**

Overview of environmental issues in the U.S. and internationally. Analysis of global environmental issues including endangered species, overpopulation, ocean dumping, border problems, deforestation, Mexican environmental regulations and global warming. Emphasis on management options and use of international laws and treaties, especially the North American Free Trade Agreement.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): EHST-1310 Introduction to Environmental Law; or EHST-131A Introduction to Environmental Law - Water and Air and EHST-131B Introduction to Environmental Law - Remediation; or departmental approval.

EHST-2320 Environmental Negotiation, Mediation, and Conflict Resolution **02 Semester Credits**

Overview to environmental dispute resolution in environmental policy and decision making. Examination of successful negotiation techniques and how and when to use mediation and other conflict resolution techniques. Includes negotiation, mediation and conflict resolution simulations and environmental case studies. Examines listening and interpersonal skills.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): EHST-1310 Introduction to Environmental Law; or EHST-131A Introduction to Environmental Law - Water and Air and EHST-131B Introduction to Environmental Law - Remediation; or departmental approval.

EHST-2330 Ecotourism**02 Semester Credits**

Examination of ecotourism as an economic development and conservation activity. Discussion and analysis of human dimensions of ecotourism and impacts of ecotourism on cultural, political and social systems of host country or region. Organizations and groups, which provide ecotourism opportunities, are identified and the career opportunities in ecotourism are discussed.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): EHST-1310 Introduction to Environmental Law; or EHST-131A Introduction to Environmental Law - Water and Air and EHST-131B Introduction to Environmental Law - Remediation; or departmental approval.

EHST-2341 Hazardous Materials Transportation**02 Semester Credits**

Detailed study of U.S. Department of Transportation (DOT) regulations as well as an introduction to international transportation organizations and their rules for air and vessel transportation. Students learn to interpret DOT regulations, recommend compliance strategies, and select packaging, labeling, documentation and placarding for selected hazardous materials.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): EHST-1310 Introduction to Environmental Law; or EHST-131A Introduction to Environmental Law - Water and Air and EHST-131B Introduction to Environmental Law - Remediation; or departmental approval.

EHST-2351 Emergency Planning and Response**02 Semester Credits**

Develop emergency response contingency plan for a facility or community. Preparedness includes analyzing hazards, writing and implementing the contingency plans, training employees for an emergency, and evaluating the effectiveness of the contingency plan.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): EHST-1310 Introduction to Environmental Law; or EHST-131A Introduction to Environmental Law - Water and Air and EHST-131B Introduction to Environmental Law - Remediation; or departmental approval.

EHST-2361 Environmental Sampling and Analysis**04 Semester Credits**

Covers the methodology of obtaining, managing and interpreting the analysis results of environmental media samples, including air, water, ground water and soil, and various waste samples. Quality control and quality assurance policies and procedures are emphasized. Competency gained in interpreting results that can be used in decision-making processes related to hazardous materials.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): MATH-1060 Survey of Mathematics.

**EHST-2371 Occupational Safety and Health Act/Department of Transportation Refresher
01 Semester Credit**

Provides annual OSHA refresher training to the hazardous waste workers and supervisors covered under 29 CFR 1910.120 (HAZWOPER) and DOT refresher training to hazmat employees covered under 49 CFR 172. Covers regulations, medical surveillance, hazard recognition, toxicology, site control, safe work practices, monitoring, personal protective equipment, decontamination and site safety.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): EHST-1330 Hazardous Waste Operations and Emergency Response, or departmental approval.

EHST-2380 Risk Assessment**02 Semester Credits**

Basic principles and methods of conducting a risk assessment. Examines both value and limitations of risk assessment. Focuses on environmental and health risks and includes an overview of toxicological principles. Reviews how risk management decisions are made in public and private sectors. Examines how to communicate environmental and health risk, public policy choices and trade-offs to public.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): EHST-1301 Introduction to Environmental Technology, or departmental approval.

EHST-2390 Solid and Hazardous Waste Management**03 Semester Credits**

Study of statutes, regulations and guidelines pertaining to hazardous waste management, with an emphasis on the requirements of the Resource Conservation and Recovery Act (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as amended. Management of hazardous wastes including "cradle to grave" requirements and enforcement strategies. Involves reading, interpreting, and summarizing sections from the Code of Federal Regulations and the United States Code.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): EHST-1310 Introduction to Environmental Law; or EHST-131A Introduction to Environmental Law - Water and Air and EHST-131B Introduction to Environmental Law - Remediation; or departmental approval.

EHST-2940 Field Experience

01-02 Semester Credits

Supervised paid or unpaid field experience, which relates to individual student's occupational objectives. Students are assigned to a facility, governmental institution, site or project to study regulatory compliance of federal and state environmental, health and/or safety laws and regulations.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 hours per semester (1) credit/ 360 hours per semester (2) credits.

Prerequisite(s): EHST-1301 Introduction to Environmental Technology, EHST-1310 Introduction to Environmental Law and departmental approval.

EHST-2991 Professional Practice

03 Semester Credits

Capstone course for Environmental, Health and Safety Technology. Cultivates critical problem solving skills in an environmental, health and safety context utilizing simulated and/or actual scenarios. Draws upon the student's legal research skills and technical knowledge to compile legally and scientifically justifiable solutions for mock clients within the confines of budgetary and time constraints. Requires reflection on degree outcomes and preparedness for initial employment or promotion in the Environmental, Health and Safety Field.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: sophomore standing.

FINANCIAL MANAGEMENT - FIN

FIN-1061 Personal Finance

03 Semester Credits

Introductory course designed to prepare a student to make educated decisions regarding consumer choices and personal financial goals. These decisions impact consumer purchasing and credit, insurances, medical care, home ownership, income taxes, investment and savings, and retirement and estate planning.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

FIN-2100 Financial Management

03 Semester Credits

Analytical study of basic principles of financial management, integrating financial analysis and planning, working capital management, capital budgeting, capital structure, dividend policy, financial markets, and financial instruments into business decisions and reporting.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ACCT-1340 Managerial Accounting, or departmental approval: equivalent courses or equivalent work experience.

FIN-2830 Cooperative Field Experience

01-03 Semester Credit

Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): Formal application into the Cooperative Education Program.

FIRE TECHNOLOGY - FIRE

FIRE-1100 Principles of Emergency Services

03 Semester Credits

Provides an overview to fire protection including history, organization of services, local and state laws in addition to nomenclature, chemistry and physics of fire protection systems, strategy and tactics.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Admission to or completion of accredited Fire Academy.

CTAN Approved: CTFFI002/CTFFII003

FIRE-1200 Principles of Fire and Emergency Services Safety and Survival

02 Semester Credits

Introduces the basic principles and history related to the national firefighter life safety initiatives, focusing on the need for cultural and behavior change throughout the emergency services.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Admission to or completion of Fire Academy.

CTAN Approved: CTFFII003

FIRE-1300 Fire Tactics and Strategy

03 Semester Credits

Pre-planning of fire fighting operation, size-up fire scene, employment of fire personnel and equipment. Overall command pattern at fire scene.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Successful completion of Fire Academy

FIRE-1400 Chemistry of Hazardous Materials

02 Semester Credits

Analysis of chemical reactions as causative agent of fire. Includes redox reactions, reaction rates, toxic compounds and hazardous combinations of chemicals. Safety procedures in handling hazardous materials, transporting and defusing them.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Successful completion of Fire Academy.

FIRE-1500 Fire Behavior and Combustion**02 Semester Credits**

Explores the theories and fundamentals of how and why fires start, spread, and how they are controlled.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Admission to or completion of Fire Academy.

CTAN Approved: CTFFII003

FIRE-1600 Fire Prevention**03 Semester Credits**

Provides fundamental knowledge relating to the field of fire prevention. Topics include: history and philosophy of fire prevention; organization and operation of a fire prevention bureau; use and application of codes and standards; plans review; fire inspections; fire and life safety education; and fire investigation.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Successful completion of Fire Academy.

FIRE-2321 Fire Protection Systems**02 Semester Credits**

Provides information relating to the features of design and operation of fire alarm systems, water-based fire suppression systems, special hazard fire suppression systems, water supply for fire protection and portable fire extinguishers.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Admission to or completion of Fire Academy.

CTAN Approved: CTFFII003

FIRE-2351 Building Construction for Fire Protection**03 Semester Credits**

Provides the components of building construction related to firefighter and life safety. The elements of construction and design of structures are shown to be key factors when inspecting buildings, preplanning fire operations, and operating at emergencies.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Completion of Fire Academy.

FIRE-2401 Fire Protection Hydraulics and Water Supply**03 Semester Credits**

Provides a foundation of theoretical knowledge in order to understand the principles of the use of water in fire protection and to apply hydraulic principles to analyze and to solve water supply problems.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Successful completion of Fire Academy.

FIRE-2600 Fire Investigation Methods**03 Semester Credits**

Principles of fire investigation, arson laws, interrogation of witnesses. Use of photography in fire investigation.

Preparation of reports. Collection and presentation of arson evidence in court.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Successful completion of Fire Academy.

FIRE-2720 Fire Service Training and Public Relations**02 Semester Credits**

Methods and techniques of instruction for fire personnel. Organization of training programs and preparation of training materials. Study of public relations as related to fire service with emphasis on building good will and explanation of fire service activity in the community.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Successful Completion of Fire Academy.

FIRE-2730 Managing Fire Services**03 Semester Credits**

Total management of effective fire and medical emergency services on immediate basis. Budget, personnel, labor relations, measurement and evaluation of productivity of service. Training and supervision of fire service personnel.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Successful completion of Fire Academy.

FIRE-2830 Cooperative Field Experience**01-03 Semester Credits**

Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): Formal application into the Cooperative Education Program.

FIRE-2990 Fire Technology Professional Study**01 Semester Credit**

Capstone course in Fire Technology. Provides students with opportunities to apply technical, oral, and written skills; to prepare resumes and/or portfolios and develop interview skills; to study history and trends in fire technology. Students will choose an area compatible with their interest and background, and facilitated by the instructor, prepare a report, presentation, resume, or a study.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Successful completion of minimum Fire Academy.

FRENCH - FREN**FREN-1010 Beginning French I****04 Semester Credits**

Introduction to French language skills needed in order to visit or study in a French-speaking location. Concentrates on the study of functional French, with emphasis on providing and obtaining personal information, expressing feelings and emotions, and exchanging opinions. Includes basic French grammatical structures, vocabulary, and various cultural aspects of the French-speaking world.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): None.

OAN Approved: OFL001

FREN-1020 Beginning French II**04 Semester Credits**

Continued study of French language skills needed in order to visit or study in a French-speaking location.

Concentrates on the study of functional French, with emphasis on oral (listening-speaking) and written (reading-writing) communication situations and cultural contexts. Additional grammar review and vocabulary building. Discussion of various cultural aspects of the French-speaking world.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): FREN-1010 Beginning French I, or one year of high school French; or departmental approval.

OAN Approved: OFL002

FREN-1040 Study Abroad in Quebec - Beginner Level**04 Semester Credits**

Introductory course focused on the study of functional French, with an emphasis on speaking, reading, writing, and understanding oral and written French in various situations and texts. Designed to enhance students' knowledge and appreciation of French Canadian language, culture, political issues, and business world. Five-week program begins with four orientation sessions followed by participation in a three-week French language immersion program in the province of Quebec.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): FREN-1010 Beginning French I; or departmental approval.

FREN-2010 Intermediate French I**03 Semester Credits**

Continued study of functional French, with an emphasis on increased understanding and utilization of oral and written expression, as it relates to the situations encountered when traveling abroad. Review of basic French grammatical structures and vocabulary with additional study of more complex grammatical elements and lexical terms. Continued study of various cultural aspects of the French-speaking world.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): FREN-1020 Beginning French II, or two years of high school French; or departmental approval.

FREN-2020 Intermediate French II**03 Semester Credits**

Second part of intermediate-level course focused on teaching language skills needed to visit or live in a French-speaking location for an extended time. Concentrated study of functional spoken and written French with emphasis on understanding and expression. Review of basic grammatical structures, vocabulary with additional use of complex grammatical elements and more detailed lexical terms and culture.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): FREN-2010 Intermediate French I, or three years of high school French; or departmental approval.

FREN-2040 Study Abroad in Quebec -Intermediate Level**04 Semester Credits**

Intermediate course concentrated on the continued study of functional French, with an emphasis on oral and written French in various situations and texts. Aimed at enhancing knowledge and appreciation of French Canadian culture, politics, and business. Includes orientation sessions in preparation for French language immersion program in the province of Quebec.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): FREN-1020 Beginning French II; or departmental approval.

FREN-2410 French Conversation and Composition**03 Semester Credits**

Intermediate course based upon the first half of a French novel. Concentrates on the study of functional French, with an emphasis on speaking, writing, and understanding oral and written French in various situations and texts. Review of basic and complex French grammatical structures. Additional development of vocabulary skills in the French language and knowledge of cultural aspects related to the French-speaking world.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): FREN-2020 Intermediate French II, or three years of high school French; or departmental approval.

FREN-2420 French Civilization and Literature**03 Semester Credits**

Intermediate course based upon the second half of a French novel. Continued concentration on the study of functional French with an emphasis on speaking, writing, and understanding oral and written French in various situations and texts. Review of basic and complex French grammatical structures. Additional development of vocabulary skills in the French language as well as knowledge of cultural aspects related to the French-speaking world.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): FREN-2020 Intermediate French II, or three years of high school French; or departmental approval.

GENERAL STUDIES - GEN
GEN-1000 Introduction to College**01 Semester Credit**

Orients students to the College's programs, services, and policies. Topics may include student resources, college and student expectations, academic support services, financial aid, degree programs, and student rights and responsibilities.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

GEN-1010 Personal Development**02 Semester Credits**

Experience-based course designed to explore individual resources, values, goals, time management, and decision making. Focus placed on structured activities which build self-esteem, motivation, self-confidence, empathy, and communication skills in a group setting.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

GEN-1022 Strategies for Success**03 Semester Credits**

Information and methods helpful for student success. Planning, time management, communication skills, relationships, memory, reading comprehension and retention, note taking and test taking techniques. Stress management and techniques for overcoming test anxiety will be practiced. Diversity, college resources, and learning styles will be explored.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-0990 Language

Fundamentals II, or departmental approval.

GEN-1032 Information Literacy and Library Research**02 Semester Credits**

Hands-on experience using the Internet, print and electronic library resources to locate information for course related and personal needs. Emphasis is on the use of search strategies, various research tools, and the application of critical thinking to library research.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

GEN-1040 Career Exploration**02 Semester Credits**

Exploration of personality, interests, skills, and values through a series of self-assessment inventories based on career theory. Emphasis on the nature and meaning of work in relation to life and career satisfaction.

Occupational resources analyzed and discussed.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

GEN-1060 Creative Parenting Skills for Students**02 Semester Credits**

Course applies a developmental framework in examining theoretical approaches to the process of parenting. Explores expectations, influences and strategies of parenting with focus on attitudes and behaviors. Topics include facilitating the parent-child relationship from birth through adolescence, parenting techniques, adaptations of the traditional family structure, contemporary discipline techniques, and community resources. These topics will be addressed within the context of cultural diversity.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

GEN-1070 First Year Success Seminar**01 Semester Credit**

Introduction to Cuyahoga Community College community, resources, and skills necessary for student success. Topics include personal responsibility, motivation, student support services, career and academic planning, time management, study skills, and financial literacy.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

GEOGRAPHY - GEOG
GEOG-1000 Introduction to Geography**03 Semester Credits**

Introduction and description of the four traditions of geography: earth science, cultural-environmental, location, and regional geography.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OSS007

GEOG-1010 World Regional Geography**03 Semester Credits**

Study of present issues and future prospects of developed and developing countries. Emphasis on economic activities determined by physical environment, social and cultural characteristics, and political stability.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OSS008

GEOG-1030 Environmental Geography**03 Semester Credits**

Study of issues created by a rapidly increasing world population causing depletion of world energy resources and agricultural crises. Other environmental problems including pollution, destruction of rain forests, overgrazing, and loss of habitat considered.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

GEOG-1050 Africans in the Americas

03 Semester Credits

Study of world regions touched by the African Diaspora, especially Africa, Caribbean, Brazil, and United States. Focus on characteristics of each region, demographic changes, and variations that shaped culture during and after slavery and to the present.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

GEOG-1510 Regional Geography of the United States and Canada

03 Semester Credits

Regional geography of the United States and Canada noting significant characteristics of each region. Physical setting, economic activities, cultural diversity, social conditions, and political identity of each region studied.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

GERMAN - GER

GER-1010 Beginning German I

04 Semester Credits

Introduction to German through multiple approaches with emphasis on speaking and understanding. Practice in conversational German and aural comprehension of topics of daily interest. Some practice in writing basic sentences and small simple paragraphs on relevant topics and reading short paragraphs.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): None.

GER-1020 Beginning German II

04 Semester Credits

Development of proficiency in speaking, understanding, reading, and writing. Emphasis on strengthening conversational skills through discussions of selected readings and cultural topics.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): GER-1010 Beginning German I, or one year of high school German, or departmental approval.

GER-2010 Intermediate German I

03 Semester Credits

Discussion of topics of everyday life, colloquialisms, vocabulary augmentation, and improvement of speech patterns. Grammar review. Practice in writing compositions. Introduction to German civilization and literature.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): GER-1020 Beginning German II, or two years of high school German, or departmental approval.

GER-2020 Intermediate German II

03 Semester Credits

Intensive exercises in written and oral expression. Additional grammar review and vocabulary building. Further exploration of German literature.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): GER-2010 Intermediate German I, or three years of high school German, or departmental approval.

HEALTH - HLTH

HLTH-1100 Personal Health Education

03 Semester Credits

Introduction to meaning and scope of health as related to individual, family, community and society. Focuses on introspective view of physical, emotional, intellectual, social, occupational, environmental, and spiritual dimensions of health with emphasis on mechanism for positive behavior change.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

HLTH-1230 Standard First Aid and Personal Safety

01 Semester Credit

Basic level first aid and one-person CPR course intended to provide knowledge and skills necessary to help sustain life and minimize the consequences of injury or sudden illness until advanced medical help arrives. Special emphasis placed on identifying and eliminating potentially hazardous conditions, recognizing emergencies and making appropriate decisions for first aid care. Upon successful completion, student is eligible for certification in First Aid/CPR/AED by the American Heart Association or the American National Red Cross.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

CTAN Approved: CTBPO

HLTH-1310 Cardiopulmonary Resuscitation

01 Semester Credit

[This course is cross-listed as EMT-1310. Credit can only be earned once for either course.] The CPR for Healthcare Providers teaches the management of respiratory and circulatory emergencies in adults, children, and infants. The Heartsaver First Aid teaches the management of illness and injury in the first few minutes until professional help arrives. Instruction and treatment methods to meet American Heart Association (AHA) or American Red Cross (ARC) standards for CPR.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

HLTH-1400 Childhood Health, Safety and Nutrition
03 Semester Credits

Focuses on nutrition, health, and safety needs of infants and young children. Training provided in communicable disease recognition, prevention and management, first aid, infant/child CPR, and child abuse recognition and prevention, as required by the Ohio Day Care Licensing Rules. Nutritional requirements of infants and young children, meal planning and menu evaluation, principles of hygiene and safety in storage, preparation and serving of food are addressed. Positive health practices emphasized as integral elements in nurturing a child's total development.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

HLTH-2500 Women's Health Issues
03 Semester Credits

Exploration of all dimensions of women's health, identification of health risks unique to women, evaluation of traditional and non-traditional approaches to health care problems and development of personal strategies for selection of health enhancing behaviors.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or departmental approval.

HEALTH INFORMATION MANAGEMENT TECHNOLOGY - HIM

HIM-1010 Basic Medical Transcription
01 Semester Credit

Introduction to the basic concepts of medical transcription with emphasis on transcription equipment, transcribing techniques, use of medical reference books, and practice in transcribing various reports.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval.

HIM-1060 Health Unit Coordinator
03 Semester Credits

Specific application of health unit coordinating duties and responsibilities relating to entry level positions. Basic information with emphasis on clerical tasks: patient processing for admissions, transfers, discharges, charts, preoperative, postoperative, scheduling and processing orders. Accuracy and appropriate understanding with physician, nursing, and dietary treatment orders. Accuracy in transcribing medication orders, laboratory orders and other diagnostic orders. Emphasis on Allied Health professional principles.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MA-1020 Medical Terminology I.

HIM-1112 Physician Office Coding
04 Semester Credits

Introduction to basic concepts of coding using ICD-10-CM (International Classification of Diseases, 10 Revision, Clinical Modification) for diseases and CPT (Current Procedural Terminology) to meet requirements for physician office coding and billing.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MA-1020 Medical Terminology I and ENG-1010 College Composition I.

HIM-1121 Medical Billing Practices
02 Semester Credits

Introduction to basic terminology regarding medical insurance, third party payers, reimbursement methodologies, claims processing procedures for posting payments and claims follow-up in physician office setting.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MA-1020 Medical Terminology I and ENG-1010 College Composition I.

HIM-1301 Introduction to Health Information Management
03 Semester Credits

Introduction to field of health information management technology (HIMT) including overview of the profession; functions of the HIMT department; purposes, uses and flow of patient information through health care system. Introduction to the history of Western medicine, allied health professions, health care organizations and the operation of modern health care delivery.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BIO-2331 Anatomy and Physiology I and MA-1010 Introduction to Medical Terminology and departmental approval: admission to the program.

HIM-1311 Legal Aspects of Health Care
03 Semester Credits

Introduction of legal and ethical issues applicable to health information including confidentiality; release of information; legislative process; the court system; legal vocabulary; retention guidelines; patient rights/advocacy; advance directives and ethics.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ENG-1010 College Composition I; and MA-1010 Introduction to Medical Terminology, or MA-1020 Medical Terminology I.

OAN Approved: OHL021

HIM-1401 Systems in Healthcare Delivery
02 Semester Credits

Overview of various health record systems and the role of the Health Information Technician in non-acute care settings, such as private practices, extended care facilities and nursing homes.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to program.

HIM-1411 Healthcare Statistical Applications & Research **02 Semester Credits**

Introduction to use, collection, presentation, and verification of health care data including fundamental concepts of descriptive statistics; data validity and reliability; data presentation techniques; vital statistics; and healthcare institutional research.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): HIM-1301 Introduction to Health Information Management, and HIM-1311 Legal Aspects of Health Care, and completion of Mathematics 1000 level or higher.

HIM-1423 Health Data Documentation, Sources and Classification Systems **03 Semester Credits**

Documentation requirements for complete and accurate health records as required by licensing, certifying and accrediting agencies; forms design; functions of data analysis and abstracting; healthcare data sets and standards; clinical vocabularies and classification standards; primary and secondary healthcare data sources.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): HIM-1301 Introduction to Health Information Management, and HIM-1311 Legal Aspects of Health Care.

HIM-1431 Healthcare Informatics and Information Management **03 Semester Credits**

Introduction to using and understanding the Electronic Health Record (EHR), varieties of computerized health records, and other healthcare informatic software systems. Also includes introduction to project management software; strategic information systems planning; and software implementation in the healthcare setting.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, and HIM-1311 Legal Aspects of Health Care, and HIM-1301 Introduction to Health Information Management

HIM-2130 Coding with CPT (Current Procedural Terminology) **02 Semester Credits**

Theories, concepts and applications of Current Procedural Terminology (CPT) coding and its relationship to the Centers for Medicare and Medicaid Service's Healthcare Common Procedure Coding System (CMS/HCPCS). Instruction will be based from textbook, computer applications and healthcare records.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): BIO-2600 Pathophysiology, and concurrent enrollment in HIM-1411 Healthcare Statistical Applications & Research, or departmental approval.

HIM-2160 Coding with ICD-10-CM **02 Semester Credits**

Principles, theories, concepts and applications required to code diseases and procedures using the International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM) Classification System.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): BIO-2341 Anatomy and Physiology II, and HIM-1301 Introduction to Health Information Management or departmental approval: Program manager approval.

HIM-2200 Project Management for the Health Information Management Professional **02 Semester Credits**

Organizing and managing effective project teams, from planning and scheduling to cost management, including use of project management software. The latest business developments and challenges and issues such as project constraints, stakeholder issues, project charter, and how projects relate to an organization's strategic plan. Effective communication both within and outside of a team.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): HIM-1431 Healthcare Informatics and Information Management and HIM-1423 Health Data Documentation, Sources and Classification Systems; or departmental approval.

HIM-2260 Coding with ICD-10-PCS **02 Semester Credits**

Coding with ICD-10-PCS will prepare and train Health Information Management Technology students to understand the format used and how to build an ICD-10-PCS procedure code. Key terms related to ICD-10-PCS, the system's use and the different sections contained within the PCS coding system: medical and surgical, obstetrics, placement, administration, measurement and monitoring; extracorporeal assistance, performance and therapies; osteopathic, chiropractic, and other procedure and treatment sections.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): HIM-2160 Coding with ICD-10-CM, or departmental approval.

HIM-2312 Quality Assessment and Improvement **03 Semester Credits**

Introduction to disease and health registries and to data quality assessment activities being performed in health care facilities.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): HIM-1411 Healthcare Statistical Applications & Research, and HIM-1423 Health Data Documentation, Sources and Classification Systems, and HIM-1431 Healthcare Informatics and Information Management.

HIM-2401 Intermediate Coding

02 Semester Credits

Continuation in the study of coding and classification systems in a variety of healthcare settings. Upon completion students should be able to apply coding principles to correctly assign codes using the International Classification of Diseases, Tenth Revision, Clinical Modification and Procedural Coding System (ICD-10-CM and PCS) and Current Procedural Terminology (CPT) and apply systems to optimize reimbursement.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): HIM-2160 Coding with ICD-10-CM; and HIM-2130 Coding with CPT (Current Procedural Terminology); or departmental approval.

HIM-2410 Management Practices in Health Information

02 Semester Credits

Management principles used in managing health information functions and personnel, with emphasis on the duties and responsibilities of supervisor in coordinating goals of a health information management department; training of personnel; and the concepts of continuous quality improvement.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): HIM-2312 Quality Assessment and Improvement, or concurrent enrollment; or departmental approval.

HIM-2430 Medical Reimbursement Methodologies

02 Semester Credits

Reimbursement issues and systems, including: compliance environment payors, reimbursement vocabulary and systems such as Diagnostic Related Groups (DRGs), Resource Based Relative Value Scale (RBRVS), Ambulatory Payment Classifications (APC), and the chargemaster.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): HIM-1411 Healthcare Statistical Applications & Research, and BIO-2600 Pathophysiology; or departmental approval.

OAN Approved: OHL022

HIM-2440 Fundamentals of Healthcare Workflow and Process Analysis

02 Semester Credits

Evaluation and analysis of workflow in a healthcare setting to facilitate redesign of that workflow.

Intermediate capstone course for utilizing Microsoft Project Management Software for implementation of a project.

Lecture 01 hour. Laboratory 03 hours.

Other Required Hours: Project may be assigned in a clinical setting.

Prerequisite(s): HIM-2200 Project Management for the Health Information Management Professional, or departmental approval.

HIM-2500 Introduction to Cancer Registry and Disease Management

02 Semester Credits

Introduction to the organization of the Cancer Registry, including cancer data management and utilization, quality control activities and the cancer program and accreditation processes. The function of the cancer registry in the electronic environment including Health Information Privacy and Security.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to program. Requires a minimum of an Associate Degree in a health care field that includes two semesters of Anatomy and Physiology, one semester of Pathophysiology, and one semester of Medical Terminology. If the degree does not include these courses, the courses will need to be taken prior to acceptance of the student.

HIM-2510 The Cancer Disease Process and Management

03 Semester Credits

Introduction to the Pathophysiology of the cancer disease process. Ascertainment of presenting symptomatology, diagnostic evaluations, extent of disease, evaluations and treatment modalities to include surgery, chemotherapy, radiation therapy, hormonal therapy, immunotherapy, palliative therapies, and alternative therapies.

Introduction to the role of clinical research trials in development of cancer treatments.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

HIM-2520 Oncology Coding and Staging

03 Semester Credits

Explanation of oncology coding methodologies and cancer staging systems. Students will use a variety of resources to accurately assign correct oncology codes for topography, histology, grade, tumor status, nodal status, metastatic status, stage group and summary state. Students will use a variety of cancer staging resources to determine the stage of the disease for reporting purposes. This course will provide an overview of cancer and the natural course of the disease progression.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BIO-2600 Pathophysiology; and concurrent enrollment in HIM-2510 The Cancer Disease Process and Management, and departmental approval: admission to program acceptance into Cancer Registrar Post Degree Certificate Program.

HIM-2530 Oncology Treatment and Coding **03 Semester Credits**

Covers treatment and management of cancerous diseases. Includes identification and coding of surgical treatments, radiation treatments, chemotherapy treatments, immunotherapy treatments, hormonal treatments, alternative, palliative and experimental treatments, and other treatment coding. Clinical Trials with coding and monitoring also discussed.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BIO-2600 Pathophysiology, and departmental approval: admission to program admission to Cancer Registrar Post-Degree Certificate program.

HIM-2540 Abstracting Principles and Methodologies for Oncology **03 Semester Credits**

Covers the components and organization of a cancer patient health record. This course provides both general and specific instructions for abstracting pertinent information from: the patient record; and source documents using sample operative and pathologic reports. Instruction includes details on what should be recorded and how to record cancer information on the cancer registry abstract, study of the structure and content of source documents from the record, as well as abstracting principles and practices using patient health records. Normal methods and procedures used to diagnose cancer also discussed.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): HIM-2530 Oncology Treatment and Coding; or departmental approval.

HIM-2550 Database Analytics, Quality and Tracking **03 Semester Credits**

Policies and procedures for Cancer Program Standards including the patient follow-up process. Managing follow-up files, data quality, and database management. Gathering, manipulating, storing, retrieving and classifying recorded information. Monitoring statistics and epidemiology factors.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): HIM-2500 Introduction to Cancer Registry and Disease Management; or departmental approval.

HIM-2560 Oncology Databases and Manuals **03 Semester Credits**

Investigating and exploring the coding rules in the Multiple Primary Histology (MP/H) Manual and the Hematopoietic database. The course will also provide study in hematopoietic and lymphoid neoplasms.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): HIM-2500 Introduction to Cancer Registry and Disease Management.

HIM-2851 Practicum I **03 Semester Credits**

Supervised practicum designed to allow student to apply technical knowledge and skills learned in classroom to procedures performed in health information management department. Assignments made to various types of health care facilities to gain exposure to health information practices.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 14 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): HIM-1301 Introduction to Health Information Management, and HIM-1411 Healthcare Statistical Applications & Research, and HIM-1423 Health Data Documentation, Sources and Classification Systems; and HIM-1431 Healthcare Informatics and Information Management, and departmental approval.

HIM-2861 Practicum II **03 Semester Credits**

Capstone course in Health Information Management. Second of two supervised practicums designed to allow student to apply technical knowledge and skills learned in classroom to procedures performed in health information management department. Assignments made to various types of health care facilities to gain exposure to health information practices.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 14 hours a week.

Seminar: 1 hour per week.

Prerequisite(s): HIM-2130 Coding with CPT (Current Procedural Terminology), and HIM-2150 Coding with ICD-9-CM, and HIM-2312 Quality Assessment and Improvement, and HIM-2851 Practicum I, or departmental approval.

HIM-2870 Clinical Professional Practice Experience for Cancer Registry **02 Semester Credits**

Direct clinical practice and observation at a Cancer Registry location that will include: Data collection and abstracting using ICD-0-3 coding; Staging cancer (CS, AJCC TNM, SEER Summary); treatments; case follow-up; Cancer Committee activities; reporting; quality control and management studies; Case-finding; Cancer Conference; HIPAA; Central Registry Operations; and Electronic Health Record exposure.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Clinical Practice hours: minimum 160 clock hours at a clinical site that is an approved Cancer Registry.

Prerequisite(s): HIM-2560 Oncology Databases and Manuals, and departmental approval: admission to program.

HEALTH TECHNOLOGY - HTEC

HTEC-1000 Introduction to Patient Care

01 Semester Credit

Discussion, demonstration and practice of basic patient care skills. Introducing principles of patient care including professional communication with diverse populations, safe patient mobility skills, vital signs, standard precautions and hand hygiene.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment; or ENG-101H Honors College Composition I, or concurrent enrollment; and MA-1020 Medical Terminology I or concurrent enrollment and MATH-0955 Beginning Algebra, or appropriate score on Math placement test to allow enrollment in MATH-1240 or higher.

HTEC-1040 Health Career Exploration

01 Semester Credit

Introduction to variety of health career options with emphasis on qualifications, job responsibilities and employment opportunities. Includes identifying components from each health career that relate to lifestyle risk factors. Discusses how to become educated consumers with regards to seeking accurate health information.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

HTEC-1100 Allied Dental Pharmacology

02 Semester Credits

Survey course acquainting Dental Assisting students with basic principles and concepts of pharmacology. Provides a general review of therapeutic use of drugs in a dental/medical emergency. Emphasizes indications and contraindications of drugs relating to dental anesthetics.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to Dental Assisting Program.

HTEC-1110 Ethics for Health Care Professionals

01 Semester Credit

Survey course emphasizing basic definitions, concepts and issues of clinical law and ethics for health care professionals. Ethical decision-making models will be explained utilizing the professional-patient relationship and case studies.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

HTEC-1120 Critical Thinking in Healthcare

01 Semester Credit

Overview of principles involved in critical and creative thinking with an emphasis on practical applications in the health care environment. A discussion of skillful analysis, assessment and communication in the problem-solving process.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

HTEC-1610 Introduction to Pharmacology

02 Semester Credits

Acquaint students with general principles and concepts of pharmacology. Provides understanding of indications, uses, doses and contraindications associated with individual drugs as well as mechanisms of drug administration and therapeutic management of patients with specific disease processes. Review of basic mathematics related to correct calculation of drug dosages and preparation of solutions.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

CTAN Approved: CTMAT011 (1 of 3 courses)

HISTORY - HIST

HIST-1010 History of Civilization I

03 Semester Credits

Introduction to study of world civilizations from ancient times to beginning of modern era.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OHS041

HIST-101H Honors History of Civilization I

03 Semester Credits

Introduction to world civilizations from ancient times to beginning of modern era. Study of different world cultures and civilizations and how they have interacted over time to create successive patterns of regional and global integration. Historical development of the world with emphasis on critical examination of primary source documents.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-101H Honors College Composition I or departmental approval.

HIST-1020 History of Civilization II

03 Semester Credits

Introduction to study of world civilizations from 17th century to present.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OHS042

HIST-102H Honors History of Civilization II **03 Semester Credits**

Introduction to world civilizations from beginning of modern era to the present. Examination of different world cultures and civilizations and how they have interacted over time to create successive patterns of regional and global integration. Historical development of the world with emphasis on critical examination of primary source documents.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-101H Honors College Composition I or departmental approval.

HIST-1510 United States History to 1877 **03 Semester Credits**

Introduction to study of United States history from Age of Exploration to end of Reconstruction.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OHS043

HIST-151H Honors United States History to 1877 **03 Semester Credits**

Introduction to study of United States history from Age of Exploration to end of Reconstruction. Analysis of historical problems and use of primary sources in study of history.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-101H Honors College Composition I, or departmental approval.

HIST-1520 United States History Since 1877 **03 Semester Credits**

Introduction to study of United States history from post Civil War/Reconstruction to present.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OHS044

HIST-152H Honors United States History Since 1877 **03 Semester Credits**

Introduction to study of United States history from post-Civil War/Reconstruction to present. Analysis of historical problems and use of primary sources in study of history.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-101H Honors College Composition I, or departmental approval.

HIST-1610 American Studies **03 Semester Credits**

Introduction to American Studies. Discussion of selected issues and institutions in American civilization; multidisciplinary approach to subject matter utilizing concepts from various social science and humanities disciplines.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

HIST-1630 History of Immigration in America **03 Semester Credits**

Study of immigration in America. Discussion of ethnic institutions; explanation of continuity and change between first, second and third generations of an immigrant group, and exploration of relationships between and among different groups; analysis of nativism and restrictionism, and explanation of immigrant contributions to America.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

HIST-1700 History of Africa **03 Semester Credits**

General survey of African history with special emphasis on pre-colonial (pre-1500) Africa plus political, economic and social challenges of nineteenth and twentieth centuries. Importance of Islam and emergence of South Africa from apartheid era.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

HIST-179H Honors Contract in History **01 Semester Credit**

Honors Contract complements and exceeds requirements and objectives for an existing HIST 1000-level honors course through the formulation of a contract with faculty mentor. In conjunction with faculty mentor, student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, student is required to meet on a regularly scheduled basis with instructor offering the contract for mentor-student tutorial sessions. May be repeated for a maximum of six credits of different topics.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Must be taken concurrently with a 1000-level honors course in History, whose instructor approves the Honors Contract.

HIST-2020 Women, Science and Technology **03 Semester Credits**

[This course is cross-listed as WST-2020. Credit can only be earned once for either course.] Study of gendered relationships in scientific theory, organization & dissemination of scientific expertise, technological development and the impact of these on health care, medicine, business, manufacturing, cultural norms and women's experience.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): WST-1510 Introduction to Women's Studies or ENG-1010 College Composition I; or concurrent enrollment; or ENG-101H Honors College Composition I, or concurrent enrollment.

HIST-2030 Islamic History**03 Semester Credits**

Introduction to the historical traditions and events of the Muslim world; examines geographic diversity, cultural variations and interpretations of Islam and the relationships between Islamic, Judaic and Christian historical traditions

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or departmental approval: permission of instructor.

HIST-2040 Native American History**03 Semester Credits**

Historical study of indigenous populations in the Americas from pre-colonial times to the present; special focus on the social, political, economic and spiritual lives of Native American nations in North America.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I.

HIST-2051 History of Russia to 1917**03 Semester Credits**

Growth, development and decline of Kievan state; evolution of Muscovite tsardom and expansion of Russian Empire to 1917. Geopolitical, social, cultural, and intellectual development of Russian state; emphasis on theory of tsardom which led to emergence of distinct civilization in Russia.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Any 1000-level history or political science course; or departmental approval.

HIST-2060 Modern Russian History and Politics**03 Semester Credits**

Development of U.S.S.R. since collapse of tsarist monarchy to dissolution of Soviet Union and Communist system; origins, development, establishment of power and rule by Communist government; analysis of development and implementation of domestic and foreign policies.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Any 1000-level history or political science course; or departmental approval.

HIST-2070 African-American Women in History**03 Semester Credits**

Historical study of African-American women from their cultural roots in Africa, experiences during the Middle Passage, adaptation and influence in the Americas, and special focus on North America from colonial times to present.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Any 1000-level history or political science course; and eligibility for ENG-1010 College Composition I; or departmental approval.

HIST-2080 Latin American History**03 Semester Credits**

Study of history of Latin America from indigenous civilizations to present time. Analysis of social, cultural, political, and economic development of the region and relations between Latin American nations and the United States.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or departmental approval.

HIST-2090 Ohio History**03 Semester Credits**

Study of history of Ohio from Native American societies and origins of statehood to present time. Analysis of environmental, political, social, economic, and intellectual aspects of the state. Role of transportation, industrialization, and immigration as well as contributions of women and cultural groups in state's development. Analysis of role of Ohio in American development.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or departmental approval.

HIST-2150 African American History to 1877**03 Semester Credits**

Analysis and study of African American experiences from African origins through Atlantic slave trade, adaptation to the Americas, and influence on American culture from slavery to emancipation and Reconstruction

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or departmental approval.

HIST-2160 African American History 1877-present**03 Semester Credits**

Analysis and study of African American experience from the end of Reconstruction, development of institutionalized racial discrimination, growth of racial advancement organizations, migration to cities, development of racial consciousness, and struggle for civil rights and political power until present time

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I or departmental approval.

HIST-2520 Hitler and the Holocaust**03 Semester Credits**

Study of Adolf Hitler, Nazi Germany and the Holocaust. Topics include National Socialist ideology; history of anti-Semitism; political history of Germany before, during, and after World War One; life of Hitler; Nazi seizure of power; Second World War; and the Holocaust.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, and any 1000 level History or Political Science course.

HIST-2660 Women in American History

03 Semester Credits

Study of changing role of women in America from colonial times to present. Introduction to current research techniques used to reconstruct family, political and work roles; special emphasis on participation in social reforms leading to women's rights, suffrage and feminist movements; impact of race, gender and region on gender perspectives and conflicts; and evaluation of contemporary trends.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Any 1000-level history or political science course; and eligibility for ENG-1010 College Composition I, or departmental approval.

HOSPITALITY MANAGEMENT - HOSP

HOSP-1010 Introduction to the Hospitality Industry

02 Semester Credits

Comprehensive tour through fascinating and challenging related fields and career opportunities in hospitality industry; travel and tourism, lodging, food service, meetings, conventions and expositions, leisure and recreation, and beverage operations. Mapping of specific positions including requirements of job duties, skills, knowledge, personality attributes, physical abilities, and working conditions. Basic keys to successful career in service-based industry. Provides basis for understanding lodging and food and beverage through overview of industry in the Greater Cleveland area, nationally, and globally, and through examination of current trends. Field trips may be required.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I, or departmental approval: industry experience.

CTAN Approved: CTCF002

HOSP-1020 Sanitation and Safety

02 Semester Credits

Examines sanitation and safety practices in food service and lodging establishments. Management oriented treatment for prevention of food borne illnesses using HACCP principles of safe food handling, sanitary design, care of facilities and equipment, pest control, self-inspection, and interpretation of food service laws. Causes and prevention of accidents and elementary first aid including the Heimlich Maneuver and CPR. Students plan and practice employee training. Students must pass a national exam, which will provide State Health Department Certification. Field trips may be required.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I, or departmental approval: industry experience.

CTAN Approved: CTCF001

HOSP-1031 Fundamentals of Culinary Arts

03 Semester Credits

Introduction to food preparation techniques, culinary theory, and equipment used in commercial food service. Basic concepts of kitchen organization and operation, heat transfer, basic terminology, use of standardized recipes, weights and measures, product evaluation, recipe conversion, food composition and introduction to commercial equipment and work methods. American Culinary Federation competency skills included. Field trips may be required.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MATH-0955 Beginning Algebra or appropriate Math placement score, and eligibility for ENG-1010 College Composition I, and HOSP-1020 Sanitation and Safety or concurrent enrollment; or departmental approval: industry experience.

CTAN Approved: CTCF003

HOSP-1040 Customer Service

02 Semester Credits

Theories and principles of guest service in hospitality industry. Discussions of basic skills and competencies needed in entry level hospitality service positions as recommended by the National Restaurant Association and Educational Institute of American Hotel and Lodging Association. Field trips may be required. Industry experience at a community event or function may be required.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0910 Basic Arithmetic and Pre-Algebra, or appropriate score on Math placement test to enroll in MATH-0955, and eligibility for ENG-1010 College Composition I, and HOSP-1020 Sanitation and Safety or concurrent enrollment; or departmental approval: industry experience.

HOSP-1180 Event Planning Essentials

02 Semester Credits

Introduction to the tasks required to plan a successful event. Emphasis on key characteristics of successful event planners, core principles of event planning, vocabulary, and basic management skills. Field trips may be required. Industry experience at a community event or function may be required.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

HOSP-1360 Fundamentals of Restaurant/Foodservice Management

03 Semester Credits

Introduction and overview of many aspects of restaurant/foodservice operations and the knowledge and skills needed by various operational and management positions. Emphasis will be on front of the house operations including various types of restaurants concepts, customer service, marketing, menu development, human resources, current trends, historical overview, nutrition and ethics, technology, facilities and design, as well as a variety of day-to-day managerial and operational concerns. Focus will be on restaurant operations, but banquet, catering and managed services will also be covered.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0955 Beginning Algebra or appropriate score of Math placement test; or departmental approval: industry related experience.

HOSP-1380 Dimensions of Tourism

03 Semester Credits

Cross-disciplinary approach to examine many facets of tourism. Social science perspective provides students with practical knowledge that can effectively be applied to hospitality industry. Terminology, concepts, and various specialized fields that comprise the industry reviewed. Advanced information that serves as bridge to further analysis or study provided. Field trips may be taken to Cleveland area attractions.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry or concurrent enrollment; or departmental approval: industry experience.

HOSP-1451 Contemporary Cuisine

04 Semester Credits

Preparation of contemporary cuisine with a wide variety of plate production techniques including appetizers, breads, soups, salads, side dishes, entrees, and desserts. Apply food pairing, plating, and garnishing techniques to contemporary cuisine. Skill training based on American Culinary Federation Apprenticeship competencies. Field trips may be required.

Lecture 02 hours. Laboratory 06 hours.

Prerequisite(s): HOSP-1020 Sanitation and Safety, and HOSP-1031 Fundamentals of Culinary Arts, and HOSP-1552 Introduction to Baking & Pastries, and MATH-0955 Beginning Algebra or appropriate Math placement score.

HOSP-1481 Housekeeping and Facilities Management

03 Semester Credits

Fundamentals of professional housekeeping services in lodging industry, and basic knowledge of maintenance and engineering departments. Examines basic cleaning methods and equipment currently used; work production and quality control techniques specific to housekeeping management. Includes survey of building systems, facility layout, and equipment.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry, and HOSP-1020 Sanitation and Safety or concurrent enrollment; and concurrent enrollment in HOSP-1580 Front Office Operations.

HOSP-1540 Lodging Operations Lab

01 Semester Credit

On-site observation and computer based training at local hotels provide practical application of lodging establishment functions in the areas of housekeeping, laundry, and maintenance. Field trips required.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry; and concurrent enrollment in HOSP-1481 Housekeeping and Facilities Management; and concurrent enrollment in HOSP-1580 Front Office Operations.

HOSP-1552 Introduction to Baking & Pastries

03 Semester Credits

Daily production of baked goods including yeast breads, pies, cakes, souffles, mousses, danish and croissants. Theoretical and practical foundation in baking production. Develop skills and knowledge that meet American Culinary Federation standards for quality handcrafted products. Emphasis on discipline, formulas, function of ingredients, proper production techniques and recognizing quality standards. Field trips may be required. Industry experience at a community event or function may be required.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): HOSP-1020 Sanitation and Safety or concurrent enrollment; and concurrent enrollment in HOSP-1031 Fundamentals of Culinary Arts and MATH-0955 Beginning Algebra or appropriate score on Math placement test; and eligibility for ENG-1010 College Composition I.

HOSP-1580 Front Office Operations

02 Semester Credits

Elements of effective front office management, focusing on planning and evaluation of front office operations and human resources management. Front office procedures and management placed within context of overall operation of a hotel. Systematic approach to front office procedures presented by detailing flow of business through a hotel, from the reservations process to check-out and settlement. On-site observation and computer-based training of front office procedures at local hotels provide practical application of front office functions. Field trips required.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry, and HOSP-1040 Customer Service.

HOSP-1650 Dining Room Operations

02 Semester Credits

Hands-on work experience in a program on-campus restaurant. Students study, demonstrate and evaluate various types of dining room service and operational responsibilities. Focus areas include: serving, setup, labor, point of sale technology and management functions. Field trips may be required. Industry experience at a community event or function may be required.

Lecture 00 hours. Laboratory 06 hours.

Prerequisite(s): HOSP-1031 Fundamentals of Culinary Arts, HOSP-1040 Customer Service, and HOSP-1451 Contemporary Cuisine, or concurrent enrollment; or departmental approval: industry related experience.

HOSP-1680 Beverage Management

02 Semester Credits

Focuses on the beverage management side of foodservice operations with specific attention to: bar and beverage operations, production, purchasing, and marketing of wine, beer, and spirits including formulation of a wine list and pricing models, and the fundamentals of responsible alcohol service.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry.

HOSP-1710 Doing Business as a Personal Chef

03 Semester Credits

Introduction to the career of Personal Chef. Topics include: starting your own personal chef business; professional associations; preparing a personal chef business plan; forms of business organization; vision and mission statements; marketing and sales; legal issues; accounting criteria; client assessment; preparation and performing the service; safety and sanitation issues; packaging foods; and

using a computer program to aid in your personal chef business. Approved by the American Personal Chef Association.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ENG-1010 College Composition I, and HOSP-1020 Sanitation and Safety, and HOSP-1031 Fundamentals of Culinary Arts; and eligible for MATH-0955 Beginning Algebra; or departmental approval: personal or professional cooking skills and experience.

HOSP-1730 International Cuisine

03 Semester Credits

Examines cuisines in countries and regions around the world and focuses on the geographic, cultural, and historic influences that have shaped various world cuisines. Exposure to traditional cooking techniques and varied indigenous ingredients that meld together to produce the basis of world cuisines.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): HOSP-1020 Sanitation and Safety, and HOSP-1451 Contemporary Cuisine, or departmental approval: industry related experience.

HOSP-1940 Culinary Arts/Professional Baking Field Experience

01-03 Semester Credits

Supervised on-site work experience in culinary arts/professional baking. Students required to function in variety of workstations to reinforce learned classroom/lab skills. May be repeated up to three times with departmental approval.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 14 hours per week for 15 weeks (total 210 hours) per credit.

Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry, and HOSP-1020 Sanitation and Safety, and HOSP-1031 Fundamentals of Culinary Arts, and HOSP-1552 Introduction to Baking & Pastries, and departmental approval: work site approval.

HOSP-1950 Restaurant/Food Service Management Field Experience

01-03 Semester Credits

Hospitality Management Department supervised on-site work experience in restaurant/food service management. Students required to function in variety of workstations to reinforce learned classroom/lab skills. May be repeated up to three times with departmental approval.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 14 hours per week for 15 weeks (total 210 hours) per credit.

Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry, and HOSP-1020 Sanitation and Safety, and HOSP-1031 Fundamentals of Culinary Arts, and HOSP-1040 Customer Service, and departmental approval: work site approval.

CTAN Approved: CTCF004

HOSP-1960 Lodging/Tourism Field Experience

01-03 Semester Credits

Hospitality Management Department supervised on-site work experience in Lodging/Tourism Management. Students required to function in variety of workstations to reinforce learned classroom/lab skills. May be repeated up to three times with departmental approval.

Lecture 00 hours. Laboratory 00 hours.

Field Experience: 12 hours per week for 15 weeks (180 total hours) per credit.

Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry, HOSP-1020 Sanitation and Safety, HOSP-1040 Customer Service, and departmental approval: work site approval.

HOSP-2180 Event Planning Workshop

02 Semester Credits

Students will apply knowledge and skills gained in previous courses to plan an event. Event plans will include themes, identification of target market, sponsorships, event promotion, vendor selection, site selection, pricing, budgets, and evaluation. Field trips may be required. Industry experience at a community event or function may be required.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): HOSP-1180 Event Planning Essentials.

HOSP-2330 Menus and Facilities Planning & Design

03 Semester Credits

Study of the central role of the menu in food and beverage operations. Comprehension and application of principles of nutritional guidelines in the menu planning process with an emphasis on locally grown and sustainable agriculture. Practice in menu development, pricing, layout and evaluation to facilities design and layout to provide for profitability. Computer generated menus and facilities layout. Planning and evaluation of facilities and selection of appropriate equipment. Field trips may be required.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): HOSP-1451 Contemporary Cuisine, HOSP-2500 Hospitality Cost Control or concurrent enrollment, HOSP-2700 Hospitality Purchasing or concurrent enrollment.

HOSP-2350 Restaurant Operations

03 Semester Credits

Practical application of learned food preparation and presentation skills. Hands-on skill development within a simulated in-house restaurant kitchen with exposure to each kitchen position. Students prepare foods to order and for buffet presentation. Field trips may be required. Industry experience at a community event or function may be required.

Lecture 00 hours. Laboratory 09 hours.

Prerequisite(s): HOSP-1451 Contemporary Cuisine.

HOSP-2360 Restaurant Marketing

02 Semester Credits

Course will focus on the role effective marketing and sales efforts play in the operation of a successful restaurant or

foodservice outlet. Demographic and relevant market research will be conducted which will lead to the formulation of a marketing plan and budget. Additionally, ethics and marketing, the product life cycle, pricing strategies, feasibility studies, and the role of return on investment (ROI) will also be covered.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): HOSP-1360 Fundamentals of Restaurant/Foodservice Management.

HOSP-2370 Restaurant/Foodservice Entrepreneurship

03 Semester Credits

Capstone course in restaurant/foodservice management. Through new material and utilizing the components and skills developed in previous courses, students will develop an understanding of the necessary requirements to open and operate a successful restaurant/foodservice operation. Students will present an original concept, create a professional menu, and prepare appropriate financial documents. Costing, controls, legal concerns and purchasing will also be covered. Intended not just for entrepreneurs, the course takes the philosophy that the best managers know how to think like owners.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): HOSP-1360 Fundamentals of Restaurant/Foodservice Management; and HOSP-1680 Beverage Management; and HOSP-2360 Restaurant Marketing, or concurrent enrollment.

HOSP-2380 Hospitality Marketing and Sales

03 Semester Credits

Provides hospitality management students with solid background in principles of hospitality sales, advertising, and marketing. Textbook's main focus on strategies and sales techniques for selling to targeted market with emphasis on planned profits. Field trips may be required.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry.

HOSP-2400 Hospitality Management and Supervision

03 Semester Credits

Analysis of hospitality operations through use of terminology, theories, and principle. Special emphasis on evolution of management thought, commitment to quality and productivity in various environments that affect practice of management and supervision. Through experiences and practical application, concepts will focus on standards and procedures for selection, training and development of human resources in hospitality industry. Field trips may be required.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry, or departmental approval: admission to program, or related work experience.

HOSP-2480 Hospitality Law

03 Semester Credits

Provides awareness of rights and responsibilities that the law grants to or imposes upon hospitality operations, and illustrates possible consequences of failure to satisfy legal obligations. Discussion includes contracts, property-guest relationship, frauds, employment laws, anti-trust regulations, food and beverage sales, wage and hour standards, social security and income tax withholding requirements, tax/tip reporting, and immigration laws. Field trips may be required.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry.

HOSP-2500 Hospitality Cost Control

03 Semester Credits

Addresses lodging, tourism, and food and beverage industries procedures to help control food, beverage, labor costs and sales income in food and beverage operations. Analysis of factors that serve as base for decision-making and improvement of operations that result in increased profits. Use of developing technology related to spreadsheets and other cost control aids. Field trips may be required.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): HOSP-2700 Hospitality Purchasing, or concurrent enrollment; or departmental approval: work experience or prior business courses in related subjects.

HOSP-2550 Baking Production and Sales II

03 Semester Credits

Building on theoretical and practical foundations of "Introduction to Baking and Pastries", students will develop advanced skills and knowledge in production and selection of quality handcrafted and purchased products. Scientific principles and experimental methods explored and additional emphasis placed on advanced decorating and finishing techniques, chocolate work, candies, sugar works, presentation methods, menu development and costing. Students required to do production for community events and contests. Field trips may be required. Industry experience at a community event or function may be required.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): HOSP-1020 Sanitation and Safety, and HOSP-1552 Introduction to Baking & Pastries, or departmental approval: industry related experience.

HOSP-2560 Garde Manger

03 Semester Credits

Presentation of Garde Manger station, including tools and equipment, preparation of pâtés, terrines and galantines, hors d'oeuvres and canapes. Demonstrate basic skills in charcuterie, carving of edible and non-edible showpieces, garnishes, and aspics. Includes buffet and plate presentation. Experience at a community event or field trips may be required.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): HOSP-1451 Contemporary Cuisine.

HOSP-2580 Convention Management and Meeting Planning

02 Semester Credits

Defines scope and segmentation of convention and group business market, describes marketing and sales strategies to attract markets with specific needs, and explains techniques to meet those needs as part of meeting and convention planning and service. Field trips may be required. Industry experience at a community event or function may be required.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): HOSP-1010 Introduction to the Hospitality Industry or departmental approval: work experience.

HOSP-2651 Banquet Management & Production

04 Semester Credits

Capstone course in Culinary Art. Practice of management and supervisory skills in an in-house restaurant. Students work in management teams to create, plan, design, market, sell, train, and execute a dining event for a minimum of 50 guests. Students rotate through production and service stations, as well as management positions, with responsibility for production, cost control/accounting procedures and customer relations within the restaurant. Industry experience participating at a community event or function may be required.

Lecture 00 hours. Laboratory 09 hours.

Other Required Hours: Seminar: 1 hour per week.

Prerequisite(s): HOSP-1940 Culinary Arts/Professional Baking Field Experience; HOSP-1650 Dining Room Operations; HOSP-2350 Restaurant Operations; HOSP-2500 Hospitality Cost Control; and HOSP-2400 Hospitality Management and Supervision or concurrent enrollment.

HOSP-2700 Hospitality Purchasing

02 Semester Credits

Principles for purchasing supplies, equipment, food and beverages, and contract services for hospitality industry. Government regulations, industry standards, product availability, economic concerns, supplier relationships, and marketplace. Practice applications of purchase orders, bidding, specifications, computer assisted ordering and inventory controls. Field trips may be required.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): HOSP-1020 Sanitation and Safety, and HOSP-1031 Fundamentals of Culinary Arts.

HOSP-2750 Culinary Competition

02 Semester Credits

Refine and demonstrate culinary and organizational skills, and explore creative cooking talents while competing in an American Culinary Federation (ACF) sanctioned event. Mandatory ACF membership required for Culinary Competitions. Participation in College Community Service representing the Hospitality Department and the college as Culinary Ambassadors.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): HOSP-1031 Fundamentals of Culinary Arts, and HOSP-1451 Contemporary Cuisine, or concurrent enrollment.

HOSP-2862 Lodging and Tourism Management Experience

01 Semester Credit

Capstone course in Lodging-Tourism Management. On-site observation and work experience in variety of job areas in Lodging or Tourism industry, with emphasis on practice of technical supervisory skills. Student portfolios reviewed by industry professionals with emphasis on preparedness as career professional.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 14 hours per week for 15 weeks.

Prerequisite(s): HOSP-1960 Lodging/Tourism Field Experience, and HOSP-2400 Hospitality Management and Supervision or concurrent enrollment, and departmental approval: approved work site and completion of 3 Career Center seminars as designated by the Hospitality department.

HOSP-2871 Food and Beverage Management Experience

02 Semester Credits

On-site observation and work experience in a variety of job areas in Food and Beverage areas of hospitality industry with emphasis on practice of supervisory skills. Special emphasis on evaluation of student accomplishments and preparedness to enter industry as career professional. Students will set goals for the field experience as well as attend required seminars, present their portfolio and create a professional personal resume.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 14 hours per week.

Seminar: 1 hour a week.

Prerequisite(s): HOSP-1950 Restaurant/Food Service Management Field Experience, HOSP-2400 Hospitality Management and Supervision or concurrent enrollment, and departmental approval: approved work site.

HOSP-2992 Culinary Evaluation & American Regional Cuisine

02 Semester Credits

Capstone course in Culinary Art. Practice preparation of classical and contemporary cuisine, including American Regional cuisine. Collaborate with visiting professional chefs to prepare various appetizers, soups, salads, entrees and desserts. Final evaluation by American Culinary

Federation (ACF) professional chefs of practical exam, including menu and recipe development, costing, purchasing, organization of station, and preparation, cooking, and presentation of student menu. Professional chef evaluations are based on American Culinary Federation and current industry standards. Industry experience at a community event or function may be required.

Lecture 00 hours. Laboratory 06 hours.

Prerequisite(s): HOSP-2350 Restaurant Operations, and HOSP-2560 Garde Manger, and HOSP-1940 Culinary Arts/Professional Baking Field Experience.

HUMAN SERVICES - HS

HS-1101 Foundations of Substance Abuse, Addiction, and Group Work

04 Semester Credits

Introduction to psychological and medical complications of alcohol, tobacco, and other drugs (ATOD), with emphasis on short term and long term effects. Provide overview of history of ATOD, etiology of dependency, physiological, neuropsychological, psychological and social effects of chemical abuse on the body and relationships. Also includes investigation of group work theories, different types of groups, group dynamics, stages of group process, group facilitation, participant role/influences, and group counseling techniques.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment.

HS-1110 Crisis Intervention and Child Abuse Issues

03 Semester Credits

Introduction to crisis theory and intervention strategies utilized with individuals, groups and the community. Focus on range of human service populations and service issues. Introduction to understanding and responding to child abuse. Define criteria to evaluate physical, emotional, psychological and sexual abuse. Define criteria for evaluating sexual interactions of children. Identify sexual perpetrator behavior of children and develop intervention strategies. Includes prevention, early intervention, crisis intervention and recovery strategies.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

HS-1120 Suicide Prevention & Intervention

02 Semester Credits

Covers suicide as a major social problem in America. Explore the social, psychological, and spiritual aspects of suicide and the differences between suicide death and other deaths. Includes the high risk factors associated with suicide, including gender, age, culture, mental illness, physical illness, addictions, and other factors. Exploration of the assessment and intervention techniques and prevention measures to assist and manage suicide crisis. Also covers resources and services to assist the person at risk of suicide as well as the family members/survivors. Field trips may be required.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I or departmental approval. Students may request a prerequisite override. This request will be done on a case by case basis.

HS-1200 Treatment Modalities and Diversity Issues in Chemical Dependency

04 Semester Credits

Introduction to current concepts, theoretical models and research used by practitioners to understand total ecology of the chemically dependent individual. Examination and exploration of psychological, social and cultural lifestyle aspects and chemical dependency as applied to multicultural and special populations. Examination of various methods of intervention, assessment, treatment, group therapy, counseling techniques, case management, referral, and community resources for practitioners to help people maintain sobriety. Review of the 12 Core Functions/Global Criteria. Identification of national accreditation criteria, documentation, certification requirements, and examination preparation.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): HS-1101 Foundations of Substance Abuse, Addiction, and Group Work.

HS-1210 Prevention and Chemical Dependency

02 Semester Credits

Examine the three levels of prevention. Models and theories used in prevention strategies. Methods, strategies, legal aspects, social and community resources available to prevent chemical dependency and relapse. Discuss prevention certification skills and requirements. Emphasis on process outcomes, including quality assurance, evaluation and tracking.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): HS-1101 Foundations of Substance Abuse, Addiction, and Group Work.

HS-1220 Diagnostic Tools and Legal Considerations

04 Semester Credits

Introduction to signs and symptoms of behaviors associated with mental illness, using DSM-IV. Identify and discuss psychotropic and related medications. Identification of criteria to qualify consumers for services. Discussion of networking strategies. Development of

advocacy strategies based on integration of course material. Basic legal issues and policies affecting consumers of mental health and substance addiction services. Exploration of Ohio Revised Code statutes relating to probate, commitment, retention, release, due process, patient's rights, forensics, confidentiality and privacy act. Discussion of recent court decisions pertaining to mental health and substance addiction.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): None.

HS-1300 Introduction to Human Services

03 Semester Credits

Survey of historical and philosophical developments and their effects on Human Services. Introduction to contemporary Human Services delivery systems. Development of client-centered Human Services interventions. Exploration of careers in the field of Human Services. Emphasis on understanding Human Services within context of culturally/ethnically diverse urban environment.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment, or ENG-101H Honors College Composition I or concurrent enrollment.

HS-1850 Introduction to Human Services Principles and Practices

05 Semester Credits

Principles and practices of Solution Focused/Brief Therapy Theory and Motivational Interviewing. Development of behavioral observation, assessment, intervention and assertiveness skills. Emphasis on developing cooperative relationships with clients, practicum supervisor, instructor and peers. Introduction to community services and managed care system. Demonstrate application of appropriate, ethical and culturally sensitive interventions at practicum site. Supervised practicum of seven hours per week with emphasis on orientation, data collection, behavioral documentation, interpretation of behavior, and decision making relating to individuals and social systems.

Lecture 03 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 7 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): HS-1300 Introduction to Human Services, and departmental approval: required background check must be completed at least three months prior to the first day of class.

HS-2200 Ethics in Chemical Dependency**03 Semester Credits**

Examination of ethical considerations in field of Chemical Dependency. Emphasis on ethical considerations surrounding the 12 Core Functions. Examine confidentiality compliance requirements for practitioner and organizations, including HIPPA. Identify scope of practice skills and limitations. Explore personal inventory of one's skills, knowledge and boundary issues. Identify strategies to prepare for state examination, including a mock test. Students will demonstrate assertiveness, advocacy and stress management techniques and skills.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): HS-1101 Foundations of Substance Abuse, Addiction, and Group Work.

HS-2210 Dual Diagnosis in Chemical Dependency**02 Semester Credits**

Signs and symptoms of behavior associated with mental illness and substance abuse/addiction. Assessment, models of treatment and case management issues. Agency organization, funding, assessment, and treatment with special populations.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): HS-1101 Foundations of Substance Abuse, Addiction, and Group Work, or departmental approval.

HS-2300 Family Theory and Services**04 Semester Credits**

Principles of family dynamics. Emphasis on family preservation. Introduction to various family theories, approaches and intervention strategies. Explore concepts related to intergenerational patterns of behavior and family traits. Introduction to signs and symptoms of behaviors associated with abuse, domestic violence and neglect. Development of assessment skills with emphasis on relationships, parenting, abuse and/or neglect. Introduction to basic legal issues, ethics, and reporting policies and procedures. Introduction to system and services of the local Department of Children and Family Services. Development of human service skills to service families. Explore range of services and resources available to families.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

HS-2600 Systems Approach to Case Management**04 Semester Credits**

Development of a systems approach to human service delivery, with emphasis on macro and micro systems. Explore formal and informal systems. Develop skills to evaluate existing human services in community. Identify role of an advocate. Development of assessment skills for individuals and families through use of Genogram and Ecological Mapping tools. Practice in development of skills in assessment, planning, coordination, intervention, maintenance, and referral as integral part of case

management. Emphasis on oral and written communication pertaining to case management.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): HS-1850 Introduction to Human Services Principles and Practices.

HS-2850 Human Services Principles and Practices I**05 Semester Credits**

Introduction to the basic skills of time management. Application of time management techniques to student's personal schedule. Investigation of therapeutic theories of laughter and playfulness. Continue developing skills and application of Motivational Therapy. Introduction into the theory and application of Cognitive Therapy and Non-Traditional Therapies. Research of a specific Adjunct Therapy. Development of preventive measures in human services.

Lecture 02 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 14 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): HS-1850 Introduction to Human Services Principles and Practices; or departmental approval: equivalent coursework or experience.

HS-2860 Human Services Principles and Practices II**03 Semester Credits**

Continuation of practicum experience. Focus on client within the existing service delivery system.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 14 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): HS-2850 Human Services Principles and Practices I.

HS-2990 Human Services Capstone Course**02 Semester Credits**

Capstone course in Human Services. Assessment of one's knowledge, experience and skills as human service worker. Preparation and presentation of qualifications through written resume and portfolio. Guidelines and preparation for employment interview. Investigation into Human Services issues.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): HS-2850 Human Services Principles and Practices I.

HUMANITIES - HUM

HUM-1010 Introduction to Humanities

03 Semester Credits

Examines creative enterprise in human cultures through the study of great works of art and literature. Lectures, performances, exhibits, and multi-media presentations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

HUM-1020 The Individual in Society

03 Semester Credits

Introduction to works of art, philosophies, and scientific views that portray, explain, and evaluate positions and interactions of individuals in society. Lectures, performances, exhibits, and multi-media presentations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

HUM-1030 The Individual in the Cosmos

03 Semester Credits

Introduction to works of art, philosophies, religions, and scientific views that portray, explain, and evaluate individual's search for meaning in cosmos. Lectures, performances, exhibits, and multi-media presentations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

HUM-1100 Leadership Development Studies

03 Semester Credits

Introduction to theories and ethics of group dynamics in leadership styles through study of classic and contemporary writings. Internationally recognized course, designed by Phi Theta Kappa. Lectures, discussions, and experiential learning exercises.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

HUM-175H Honors Forum: Critical Issues

03 Semester Credits

Analysis of contemporary critical issues through their roots in past and present social, philosophical, and political attitudes and literature. Topics may vary with each offering, lecture, discussion, guest presentation, and multi-media presentation.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-101H Honors College Composition I, or departmental approval.

HUM-179H Honors Contract in Humanities

01 Semester Credit

Honors Contract complements and exceeds requirements and objectives for an existing HUM 1000-level honors course through formulation of a contract with a faculty mentor. In conjunction with faculty mentor, student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete contract, student is required to meet on a regularly scheduled basis

with instructor offering the contract for mentor-student tutorial sessions. May be repeated for a maximum of six credits of different topics.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Must be taken concurrently with a 1000-level honors course in Humanities whose instructor approves the Honors Contract.

INFORMATION TECHNOLOGY - IT

IT-1000 Keyboarding

02 Semester Credits

Mastery of alphabetic and numeric keyboard using touch system. Formatting, speed and skill development, and keying basic business documents emphasized. Minimum goal of 30 words a minute with not more than five errors on a three-minute timed writing. Instruction on microcomputer.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

IT-1005 Computer Fundamentals

02 Semester Credits

Introduces students to general concepts of computer information systems. Presents terminology and effects of computers in our personal and business lives. Discusses available hardware and software as well as their applications. Includes repetitive hands-on applications in windows, keyboarding, electronic messaging, and word processing using a Windows environment. Introduces research techniques on the Internet and the World Wide Web. Exposes students to applications that promote critical thinking skills which are required to analyze and process information in future information technology courses.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

IT-1010 Introduction to Microcomputer Applications

03 Semester Credits

Overview and introduction to techniques and skills used on the microcomputer in a Windows environment. Introductory level instruction and hands-on training in file management, word processing, computerized spreadsheets, database management software, presentation graphics, electronic mail and Internet. Practical applications in creating, editing, saving, and printing computer generated materials.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): Recommend IT-1000 for students who have not previously taken a keyboarding/typing course.

OAN Approved: OBU003; CTAN Approved: CTIT001

IT-101H Honors Introduction to Microcomputer Applications

03 Semester Credits

Introduction to Microcomputer concepts and applications from a business problem perspective. Emphasis on business applications spanning multiple platforms and, including file management, communications, word processing, spreadsheets, database management, presentation software and the Internet. Course objectives will be met utilizing a variety of online resources in lieu of or in addition to a traditional text book.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): Eligibility for ENG-101H Honors College Composition I, and MATH-0955 Beginning Algebra or appropriate score on Math placement test, or higher.

IT-1025 Information Technology Concepts for Programmers

03 Semester Credits

Designed for students pursuing careers in programming, networking and general Information Technology fields. Introduces computer, networking, and programming concepts.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

IT-1030 Internet Fundamentals

02 Semester Credits

Instruction in use of the Internet and World Wide Web. Technical concepts and terminology including: effective browser use, hypermedia, effective search strategies, e-mail, social media, newsgroups, copyright issues, library resources, citation styles, multimedia resources, cloud computing, e-commerce; web research, web page evaluation, privacy and ethical issues. Hands-on use of current software tools and techniques is emphasized.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): IT-1010 Introduction to Microcomputer Applications or concurrent enrollment.

IT-1040 Microcomputer Operating Systems

03 Semester Credits

Overview of microcomputer operating systems and their role in hardware, software and data management. Hands-on skill development in use of current microcomputer operating system.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1025 Information Technology Concepts for Programmers; or departmental approval: equivalent knowledge or skills.

IT-1050 Programming Logic

03 Semester Credits

Language-independent course introducing computer program design and development. Identification and solution of business problems emphasized. Structured

flow charts, hierarchy charts and pseudocode used in program description and design.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1025 Information Technology Concepts for Programmers, or concurrent enrollment.

IT-1060 Introduction to Windows

02 Semester Credits

Basic study of graphical user interface using Windows operating system. Emphasis on windowing concepts and commands, running application programs, managing files and transferring data. Includes use of Windows help system, utilities, accessories and web browsers.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

IT-1070 Advanced Internet Concepts

03 Semester Credits

Networking technologies that make up the Internet. Management of processes using the Internet, building Websites utilizing HTML editor, and management of client personal computers connected to the Internet.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1030 Internet Fundamentals.

IT-1100 Fundamentals of iOS Application Development

03 Semester Credits

Introduction to the approach and technologies required for iOS (iPhone / iPad / iPod) application development. Technologies introduced will include: download and installation of software, Xcode, iPhone Simulator, Objective-C, Cocoa Touch, MVC and application marketing and distribution. Mac computer required with ability to download/install software.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

IT-1150 Introduction to Web Programming

03 Semester Credits

Build Web pages using current technologies including but not limited to HTML, Cascading Style Sheets and JavaScript using an HTML editor. Focus is on developing a foundation in web programming.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1025 Information Technology Concepts for Programmers or concurrent enrollment.

IT-2030 ASP.NET Web Programming

04 Semester Credits

Capstone course for Programming and Development majors. Advanced server-side programming course. Create server-side, database-driven websites using the ASP.NET framework in combination with markup, style sheets and client-side scripting.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): IT-1150 Introduction to Web Programming, and IT-2351 Enterprise Database Systems, and IT-2650 Java Programming.

IT-2100 iOS Application Programming

04 Semester Credits

Focuses of skills required to successfully create dynamic and efficient iOS applications. Covers the fundamentals of objects, classes and behaviors as well as object communication and, user interface design considerations. Mac computer required with ability to download/install software.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): IT-2650 Java Programming.

IT-2110 Android Mobile App Development

03 Semester Credits

Introduction to mobile development using the Android Software Development Kit (SDK). Focuses on the skills required to design, develop and publish applications for the Android platform. Covers the fundamentals of Android application development including designing an application, implementing specific framework components such as a splash screen and main menu, how to handle user interaction and make an application available in the Android market.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-2650 Java Programming.

IT-2250 Excel: VBA Programming

03 Semester Credits

Object-oriented programming course in Visual Basic for Applications (VBA). Investigation of the Excel object model as it relates to the creation of functions and procedures within VBA programming constructs. Strong emphasis on business applications.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1050 Programming Logic.

IT-2300 Database Use and Design

03 Semester Credits

Study in electronic database concepts and software as used in a business environment. Database theory, design and implementation techniques. Problem solving strategies using database software for accurate and timely storage, retrieval and interpretation of data.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, or departmental approval: equivalent experience.

CTAN Approved: CIIT002

IT-2320 Interactive Internet Programming

04 Semester Credits

Introduction to interactive object-oriented programming in an Internet environment from a conceptual approach. Emphasis is on understanding the basic Internet technologies (mostly from the client side), how and when to use them and how to integrate them into a system.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): IT-1050 Programming Logic, and IT-1150 Introduction to Web Programming.

IT-2351 Enterprise Database Systems

04 Semester Credits

Apply knowledge of: relational algebra, data migration, data warehousing, data mining, distributed databases and security to design, develop and normalize a Structured Query Language (SQL) database to 3rd normal form using appropriate diagrams and database objects. Retrieve, insert, update, delete, troubleshoot and report data from complex SQL databases.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): IT-1025 Information Technology Concepts for Programmers, and MATH-0955 Beginning Algebra or appropriate score on Math placement test.

IT-2400 Unity Game Programming

03 Semester Credits

An introduction to scripting with Unity focusing on the programming skills needed to translate game design principles into a fully-functional game.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): VCIM-1400 Game Design II: Game Engines, or departmental approval.

IT-2510 Project Management Software

03 Semester Credits

Provides an overview of project management concepts and hands-on activities in a project management software application. Utilize a business scenario in order to learn knowledge and skills relating to project scheduling, calendars, tasks, phases, resources, charting, and reporting.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): BADM-1020 Introduction to Business, IT-1010 Introduction to Microcomputer Applications or IT-101H Honors Introduction to Microcomputer Applications; or departmental approval.

IT-2600 E-Business Programming Technologies

03 Semester Credits

Use of web programming technologies to create Internet client/server applications. Design, create, code and debug applications using Web objects. Topics include, but are not limited to, SQL, XML, C# .Net, Visual Basic .Net, and a server-side technology such as PHP.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1150 Introduction to Web Programming, and IT-2351 Enterprise Database Systems; and IT-2650 Java Programming, or IT-2620 Visual Basic .NET Programming, or IT-2670 C/C++ Programming Language, or IT-2680 Visual C# .NET.

IT-2620 Visual Basic .NET Programming

04 Semester Credits

Introduction to object-oriented programming in a Windows environment using the Visual Basic programming language and .NET framework. Emphasis on program development and design, application of logic in both user-defined and event-driven procedures, debugging techniques, and basics of Visual Basic syntax.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): IT-1050 Programming Logic, or departmental approval: equivalent knowledge or skills.

IT-2650 Java Programming

04 Semester Credits

Introduction to object-oriented methodologies and programming using the Java programming language. Design, code, and debug Java applications. Other topics include GUI components, event handling, and exception handling.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): IT-1050 Programming Logic.

IT-2660 Data Structures & Algorithms

04 Semester Credits

Programming and problem-solving skills are further developed by using language features to implement various data structures such as stacks, queues, linked lists, trees and graphs. Additional topics include recursion, sorting, searching, and hashing algorithms.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): IT-2650 Java Programming.

IT-2670 C/C++ Programming Language

04 Semester Credits

Introduction to programming using the C and C++ programming languages, emphasizing program development and design, debugging techniques, and common basics of the C/C++ languages. Topics include data types, control statements, functions, argument passing, arrays, strings, structures, data files, and classes.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): IT-1050 Programming Logic.

IT-2700 Systems Analysis and Design

03 Semester Credits

Overview of systems development life cycle. Utilize structured tools and object-oriented techniques to analyze and document process flow, data flows, data structures, file designs, input and output designs and program specifications in the systems development life cycle. Examine information gathering and reporting activities. Analyze strategies and techniques for producing logical methodologies which deal with complexity in development of information systems.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): IT-1050 Programming Logic.

IT-2680 Visual C# .NET

04 Semester Credits

An introduction to object-oriented programming using the Visual C# .NET programming language. Design, code and debug Visual C# .NET applications and objects. Topics include, but not limited to, using methods, creating and using classes, GUI components, the Visual Studio IDE, event handling, using controls and exception handling.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): IT-1050 Programming Logic.

IT-2830 Cooperative Field Experience

01-03 Semester Credits

Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): Formal application into the Cooperative Education Program.

**INFORMATION TECHNOLOGY -
(Programming and Development) -
ITMP/ITWM**

All courses formerly listed under ITMP/ITWM have been moved under IT. See page 378.

**INFORMATION TECHNOLOGY -
(Networking Software) - ITNT**

ITNT-2300 Networking Fundamentals

03 Semester Credits

Survey course into the fundamental topics and concepts of networks and network technologies. Topics include introductory content on networking standards, models and protocols, networking hardware, transmission methods and media, LANs, WANs, Wireless, VOIP, security, and network management issues. Serves as a preparation basis for the CompTIA Network+ exam.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): IT-1025 Information Technology Concepts for Programmers, or concurrent enrollment or departmental approval, or EET-1241 Digital Fundamentals, or concurrent enrollment.

ITNT-2310 TCP/IP

03 Semester Credits

Provides knowledge and skills required to setup, configure, use, and support Transmission Control Protocol/Internet Protocol (TCP/IP). Emphasis on Microsoft Windows operating system.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ITNT-2300 Networking Fundamentals or concurrent enrollment, or departmental approval: equivalent knowledge or skills.

ITNT-2320 Network Administration I

03 Semester Credits

Introduction to knowledge and skills necessary to perform installation, configuration, and day-to-day administration tasks in a Microsoft Windows-based network. Includes how to install the server operating system, manage local and remote access, manage file and printer services, implement group policies, and manage server storage. How to install and configure Active Directory (AD), Domain Name System (DNS) server, Dynamic Host Configuration Protocol (DHCP), and networking services are also covered.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ITNT-2300 Networking Fundamentals or concurrent enrollment, or departmental approval: equivalent knowledge or skills.

CTAN Approved: CTIT013

ITNT-2370 Network Security Fundamentals

03 Semester Credits

A survey examination of network security fundamentals involved in creating and managing secure computer network environments. Both hardware and software topics are considered, including authentication methods, remote access, network security architectures and devices, cryptography, forensics and disaster recovery plans. Serves as preparation basis for CompTIA Security+ exam.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ITNT-2310 TCP/IP, or EET-1302 Cisco I: Basic Networking Technologies, and EET-1312 Cisco II: Basic Routing and Switching.

CTAN Approved: CTITN005

ITNT-2380 Linux Administration

03 Semester Credits

Linux is used as a platform for many server applications including the dominant Web server. Cost and licensing advantages have made it a network operating system that is in widespread use. The essentials of installing, configuring, maintaining, administering, and troubleshooting the Linux Operating System will be covered.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ITNT-2300 Network Fundamentals or concurrent enrollment; or departmental approval: equivalent skills.

ITNT-2420 Network Administration II

03 Semester Credits

Introduction to knowledge and skills necessary to manage and maintain the core infrastructure required for a Windows Server environment. Includes how to manage domain users and groups, how to control network access, and how to implement data security.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ITNT-2320 Network Administration I, or departmental approval: equivalent knowledge or skills.

ITNT-2990 Networking Capstone

03 Semester Credits

Capstone course for Networking (Hardware and Software degree programs). Primary focus on developing and responding to request for proposals, and determining and presenting solutions to various networking environments. Uses case studies and teamwork.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): To be taken within the last 15 credits of the IT (Networking Software) or the EET (Networking Hardware) degree programs, or departmental approval.

INTEGRATED SYSTEMS ENGINEERING TECHNOLOGY - ISET

ISET-1100 Welding Blue Print Reading

02 Semester Credits

Explore the techniques of blueprint reading and welding symbols relating to the welding field, including the proper way to read and apply measurements and dimensioning pertaining to industrial blueprints and metal specifications. Includes how to understand and interpret views and translate measurements and dimensions.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0910 or appropriate score on Math placement test to enroll in MATH-0955.

ISET-1300 Mechanical/Electrical Print Reading

02 Semester Credits

Introduction to fundamental theory and application of blueprint reading skills. Included material will cover electrical, mechanical, structural drawings with symbols and wiring diagrams, safety codes, and basic troubleshooting techniques. Extensive guided instruction and practice provided.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

**ISET-1310 Mechanical Power Transmission
02 Semester Credits**

Introduction to basic concepts of industrial maintenance and installation of mechanical drive systems including bearing, shafts, gears, and couplings. With an emphasis on OSHA safety standards, installation, maintenance, troubleshooting, and lubrication of mechanical components.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

**ISET-1320 Fundamentals of Fluid Power
02 Semester Credits**

Principles of power transmission are presented and contrasted with other means of transmission. Includes laws and principles of fluid power transmission, units of pressure and flow, plumbing materials and sizing, pressure losses through piping, and the uses of vacuum and vacuum applications. Extensive guided instruction and practice provided.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): ISET-1300 Mechanical/Electrical Print Reading.

**ISET-1340 Industrial Piping and Tubing
02 Semester Credits**

Concepts and principles specific to piping, pipefitting, and tubing techniques, materials, routing and layout including types of material, cutting, threading, measurements, fittings, bending and offsets. Extensive guided instruction and practice provided.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): ISET-1300 Mechanical/Electrical Print Reading.

**ISET-1410 Applied Electricity I
03 Semester Credits**

Fundamentals of electricity with emphasis on resistance, direct current voltage and current, electrical quantities and units of measurements. Ohm's Law, Kirchoff's voltage and current laws will also be covered.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MATH-1240 Contemporary Mathematics or concurrent enrollment.

**ISET-1420 Applied Electricity II
03 Semester Credits**

Principles and applications of electricity with emphasis on alternating current, inductors, capacitors, and phase relationships. Electrical quantities and units of measurements, Ohm's Law, Kirchoff's voltage and current laws, single and three phase transformers will also be included. Extensive guided instruction and practice provided.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ISET-1410 Applied Electricity I.

**ISET-1450 Heating Ventilation Air
Conditioning/Refrigeration I
02 Semester Credits**

Fundamental concepts and principles of heating, ventilating, and air conditioning and refrigeration (HVAC/R) systems. Topics include types and components of HVAC/R systems, fuels and refrigerants, controls devices, thermostats and sensing devices.

Extensive guided instruction and practice provided.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

**ISET-1460 Fundamental Boiler Technology
03 Semester Credits**

Concepts and fundamental skills associated with the operation and maintenance of steam boilers. Topics include an overview of steam boilers and boiler operation, basic boiler processes, boiler construction and material properties, boiler operating and maintenance procedures, combustion theory and fuels, efficiency, and codes and standards. Safety codes and procedures, preventive maintenance and basic troubleshooting techniques will also be covered. Extensive guided instruction and practice provided.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

**ISET-2100 Gas Metal Arc Welding (MIG)
04 Semester Credits**

Develop skills in Gas Metal Arc Welding (MIG). Extensive guided instruction provided and prepares a student for the certified MIG certification test.

Lecture 02 hours. Laboratory 04 hours.

Prerequisite(s): ISET-1100 Welding Blue Print Reading or departmental approval.

**ISET-2110 Gas Tungsten Arc Welding (TIG)
04 Semester Credits**

Develop skills in Gas Tungsten Arc Welding (GTAW-TIG). Extensive guided instruction provided and prepares a student for the certified TIG certification test.

Lecture 02 hours. Laboratory 04 hours.

Prerequisite(s): ISET-1100 Welding Blue Print Reading or departmental approval.

**ISET-2120 Shielded Metal Arc Welding (STICK)
04 Semester Credits**

Develop skills in Shielded Metal Welding (STICK). Extensive guided instruction provided and prepares a student for the certified STICK certification test.

Lecture 02 hours. Laboratory 04 hours.

Prerequisite(s): ISET-1100 Welding Blue Print Reading or departmental approval.

ISET-2130 OxyFuel Gas Welding

04 Semester Credits

Develop skills in OxyFuel Gas Welding. Extensive guided instruction provided and prepares a student for the certified OxyFuel Gas Welding certification test.

Lecture 02 hours. Laboratory 04 hours.

Prerequisite(s): ISET-1100 Welding Blue Print Reading or departmental approval.

ISET-2140 Non-Destructive Testing

03 Semester Credits

An introduction to terms, definitions, methods, and applications of the non-destructive testing profession and an in-depth exploration of two methods of non-destructive testing: visual inspection and liquid penetrant examination. The tools, proper processing techniques, different testing methods, and interpretation involved with visual inspection and liquid penetrant testing will be discussed and practiced.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

ISET-2150 Robotic Welding

03 Semester Credits

Concepts and fundamental skills associated with the operation and programming of robotic welding machines. Topics include safe operation of robotic welding machines; building and editing programs to complete simple and complex welds; welding variables and options; and machine maintenance and setup.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): ISET-2100 Gas Metal Arc Welding (MIG).

ISET-2160 Structural Fabrication

04 Semester Credits

Complete a fabrication project, beginning by interpreting a set of prints, developing a plan, and working to cut, prepare, fit and weld raw materials together. The fabrication project will resemble a real world scenario related to the shipbuilding, construction, aeronautical, or related industries on a smaller scale.

Lecture 02 hours. Laboratory 04 hours.

Prerequisite(s): ISET-1100 Welding Blue Print Reading, and ISET-2100 Gas Metal Arc Welding (MIG).

ISET-2200 Industrial Motor Controls

03 Semester Credits

Instruction in theory, application, and use of industrial type motors focusing on topics of safety, direct current (DC) motors, alternating current (AC) motors, single-phase motors, three-phase motors, motor troubleshooting methods, and motor starting. Extensive guided instruction and practice provided.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ISET-1420 Applied Electricity II, or EET-1210 AC Electric Circuits, or departmental approval.

ISET-2210 Commercial Wiring

03 Semester Credits

Principles of commercial electrical installations to prepare for work in the electrical field in a commercial, environmental setting. Based on the National Electric Code, study includes job specifications, sizing and selection of materials, and installation techniques. Extensive guided instruction and practice provided.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ISET-2240 Applied National Electric Code or concurrent enrollment; or departmental approval.

ISET-2220 Fundamentals of Electronics and Instrumentation

03 Semester Credits

Concepts of electronics circuitry and instruments including purpose, function, and operation of diodes, transistors, Silicon Controlled Rectifier's (SCR's), DIAC's, TRIAC's, Field Effect Transmitter's (FET's), and other solid state devices used in live dynamic electronic circuits. Extensive guided instruction and practice provided.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ISET-1420 Applied Electricity II, ISET-2200 Industrial Motor Controls; and departmental approval.

ISET-2240 Applied National Electric Code

03 Semester Credits

Introduction to the National Electric Code including industry safety hazards, standards, and precautions. Code book structure, terminology, and electrical installations will be presented. Extensive guided instruction and practice provided.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ISET-1420 Applied Electricity II.

ISET-2450 Heating Ventilation Air Conditioning/Refrigeration II

02 Semester Credits

Topics include refrigeration, heat transfer and thermodynamics HVAC/R. Course covers modern HVAC/R systems including their major components, controls, different duct work designs, combustion, and HVAC/R blueprint reading. Install heating and air conditioning, start up and troubleshoot equipment, live demonstrations on heating and air conditioning systems, and preparation for the HVAC test. Extensive guided instruction and practice provided.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): ISET-1450 Heating Ventilation Air Conditioning/Refrigeration I, or departmental approval.

ISET-2460 Applied Boiler Technology

02 Semester Credits

The focus of this course will be applications of steam and hot water boilers, water chillers, steam and hydronic heating and cooling systems. This course is the prerequisite for the State of Ohio Low Pressure Operators License Exam Preparatory. Extensive guided instruction and practice provided.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): ISET-1460 Fundamental Boiler Technology, or departmental approval.

ISET-2500 Programmable Logic Controllers

Maintenance I

03 Semester Credits

Fundamental concepts of Programmable Logic Controllers (PLCs) Maintenance including applications of industrial type PLCs requiring motion control, automated manufacturing and the functions PLCs serve in that environment. Extensive guided instruction and practice provided.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ISET-2200 Industrial Motor Controls, and departmental approval.

ISET-2510 Programmable Logic Controllers

Maintenance II

02 Semester Credits

Programming and application of Programmable Logic Controllers (PLCs) including timers, counters, program control, data manipulation, and math instructions. Extensive guided instruction and practice provided.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): ISET-2500 Programmable Logic Controllers Maintenance I, or departmental approval.

ISET-2520 Programmable Logic Controllers

Maintenance III

02 Semester Credits

Programming and application of programmable logic controllers (PLCs) including sequencers, shift registers, PLC installation, editing, troubleshooting, process control, data acquisition, and computer-controlled machines and processes. Extensive guided instruction and practice provided.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): ISET-2510 Programmable Logic Controllers Maintenance II or concurrent enrollment; or departmental approval.

ISET-2990 Reliability Centered Maintenance

03 Semester Credits

Advanced concepts and principles of troubleshooting, preventive and predictive maintenance, reliability centered maintenance (RCM), elements of root cause failure analysis (RCFA), and Total Productive

Maintenance (TPM). Extensive guided instruction and practice provided.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ISET-1450 Heating Ventilation Air Conditioning/Refrigeration I, and ISET-2500 Programmable Logic Controllers Maintenance I, and ISET-2210 Commercial Wiring, or departmental approval.

INTERIOR DESIGN - INTD

INTD-1100 Hand Drafting and Sketching for Interiors

02 Semester Credits

Introduction to hand drafting and field sketching for interior design. Emphasizes an understanding of basic construction and field terminology, use of field equipment, and understanding and interpreting construction documents. Provides a foundation in using hand drafting tools and translating field sketches to working drawings.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): INTD-1111 Introduction to Interior Design or concurrent enrollment; and appropriate score on Math Placement test to enroll in MATH-0955 Beginning Algebra.

INTD-1111 Introduction to Interior Design

03 Semester Credits

Introduction to interior design studies with emphasis on identifying and developing basic skills and competencies required for residential and nonresidential design. Provides the foundation for understanding terminology, principles and practices utilized in subsequent interior design coursework.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment; and IT-1010 Introduction to Microcomputer Applications, or concurrent enrollment.

INTD-1120 Architectural Drafting for Interiors I

03 Semester Credits

Introduction to two dimensional computer-aided drafting (CAD). Learn and apply basic and intermediate CAD commands to draw, edit and plot drawings of architectural exteriors, interiors, elevations, sections, and details for the purpose of design, documentation and presentation.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, INTD-1100 Hand Drafting and Sketching for Interiors, INTD-1111 Introduction to Interior Design, and MATH 1000-level course or higher, or concurrent enrollment; or departmental approval.

INTD-1130 Architectural Drafting for Interiors II **03 Semester Credits**

Introduction to REVIT and building information modeling for commercial structures. Learn and apply basic REVIT commands to develop, plans, sections, exterior and interior elevations, details and perspectives for the purpose of design, documentation and presentation. Advanced computer-aided drafting (CAD) utilized to complete millwork drawings.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): INTD-1120 Architectural Drafting for Interiors I, and MATH-1000 level course or higher.

INTD-1300 Color and Light in Interiors **03 Semester Credits**

Introduction of color theory and light for interior spaces. Emphasis on color selection for the interior environment, color psychology, color trends and forecasting and how light affects color and design elements in spaces.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): INTD-1111 Introduction to Interior Design.

INTD-1330 Coordinating Spaces **03 Semester Credits**

Introduction to coordinating spaces by developing and enhancing an interior environment through furniture, fabrics and accessories. Emphasis on identifying and developing skills required to form spatial sequences as well as the use of interior elements in decorating.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): INTD-1300 Color and Light in Interiors, INTD-2330 Interior Design Materials and Sources, and INTD-2320 History of Interiors, or concurrent enrollment.

INTD-1350 Business of Interiors **03 Semester Credits**

Introduction to business practices used in decorating interior spaces. Emphasis on professional ethics and business conduct, building professional relationships, effective communications with clients and industry professionals. Provides a foundation in design sales procedures and protocols.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): INTD-2330 Interior Design Materials and Sources.

INTD-1400 Interior Decorating Field Experience **01 Semester Credit**

Field Experience in Interior Decorating. Students placed in practical work environments under college supervision. Interaction with professionals in the field and application

of skill and knowledge gained in the classroom required.
Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 14 hours per week; 210 hours per semester at assigned site.

Prerequisite(s): INTD-2320 History of Interiors, or concurrent enrollment, INTD-1300 Color and Light in Interiors, INTD-1330 Coordinating Spaces, or concurrent enrollment and INTD-1350 Business of Interiors, or concurrent enrollment.

INTD-2300 Interior Design Studio I **03 Semester Credits**

First in two-course sequence. Introduction of functional space planning through design of residential projects. Emphasis on problem solving and exploring multiple design solutions for kitchen and bath design. Addresses accessibility design and guidelines according to the Americans with Disabilities Act (ADA).

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): ART-1050 Drawing I, or concurrent enrollment, ART-1091 Color Theory and Application, or concurrent enrollment, INTD-1111 Introduction to Interior Design, INTD-1120 Architectural Drafting for Interiors I, INTD-1130 Architectural Drafting for Interiors II, INTD-2380 Fundamentals of Lighting, INTD-2430 Architectural Materials and Methods, and VC&D-1015 Digital Studio Basics or concurrent enrollment; or departmental approval.

INTD-2320 History of Interiors **03 Semester Credits**

History of development of furnishings, ornaments, interiors and architectural details from Egyptian through prominent 20th century movements to present.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): INTD-1111 Introduction to Interior Design and ART-2020 Art History Survey: Prehistoric to Renaissance and ART-2030 Art History Survey: Late Renaissance to Present.

INTD-2330 Interior Design Materials and Sources **03 Semester Credits**

Review various interior finishes and materials through lectures, field trips, projects, and research assignments. Information presented on material and finish production, estimating, sources and showrooms. Criteria for specifying materials and finishes of interior spaces using Construction Specifications Institute (CSI) MasterFormat specifications and Furniture, Finishes and Equipment (FF&E) specifications.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): INTD-1111 Introduction to Interior Design and INTD-1100 Hand Drafting and Sketching for Interiors and MATH-0955 Beginning Algebra, or appropriate score on Math placement test to enroll in 1000-level Mathematics or higher.

INTD-2380 Fundamentals of Lighting**03 Semester Credits**

Principles and techniques of lighting design and application in interior space. Light measurement, sources, specifications, color and light, and proper terminology used to create an interior environment.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): INTD-1111 Introduction to Interior Design, and INTD-1120 Architectural Drafting for Interiors I.

INTD-2400 Interior Design Studio II**03 Semester Credits**

Second in two-course sequence. Introduction to the functional design of commercial interiors with an emphasis on evidence-based design and research, analysis of existing structures, building constraints, accessibility, regulations and guidelines.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): INTD-2300 Interior Design Studio I, and concurrent enrollment in INTD-2460 Interior Design Presentation.

INTD-2430 Architectural Materials and Methods**03 Semester Credits**

Emphasizes the study of building construction, environmental systems and controls, building systems, and fire and life safety codes, standards, and guidelines through field trips and research. Application of construction and building systems knowledge to functional solutions for interior environments.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): INTD-1120 Architectural Drafting for Interiors I and INTD-2330 Interior Design Materials and Sources.

INTD-2460 Interior Design Presentation**03 Semester Credits**

Verbal and visual communication methods for interior designers. Focuses on perspective construction, hand and electronic rendering techniques, sketching techniques, presentation methods and digital and web design portfolio construction.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): Concurrent enrollment in INTD-2400 Interior Design Studio II, and VC&D-1015 Digital Studio Basics.

INTD-2471 Professional Practice of Interior Design**02 Semester Credits**

Business practices for production of residential and commercial interior design projects within a global context. Emphasis on professional ethics and building professional relationships. Operation, communications, and legal responsibilities along with resumes, interviews, and business conduct presented. Preparation for INTD-2851 Interior Design Field Experience.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): INTD-1111 Introduction to Interior Design, and ENG-1010 College Composition I.

INTD-2851 Interior Design Field Experience**01 Semester Credit**

Capstone course in Interior Design. Students placed in practical work environment under College supervision. Interaction with professionals in the field and application of skills and knowledge gained in the classroom required.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 14 hours per week; 210 hours per semester at assigned site.

Prerequisite(s): INTD-2330 Interior Design Materials and Sources, INTD-2400 Interior Design Studio II, or concurrent enrollment, INTD-2430 Architectural Materials and Methods, INTD-2460 Interior Design Presentation, or concurrent enrollment, and INTD-2471 Professional Practice of Interior Design, and departmental approval.

ITALIAN - ITAL**ITAL-1010 Beginning Italian I****04 Semester Credits**

Introduction to Italian through multiple approaches with emphasizing speaking and understanding. Practice in conversational Italian and aural comprehension on topics of daily interest. Practice in writing basic sentences and small simple paragraphs on relevant topics and reading short paragraphs.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): None.

ITAL-1020 Beginning Italian II**04 Semester Credits**

Development of proficiency in speaking, understanding, reading, and writing in Italian. Emphasis on strengthening conversational skills through discussions of selected readings and cultural topics.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): ITAL-1010 Beginning Italian I, or one year of high school Italian; or departmental approval.

ITAL-2010 Intermediate Italian I**03 Semester Credits**

Increased vocabulary development and structural review through readings of cultural texts. Emphasis on oral expression and group discussions. Intensive exercises in written and oral expression. Grammar review and vocabulary building.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ITAL-1020 Beginning Italian II, or two years of high school Italian; or departmental approval.

ITAL-2020 Intermediate Italian II

03 Semester Credits

Intensive exercises in written and oral expression in Italian with emphasis on conversation. Further improvement of written skills. Reading of selected texts in order to deepen the understanding and appreciation of Italian culture. Additional grammar review and vocabulary building. Further exploration of Italian literature.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ITAL-2010 Intermediate Italian I, or two years of high school Italian; or departmental approval.

ITAL-2410 Italian Conversation and Composition

03 Semester Credits

Development of proficiency in speaking, understanding, reading, and writing. Emphasis on strengthening conversational skills through discussions of selected readings and cultural topics and more conversational opportunities. Discussion of topics of everyday life, colloquialisms, vocabulary augmentation, and improvement of speech patterns. Practice in writing compositions. Emphasis on group discussion.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ITAL-2020 Intermediate Italian II, or concurrent enrollment with departmental approval: three years of high school Italian.

ITAL-2420 Italian Civilization, Culture and Literature

03 Semester Credits

Introduction to the civilization and literature of Italy. Emphasis on the interrelationship between history and geography of Italy and its culture.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ITAL-2410 Italian Conversation and Composition, or concurrent enrollment with departmental approval: three years of high school Italian.

JAPANESE - JAPN

JAPN-1011 Beginning Japanese Language and Culture I

04 Semester Credits

Introduction to modern Japanese. Listening, speaking, reading, writing, and basic grammatical structures, with emphasis on appropriate social use of the language within Japanese culture. Hiragana, katakana, and 75-100 kanji. Basics of kanji dictionaries. Presented through class interaction, audio, video, and computer lab instruction.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): None.

JAPN-1021 Beginning Japanese Language and Culture II

04 Semester Credits

Continued study of modern Japanese in social and cultural context. Emphasis on listening comprehension and speaking regarding practical daily transactions. Reading basic, graded texts and writing simple compositions, integrating basic grammatical structures, hiragana, katakana, and 100-150 new kanji. Acquiring speed in referring to kanji dictionaries. Class interaction, audio, video and computer lab.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): JAPN-1011 Beginning Japanese Language and Culture I; or departmental approval.

JAPN-2011 Intermediate Japanese Language and Culture I

04 Semester Credits

Continued study of modern Japanese in social and cultural context. Listening and speaking skills necessary for basic function and communication in Japanese society. Reading functional, intermediate, graded texts and writing brief compositions and personal correspondence, integrating intermediate grammatical structures and 150-200 new kanji. Class interaction, audio, video, and computer lab.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): JAPN-1021 Beginning Japanese Language and Culture II, or departmental approval.

JAPN-2021 Intermediate Japanese Language and Culture II

04 Semester Credits

Continued study of modern Japanese in social and cultural context. Emphasis on communicative listening and speaking skills. Discussion of topics on Japanese culture and society. Reading and writing longer texts and compositions expressing more complex ideas, integrating 150-200 new kanji. Completion of Japanese grammar foundation. Class interaction, audio, video, and computer lab.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): JAPN-2011 Intermediate Japanese Language and Culture I, or departmental approval.

JAPN-2411 Advanced Japanese Language and Culture I

03 Semester Credits

Modern Japanese in social and cultural context. Development of focused listening comprehension and conversation skills. Discussion of cultural and business topics in Japanese. Reading selected literary texts. Introduction to formal writing style and its structural differences. Writing formal letters and brief essays. Introduction of 200-250 new kanji. Class interaction, audio, video, and computer lab.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): JAPN-2021 Intermediate Japanese Language and Culture II, or departmental approval.

JAPN-2421 Advanced Japanese Language and Culture II
03 Semester Credits

Modern Japanese in social and cultural context. Further development of focused listening and conversation skills. Discussion of aspects of Japanese politics and economy. Reading authentic texts such as periodicals, short stories, and novel excerpts. Writing journal entries and compositions of 200-400 characters. Introduction of 200-250 new kanji. Class interaction, audio, video, and computer lab.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): JAPN-2411 Advanced Japanese Language and Culture I, or departmental approval.

JOURNALISM AND MASS COMMUNICATION - JMC

JMC-1011 Introduction to Mass Communication
04 Semester Credits

Nature and function of mass media: print, television, radio and film. Impact and influence on individuals in a democratic society.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-0990 Language Fundamentals II.

OAN Approved: OCM006

JMC-1310 Film Appreciation
03 Semester Credits

Introduction to aspects of film including script, directing and elements of cinematography. Includes survey of film history and criticism. Class views masterpieces from a number of countries.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

JMC-1410 Staff Practice
01 Semester Credit

Class laboratory experience in assembling, making-up and publishing College newspaper. Detailed weekly analysis of effectiveness of news stories written and published and overall presentation of the College newspaper. Students assigned to College newspaper staff.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): Concurrent enrollment in JMC-2010 News Writing, or departmental approval: comparable knowledge or skills.

JMC-1610 Survey of the Black Press
03 Semester Credits

Nature and function of the Black press including broadcast, with emphasis on history and function of the Black press and impact of the Black press on minorities in general. Special attention on career opportunities for

minorities and problems of the black journalist working with the general press.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

JMC-2000 Media Writing
03 Semester Credits

Introduction to writing skills necessary for professional media such as news, print, broadcast, public relations and advertising. Emphasis also on the writing process, grammatical style sheets, audience concerns and an in-class, professional presentation of written materials.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II.

JMC-2010 News Writing
04 Semester Credits

News information gathering and writing for all media. An advanced look at structure of news stories and emphasis on writing against deadlines. Ethical, policy and legal questions confronting reporters, their newspapers and publishers. Completion of a professional portfolio of in-class clips. Survey of career opportunities in print, broadcast and internet journalism.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1020 College Composition II, or ENG-102H Honors College Composition II.

JMC-2040 American Cinema
03 Semester Credits

American film history from its beginnings to the present day. American film as an expression of American society and popular culture. Topics include: classical Hollywood cinema; the studio system; the star; genre studies of the western, comedy, musical, combat films, and film noir; Hollywood in the age of television; the film school generation; and into the 21st century.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I.

JMC-2220 Broadcast Journalism
03 Semester Credits

News reading, news preparation, news reporting on audiotape, videotape and live camera for television and radio. Covers Federal Communications Commission rules and regulations on news. Fundamentals of what makes a story and how to get it. Art of interviewing. Field work, study of radio and television history.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): JMC-1011 Introduction to Mass Communication.

JMC-2310 Screenwriting I

03 Semester Credits

Provides an introduction to screenwriting for feature films.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): ENG-1010 College Composition I; and JMC-1011 Introduction to Mass Communication, or JMC-1310 Film Appreciation, or departmental approval.

JMC-2410 Television Production

03 Semester Credits

Introduction to basic concepts of video production. Emphasis on operation of video cameras, microphone placement, lighting, editing and post-production equipment. Teamwork and group production emphasized.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): JMC-1011 Introduction to Mass Communication, or departmental approval: comparable knowledge or skills.

JMC-2420 Advanced Television Production

03 Semester Credits

Advanced television production and operations, to include hands-on training with studio and field equipment. Theories and processes of producing and directing video programs, including script writing, visualization, personnel management and budgeting. Includes multi-camera and single-camera production, video editing techniques. Teamwork and group production emphasized.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): JMC-2410 Television Production.

OAN Approved: OCM010

JMC-2830 Cooperative Field Experience

01-03 Semester Credits

Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): Formal application into the Cooperative Education Program.

MARKETING - MARK

MARK-2010 Principles of Marketing

03 Semester Credits

Introduction to basic principles of marketing involved in selling of goods and services. Focus on the marketing mix which includes the creation of a product, pricing, channels of distribution, and promotion.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): BADM-1020 Introduction to Business, and ECON-2620 Principles of Microeconomics.

OAN Approved: OBU006

MARK-2020 Principles of Salesmanship

03 Semester Credits

Skill development in techniques used by successful professional sales persons. Sales management also addressed in context of self management and organizational management.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MARK-2010 Principles of Marketing, or concurrent enrollment in INTD-2300 Interior Design Studio I or departmental approval: comparable knowledge or skills.

MARK-2120 Import/Export Procedures and Documentation

03 Semester Credits

Procedures and documentation required for import and export activities. Includes shipment of goods and payment for foreign sales, rules for importing cargo into the U.S., and Customs regulations and processes.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MARK-2010 Principles of Marketing, or departmental approval: previous coursework and/or experience.

MARK-2260 Sales Promotion and Public Relations

03 Semester Credits

Study of promotion methods and techniques which are supplementary to advertising and personal selling. Focus on both consumer and trade promotions. Includes publicity and public relations, trade shows and exhibits, point-of-purchase displays, couponing, contests, sweepstakes, rebates and premiums.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MARK-2010 Principles of Marketing.

MARK-2270 Principles of Advertising
03 Semester Credits

Introduction to advertising as an element of the promotion mix in marketing. Focuses on strategic, quantitative, and creative processes by which the advertising message is planned and produced.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MARK-2010 Principles of Marketing.

OAN Approved: OCM012

MARK-2500 Business-to-Business/Organizational Marketing**03 Semester Credits**

Principles and practices involved in marketing of materials, equipment, supplies, and services to organizational markets, such as manufacturers, resellers, service providers, institutions, and the government. Focus on unique characteristics of organizational market and how to profitably sell in this market by developing proper marketing mix. Includes product management, pricing policies, channels of distribution, and promotional practices.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MARK-2010 Principles of Marketing.

MARK-2830 Cooperative Field Experience**01-03 Semester Credits**

Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 01-03 hour. Laboratory 00 hours.

Prerequisite(s): Formal application into the Cooperative Education Program.

MESSAGE THERAPY - MT**MT-1100 Introduction to Massotherapy****03 Semester Credits**

Survey of massotherapy. Review of history of massage with emphasis on modern massage methodologies. Basic definitions of massage, movements, and modalities.

Theories and principles of massage; basic physiological effects; indications and indications for massage. Scope of practice; code of ethics; boundary issues; credentialing and licensing; massage law and legislation are introduced. Basic chair massage techniques for the upper torso are introduced.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

MT-1242 Somatic Studies I**03 Semester Credits**

Study of human anatomy and physiology for students of massotherapy. Specific emphasis on fundamental concepts of human body, chemical level, cellular level, tissue, integumentary system, skeletal system and articulations.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MATH-0955 Beginning Algebra or appropriate Math placement test to enroll in 1000-level Mathematics; and ENG-0980 Language Fundamentals I, or eligibility for ENG-0990 Language Fundamentals I; or departmental approval.

MT-1272 Somatic Studies II**03 Semester Credits**

Study of human anatomy and physiology for students of massotherapy. Specific emphasis on fundamental concepts of muscular system, nervous system, spinal cord, nerve plexus, brain, sensory and motor pathways, special senses, autonomic nervous system, endocrine, and cardiovascular system.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MT-1242 Somatic Studies I, or departmental approval.

MT-1280 Somatic Studies III**02 Semester Credits**

Study of human anatomy and physiology for students of massotherapy and sport and exercise studies. Specific emphasis on fundamental concepts of circulatory system, lymphatic system, respiratory system, digestive system, metabolism, urinary system, acid-base balance and reproductive system.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): MT-1272 Somatic Studies II, or departmental approval.

MT-1302 Massage Therapy I**02 Semester Credits**

History of massage with emphasis on modern massage methodologies. Examines theories and principles of massage, basic physiological effects, and indications and contraindications for massage. Scope of practice, code of ethics, boundary issues, credentialing and licensing, massage law and legislation discussed. Study and practice of both Kellogg and Fritz's techniques for manipulations of massage. Basic full-body massage, proper hygiene and sanitation practices, position and draping client, and proper body mechanics. Introduction to SOAP documentation.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): ENG-0980 Language Fundamentals I, or eligibility for ENG-0990 Language Fundamentals II; and MATH-0955 Beginning Algebra or appropriate Math placement test to enroll in 1000-level Mathematics.

MT-1312 Applied Musculo-Skeletal Anatomy

03 Semester Credits

Extensive practice in learning to palpate all bony landmarks of trunk and extremities; muscle, ligament, and tendon palpation. Introduction to postural analysis with practice in taking and interpreting postural measurements. *Lecture 02 hours. Laboratory 03 hours.*

Prerequisite(s): ENG-0980 Language Fundamentals I, or eligibility for ENG-0990 Language Fundamentals I; and MATH-0955 Beginning Algebra or appropriate Math placement test to enroll in 1000-level Mathematics; or departmental approval.

MT-1321 Functional Assessment in Massage Therapy

02 Semester Credits

Recognizing and assessing common structural and postural deviations and common soft tissue injury to muscle, tendon, joint capsule, ligament, bursa, fascia and nerve in order to determine appropriateness of massage therapy.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): MT-1302 Massage Therapy I, and MT-1312 Applied Musculo-Skeletal Anatomy; or departmental approval.

MT-1331 Massage Therapy II

03 Semester Credits

Documentation for massage therapy sessions through SOAP charting; interviewing and observational skills; in depth study of the physiological effects and therapeutic applications for each of the massage procedures and its respective subdivisions. Demonstrate massage procedures with patient in seated, side lying, prone and supine positions. Study of dysfunction resulting from poor body mechanics. Assessment and therapeutic treatment using Kellogg and Beck techniques and positional release. Introduction to theory and practice of trigger point and myofascial release therapy.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MT-1302 Massage Therapy I, and MT-1312 Applied Musculo-Skeletal Anatomy, and MT-1272 Somatic Studies II or concurrent enrollment; or departmental approval.

MT-1400 Overview and Assessment in Geriatric Massage Therapy

03 Semester Credits

Overview of major concepts that comprise the study of geriatric massage therapy. Includes demographic information and economic issues. Provides framework for understanding older adults and effects of massage. Application of geriatric assessment, cautions and contraindications and geriatric practice.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MT-1301 Massotherapy I, and MT-1320 Functional Assessment in Massage Therapy or concurrent enrollment; or departmental approval.

MT-2200 Medical Massage

02 Semester Credits

Introductory study and overview of theoretical and clinical massage in a medical setting. Demonstrate holistic team approach skills. Demonstrate holistic assessment, plan of care and delivery of massage and touch therapy to the frail and hospitalized patient.

Lecture 1.5 hours. Laboratory 1.5 hours.

Prerequisite(s): MT-1331 Massage Therapy II, and MT-2301 Pathology for Massage Therapists, and MT-2350 Massage Therapy Clinic I, and MT-2360 Massage Therapy Clinic II or concurrent enrollment, and concurrent enrollment in MT-1280 Somatic Studies III.

MT-2301 Pathology for Massage Therapists

03 Semester Credits

Introduction to disease and basic mechanisms of disease for massage therapists. Diseases of skin, musculoskeletal system, nervous and endocrine systems. Other diseases to include cardiovascular, lymphatic, respiratory, digestive, urinary, reproductive, and immune systems. Role of stress in disease, mental, emotional and genetic.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MT-1242 Fundamentals of Somatic Studies I, or concurrent enrollment; or departmental approval.

MT-2311 Advanced Massage Therapy

03 Semester Credits

Assessment and treatment of musculoskeletal dysfunction based on trigger point therapy, myofascial release, and muscle energy approaches. Documentation of patient session and patient education.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MT-1280 Somatic Studies III, and MT-1321 Functional Assessment in Massage Therapy, and MT-2360 Massage Therapy Clinic II, and MT-2200 Medical Massage, and MT-2701 Comprehensive Somatic Studies for Massage Therapists, and MT-2991 Comprehensive Massage Therapy; or departmental approval.

MT-2350 Massage Therapy Clinic I

03 Semester Credits

Student clinical experience. Massage of patients, under supervision, integrating interviewing, observational, and massage therapy skills. Completion of SOAP notes on each patient. Discussion and study of clinical ethics, boundaries, and chemical dependency issues that arise in massage therapy. Pharmacology for massage therapists. Hygiene and sanitation. Basic business communication and massage office policies, procedures, and practices. Patient education.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): MT-1302 Massage Therapy I, and MT-1312 Applied Musculo-Skeletal Anatomy, and MT-1242 Somatic Studies I, and MT-1272 Somatic Studies II or concurrent enrollment; or departmental approval.

MT-235A Massage Therapy Clinic I - A
02 Semester Credits

Student clinical experience. Massage of patients, under supervision, integrating interviewing, observational, and massage therapy skills. Completion of SOAP notes on each patient. Discussion and study of clinical ethics, boundaries, and chemical dependency issues that arise in massage therapy. Pharmacology for massage therapists. Hygiene and sanitation. Basic business communication and massage office policies, procedures, and practices. Patient education. Important: MT-235A and MT-235B together meet the requirement for completion of MT-2350 Massage Therapy Clinic I.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): MT-1302 Massage Therapy I, and MT-1312 Applied Musculo-Skeletal Anatomy, and MT-1242 Somatic Studies I, and MT-1272 Somatic Studies II or concurrent enrollment; or departmental approval.

MT-235B Massage Therapy Clinic I - B
01 Semester Credit

Continuation of clinical experience begun in MT-235A. Students will continue the massage of patients, under supervision, integrating interviewing, observational, and massage therapy skills. Completion of SOAP notes on each patient. Discussion and study of clinical ethics, boundaries, and chemical dependency issues that arise in massage therapy. Pharmacology for massage therapists. Hygiene and sanitation. Basic business communication and massage office policies, procedures, and practices. Patient education. Important: MT-235A and 235B together meet the requirement for completion of MT-2350 Massage Therapy Clinic I.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): MT-1302 Massage Therapy I, and MT-1312 Applied Musculo-Skeletal Anatomy, and MT-1242 Somatic Studies I, and MT-1272 Somatic Studies II or concurrent enrollment; and MT-235A Massage Therapy Clinic I - A; or departmental approval.

MT-2360 Massage Therapy Clinic II
03 Semester Credits

Continuation of student clinical experience. Massage of patients, under supervision, integrating interviewing, observational, and massage therapy skills. Massage sequence will include demonstration of knowledge of physiological effects and therapeutic applications of massage procedures and appropriate assessment of anatomical structures utilizing specific massage procedures and/or palpation skills. Demonstrate knowledge of pharmacology for massage therapists. Study of hydrotherapy. In depth study of massage business and law, including scope of practice, business communication, and massage office policies, procedures and practices.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): MT-1331 Massage Therapy II, and MT-2301 Pathology for Massage Therapists, and MT-2350 Massage

Therapy Clinic I, and MT-1272 Somatic Studies II, and MT-1280 Somatic Studies III or concurrent enrollment; or departmental approval.

MT-236A Massage Therapy Clinic II -A
02 Semester Credits

Continuation of student clinical experience. Massage of patients, under supervision, integrating interviewing, observational, and massage therapy skills. Massage sequence will include demonstration of knowledge of physiological effects and therapeutic applications of massage procedures and appropriate assessment of anatomical structures utilizing specific massage procedures and palpation skills. Pharmacology for massage therapists. Study of hydrotherapy. In depth study of massage business and law, including scope of practice, business communication, and massage office policies, procedures and practices. Important: MT-236A and MT-236B together meet the requirement for completion of MT-2360 Massage Therapy Clinic II.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): MT-1272 Somatic Studies II, and MT-1280 Somatic Studies III or concurrent enrollment; and MT-1331 Massage Therapy II, and MT-2301 Pathology for Massage Therapists, and MT-2350 Massage Therapy Clinic I; or MT-235A Massage Therapy Clinic I - A and MT-235B Massage Therapy Clinic I - B; or departmental approval.

MT-236B Massage Therapy Clinic II-B
01 Semester Credit

Continuation of student clinical experience begun in MT-236A. Students will continue the massage of patients, under supervision, integrating interviewing, observational and massage therapy skills. Massage sequence will include demonstration of knowledge of physiological effects and therapeutic applications of massage procedures and appropriate assessment of anatomical structures utilizing specific massage procedures and/or palpation skills. Pharmacology for massage therapists. Study of hydrotherapy. In depth study of massage business and law, including scope of practice, business communication and massage office policies, procedures and practices. Important: MT-236A and MT-236B together meet the requirement for completion of MT-2360 Massage Therapy Clinic II.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): MT-1272 Somatic Studies II, and MT-1280 Somatic Studies III or concurrent enrollment; and MT-1331 Massage Therapy II, and MT-2301 Pathology for Massage Therapists, and MT-2350 Massage Therapy Clinic I; or MT-235A Massage Therapy Clinic I - A and MT-235B Massage Therapy Clinic I - B; and MT-236A Massage Therapy Clinic II - A; or departmental approval.

MT-2370 Supplemental Massage Therapy Clinic 01 Semester Credit

Supplemental clinical experience begun in MT-2350, MT-2360, MT-235A, MT-235B, MT-236A, and MT-236B. Massage of patients, under supervision, integrating interviewing, observational, and massage therapy skills. Massage sequence will include demonstration of knowledge of physiological effects and therapeutic applications of massage procedures and appropriate assessment of anatomical structures utilizing specific massage procedures and palpation skills. Demonstrate knowledge of pharmacology for massage therapists. Study of hydrotherapy. In depth study of massage business and law, including scope of practice, business communication and massage office policies, procedures, and practices.
Lecture 00 hours. Laboratory 03 hours.
Prerequisite(s): MT-1331 Massage Therapy II, and MT-2301 Pathology for Massage Therapists, and MT-2350 Massage Therapy Clinic I, and MT-1272 Somatic Studies II, and MT-1280 Somatic Studies III; or departmental approval.

MT-2380 Advanced Massage Therapy Clinic 03 Semester Credits

Review and demonstrate competency in SOAP charting. Assessment and treatment of patients in the clinic. Treatment modalities include trigger point therapy, myofascial release, and muscle energy approaches. Review of complementary modalities including hot stone massage, aromatherapy, and reflexology. Advancing skills in business communication and office management in a clinical setting.
Lecture 00 hours. Laboratory 09 hours.
Prerequisite(s): MT-1321 Functional Assessment in Massage Therapy, and MT-2200 Medical Massage, and MT-2311 Advanced Massage Therapy or concurrent enrollment; or departmental approval.

MT-2400 Geriatric Massage Techniques 03 Semester Credits

Study and practice of geriatric massage techniques including effleurage, petrissage, friction, tapotement vibration, rocking and shaking, skin rolling and ROM. Supplementary study and practice of geriatric massage to include effects of massage, anatomy and massage, muscles on the back, arm, gluteal muscles, muscles of the thigh and leg, and critical are as in the lower limb. Chronic conditions in the elderly. Includes basic geriatric massage techniques, evaluation process, preparing the treatment, and position problems.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): MT-2301 Pathology for Massage Therapists or concurrent enrollment, and MT-2410 Health and Aging or concurrent enrollment.

MT-2410 Health and Aging 02 Semester Credits

Examination of the normal and expected age-related physiological changes. Emphasis on understanding normal structure and function of body systems, changes as part of aging, and typical abnormal pathological conditions commonly observed in older individuals. Focus on disease prevention and wellness. Survey of the theories and principles of geriatric massage in normal and abnormal aging.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): MT-1400 Overview and Assessment in Geriatric Massage Therapy, and MT-2400 Geriatric Massage Techniques or concurrent enrollment.

MT-2701 Comprehensive Somatic Studies for Massage Therapists 01 Semester Credit

Quizzes and mock exam are given to prepare for State Medical Board of Ohio licensure exam. Comprehensive exam given at end of course must be passed to be recommended for State Medical Board of Ohio licensure exam. Comprehensive study to summarize human anatomy and physiology for students of massotherapy. Special emphasis on review of key concepts of human body - its introduction, six levels of organization and eleven systems of the body. Students develop in-depth knowledge of anatomy and physiology of human body.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): Departmental approval: completion of all course work necessary to sit for the State Medical Board of Ohio licensure exam with a grade of "C" or higher, and recommendation of Massage Therapy Program Manager.

MT-2861 Geriatric Massage Practicum 03 Semester Credits

Massage of geriatric patients under supervision integrating interviewing, observational and massotherapy skills. Completion of SOAP notes on every patient seen. Seminar to include group discussion of lab work.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum: 14 hours per week.
Seminar: 1 hour per week.
Prerequisite(s): MT-2400 Geriatric Massage Techniques, and MT-2410 Health and Aging.

**MT-2991 Comprehensive Massage Therapy
01 Semester Credit**

Capstone course in Massage Therapy. Comprehensive review of massage techniques and theory with major focus on writings of Kellogg. Includes series of intensive training sessions to prepare students for the Ohio State Medical Board exam for licensure. Review of topics necessary to ensure success as professional L.M.T.'s. Student must pass comprehensive exam given at end of course in order to be recommended to sit for Ohio Medical Board exam for licensure and demonstrate minimally accepted competency in performance of a therapeutic massage on a licensed massage therapist.

Lecture 01 hour. Laboratory 00 hours.

Departmental approval: completion of all course work necessary to sit for State Medical Board Licensure Exam, and recommendation of Massage Therapy Program Manager.

MATHEMATICS - MATH

**MATH-0800 Developmental Special Topics in Mathematics
02 Semester Credits**

Study of selected developmental topics or current issues in mathematics. Provides student opportunity to explore various topics in greater detail (see Credit Schedule of classes for current offerings). Repeatable for different topics. May not be applied toward elective and/or program graduation degree requirements.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Faculty counterparts determine appropriate prerequisite/corequisite for each topic.

**MATH-0855 Mastering Math 0955
02 Semester Credits**

Information and methods for student success in developmental mathematics including: learning style preferences, role of memory process in learning mathematics, study skills for mathematics, overcoming math anxiety, goals in mathematics, self-motivation in mathematics, self-management in mathematics, self-esteem in mathematics, and self-evaluation of personal role in learning mathematics.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Concurrent enrollment in MATH-0955 Beginning Algebra.

**MATH-0910 Basic Arithmetic and Pre-Algebra
03 Semester Credits**

Includes real numbers (integers, fractions, signed fractions, and signed decimals) and operations (addition, subtraction, multiplication and division) along with the use of order of operations, ratio, rates, proportion, percent, English system of measurement, introduction to basic algebra and solving basic algebraic equations, and

perimeter and area of basic geometric shapes. Includes applications and activities to build skills in estimation and problem solving. Students may only take MATH-0910 once. If a student fails or withdraws, it cannot be repeated.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Sufficient score on assessment test, or departmental approval.

**MATH-0955 Beginning Algebra
06 Semester Credits**

Topics include solving one variable linear equations, literal equations, linear inequalities in one variable, graphing linear inequalities in one variable, compound inequalities, graphing compound inequalities, determining relation, domain, range of functions graphically and algebraically, performing operations on functions, introducing the rectangular coordinate system, determining equations of lines, graphing lines and two variable inequalities, solving systems of two variable equations and inequalities, performing algebraic operations and simplifying of polynomials involving rules of exponents, and scientific notation. Includes applications and activities to build skills in problem solving.

Lecture 06 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0910 Basic Arithmetic and Pre-Algebra, or sufficient score on math placement test; or departmental approval.

**MATH-0965 Intermediate Algebra
06 Semester Credits**

Topics include factoring, solving equations by factoring, rational expressions, rational equations, systems of three linear equations in three variables, radical expressions, radical equations, expressions with rational exponents, equations with rational exponents, quadratic equations involving the Zero Product Property, Square Root Property, Completing the Square, and the Quadratic Formula, graphing quadratic functions, exponential expressions, and graphing exponential functions. Includes applications and activities to build skills in problem solving.

Lecture 06 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0955 Beginning Algebra, or sufficient score on math placement test; or departmental approval.

**MATH-0990 Math Literacy for College Students
04 Semester Credits**

Course integrates numeracy, proportional reasoning, algebraic reasoning, and functions. Students will develop conceptual and procedural tools that support the use of key mathematical concepts in a variety of ways. Contexts include personal finance, medical literacy, and citizenship.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0910 Basic Arithmetic and Pre-Algebra or sufficient score on placement exam, or departmental approval.

MATH-1100 Mathematical Explorations

03 Semester Credits

Survey of mathematical topics. Introduction to basic concepts of problem solving, set theory, logic, number theory, and college geometry.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0955 Beginning Algebra; or MATH-0990 Math Literacy for College Students; or sufficient score on assessment test; or departmental approval: equivalent coursework.

OAN Approved: TMMSL

MATH-1190 Algebraic and Quantitative Reasoning

03 Semester Credits

Applications and appreciation of quantitative literacy. Interpreting information from real-world sources to solve problems using numerical, algebraic, and graphical knowledge. Various uses of mathematical models are explored, and statistical thinking is developed. Contexts include financial, environmental, social, and public and personal health.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0955 Beginning Algebra I, or MATH-0990 Math Literacy for College Students; or sufficient score on placement test; or departmental approval.

MATH-1240 Contemporary Mathematics

03 Semester Credits

Applications of mathematics in contemporary life. Introduction to financial literacy, dimensional analysis as applied to measurement and unit conversions, graph theory, topics in probability and descriptive statistics.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0955 Beginning Algebra, or sufficient score on Math Placement test; or departmental approval: equivalent coursework.

OAN Approved: TMMSL

MATH-1370 Mathematics for Elementary and Middle School Teachers I

04 Semester Credits

First of two semester sequence designed for elementary and middle school education majors. Emphasis on understanding ideas and concepts. Includes sets and numeration, whole numbers, number theory, fractions, decimals, integers, rational and real numbers, problem solving strategies, and historical topics. Highlights applications to classroom, projects, and use of current technology, including scientific/graphing calculators and computers.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0965 Intermediate Algebra or sufficient score on Math Placement Test; or departmental approval: equivalent coursework.

MATH-1380 Mathematics for Elementary and Middle School Teachers II

04 Semester Credits

Second of two-semester sequence designed for elementary and middle school education majors. Emphasis on understanding ideas and concepts. Includes statistics, probability, measurement, geometric shapes, Euclidean geometry, coordinate geometry, transformational geometry, problem-solving strategies, and historical topics. Highlights applications to classroom, projects, and use of current technology, including scientific/graphing calculators and computers.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1370 Mathematics for Elementary and Middle School Teachers I, or departmental approval: equivalent coursework.

MATH-1410 Elementary Probability and Statistics I

03 Semester Credits

First of a two semester introductory sequence in probability and statistics. Intended for students majoring in liberal arts, sciences, engineering, and education. Includes study of descriptive statistics, relationships in bivariate data using scatter plots, two-way tables, correlation coefficients, and simple linear regression, elementary probability, probability distributions, normal distribution, binomial distribution, sampling concepts, sampling distribution of sample mean, estimation, and hypothesis testing.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0965 Intermediate Algebra, or MATH-1240 Contemporary Mathematics, or appropriate score on Math Placement Test; or departmental approval: equivalent coursework.

OAN Approved: OMT010

MATH-1420 Elementary Probability and Statistics II

03 Semester Credits

Second of two-semester introductory sequence in probability and statistics. Intended for students majoring in liberal arts, sciences, engineering, and education. Includes study of Chi-square distribution and F distribution and their applications, inferences on variances and proportions, comparing two means, categorical data, correlation, simple and multiple regression, analysis of variance, nonparametric tests and the use of statistical software packages.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1410 Elementary Probability and Statistics I, or departmental approval: equivalent coursework.

MATH-1470 Modern Mathematics for Business and Social Sciences I**04 Semester Credits**

First of two-semester sequence. Includes linear systems, functions, matrix algebra and linear programming techniques as applied to business problems and the simplex method. Math of finance and basic theory of probability and statistics.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0965 Intermediate Algebra, or appropriate score on Math placement test; or departmental approval: equivalent coursework.

MATH-1480 Modern Mathematics for Business and Social Sciences II**04 Semester Credits**

Second of two-semester sequence. Includes fundamentals of differential and integral calculus and the application of these topics to business and economics.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1470 Modern Mathematics for Business and Social Sciences I, or departmental approval: equivalent coursework.

OAN Approved: TMM013

MATH-1490 Business Probability and Statistics I**03 Semester Credits**

First of two-semester introductory sequence in business probability and statistics. Intended for students majoring business. Application of statistical methods to business and economic problems. Topics include study of descriptive statistics, elementary probability, random variables and probability distributions, normal distribution, binomial distribution, sampling concepts, sampling distribution of sample mean, estimation, and hypothesis testing.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1470 Modern Mathematics for Business and Social Sciences I, or appropriate score on MATH Placement Test; or departmental approval: equivalent coursework.

OAN Approved: OBU009 (1 of 2 courses)

MATH-1500 Business Probability and Statistics II**03 Semester Credits**

Second of two-semester introductory sequence in probability and statistics, intended for students majoring in business. Includes study of inferences on means and proportions, analysis of variance, correlation, simple and multiple linear regression models, business applications and decision making, and the use of statistical software.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1490 Business Probability and Statistics I, or departmental approval: equivalent coursework.

OAN Approved: OBU009 (2 of 2 courses)

MATH-1530 College Algebra**04 Semester Credits**

Topics include extensive function (linear, quadratic, polynomial, radical, roots, power, piece-wise, exponential, logarithmic) representation including verbal, numeric, graphic, and algebraic, identifying properties of the different function types, transformation of functions, solve linear, polynomial, rational, absolute value, exponential and logarithmic equations. Solve quadratic, polynomial and rational inequalities in one variable. Determine and graph conic sections, solve non-linear systems of equations and inequalities and solve systems of equations using matrices, arithmetic and geometric sequences and series. Includes applications and activities to build skills in problem solving.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0965 Intermediate Algebra, or appropriate score on Math placement test.

OAN Approved: TMM001

MATH-153H Honors College Algebra**04 Semester Credits**

Topics include extensive function (linear, quadratic, polynomial, radical, roots, power, piece-wise, exponential, logarithmic) representation including verbal, numeric, graphic, and algebraic, identifying properties of the different function types, transformation of functions, solve linear, polynomial, rational, absolute value, exponential and logarithmic equations. Solve quadratic, polynomial and rational inequalities in one variable. Determine and graph conic sections, solve non-linear systems of equations and inequalities and solve systems of equations using matrices, arithmetic and geometric sequences and series. Includes applications and activities to build skills in problem solving.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0965 Intermediate Algebra or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-1540 Trigonometry**03 Semester Credits**

Topics include trigonometric functions and their values for all angles, vectors and oblique triangles, graphs of trigonometric functions, trigonometric identities and equations. Applications and activities to build skills in problem solving included.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1530 College Algebra, or appropriate score on Math placement test.

MATH-154H Honors Trigonometry

03 Semester Credits

Topics include trigonometric functions and their values for all angles, vectors and oblique triangles, graphs of trigonometric functions, trigonometric identities and equations. Applications and activities to build skills in problem solving included. Emphasis on more challenging trigonometric concepts in real-world settings are found in the form of projects and in-class presentations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1530 College Algebra, or MATH-153H Honors College Algebra; or departmental approval.

MATH-1580 Precalculus

05 Semester Credits

Intensified course designed to prepare students for calculus. Study of real numbers, equations and inequalities, functions and graphs, sequences and series, theory of equations, systems of equations and inequalities, mathematical induction, conic sections, exponential and logarithmic functions, trigonometric functions, and complex numbers. Applications and activities to build skills in problem solving are also included.

Lecture 05 hours. Laboratory 00 hours.

Prerequisite(s): Sufficient score on assessment test; or departmental approval: previous trigonometry or algebra/trigonometry course in high school or college.

UAN Approved: TMM002

MATH-1610 Calculus I

05 Semester Credits

First of three semester sequence designed for math, science, and engineering majors. Includes study of Cartesian coordinates, functions and graphs, limits and continuity, differentiation of algebraic and trigonometric functions, applications of the derivative, differentials and antiderivatives, the definite integral and its applications.

Lecture 05 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1540 Trigonometry, or MATH-154H Honors Trigonometry, or MATH-1580 Precalculus, or sufficient score on assessment test, or departmental approval: equivalent coursework.

UAN Approved: TMM005

MATH-161H Honors Calculus I

05 Semester Credits

First of a three-semester sequence designed for math, science, business, and engineering majors. Focuses on conceptual understanding of verbal, numerical, visual, and algebraic representations of functions, their graphs, and operations. Includes limits, continuity, rates of change, derivatives, implicit differentiation of algebraic and trigonometric functions, application of differentials, differentiation, integrals, and application of integration. Emphasizes challenging calculus exercises, problems, projects, cooperative group work, student's presentation

of one of the course projects, and use of technology: graphing calculators and computers.

Lecture 05 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1540 Trigonometry, or MATH-154H Honors Trigonometry, or MATH-1580 Precalculus; or departmental approval.

MATH-1620 Calculus II

05 Semester Credits

Second of three-semester sequence. Includes study of techniques of integration and their applications; L'Hôpital rule and indeterminate forms; mathematical modeling in differential equations; sequences and series; parametric and polar coordinates and curves, conics; conic sections.

Lecture 05 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1610 Calculus I, or departmental approval: equivalent coursework.

UAN Approved: TMM006

MATH-162H Honors Calculus II

05 Semester Credits

Second of three-semester sequence designed for mathematics, science, business, and engineering majors. Focuses on conceptual understanding of logarithmic and exponential functions, trigonometric and inverse trigonometric functions, and hyperbolic and inverse hyperbolic functions; develops their properties, characteristics, derivatives, and graphs. Includes techniques of integration, polar coordinates, conic sections, limits of indeterminate forms of quotients of functions, improper integrals, and sequences and series. Emphasizes proofs of theorems and solving challenging examples, exercises, and application problems. Stresses development of research projects. Underscores cooperative work, student's presentation of one of the course projects, and use of technology: graphics calculators and computers.

Lecture 05 hours. Laboratory 00 hours.

Prerequisite(s): MATH-161H Honors Calculus I, or departmental approval: equivalent coursework.

UAN Approved: TMM006

MATH-2010 Introduction to Discrete Mathematics

04 Semester Credits

Foundation course in discrete mathematics with applications. Topics include logic, methods of proof, elementary number theory, set theory, functions, efficiency of algorithms, and mathematical induction.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1530 College Algebra, or MATH-153H Honors College Algebra; or MATH-1580 Precalculus; or sufficient score on Math placement test; or departmental approval: equivalent coursework.

MATH-2310 Calculus III

04 Semester Credits

Third of three-semester sequence. Topics include vectors, parametric equations, analytic geometry of space, partial differentiation, and multiple integrals, line and surface integrals.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1620 Calculus II, or departmental approval; equivalent coursework.

OAN Approved: TMM018 and OMT018

MATH-231H Honors Calculus III

04 Semester Credits

Third of three-semester sequence designed for mathematics, science, business, and engineering majors. Focuses on conceptual understanding of vectors, parametric equations, analytic geometry of space, partial differentiation, and multiple integrals, line and surface integrals. Emphasizes proofs of theorems and solving challenging examples, exercises, and application problems. Stresses development of research projects. Underscores cooperative work, student's presentation of one of the course projects; and use of technology: graphics calculators and computers.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): MATH-162H Honors Calculus II, or high school Honors Calculus II; or departmental approval: equivalent coursework.

OAN Approved: TMM018 and OMT018

MATH-2410 Introduction to Linear Algebra

03 Semester Credits

Includes the study of vector spaces, linear transformations and matrices, determinants, invariant subspaces, eigenvalues and eigenvectors and applications.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1620 Calculus II, or departmental approval; equivalent coursework.

OAN Approved: TMM019

MATH-2520 Differential Equations

03 Semester Credits

Includes study of differential equations of first and higher order, simultaneous, linear and homogenous differential equations, solution by power series, Laplace transformations and computer applications.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1620 Calculus II, or departmental approval; equivalent coursework.

OAN Approved: TMM020 and OMT020

**MECHANICAL ENGINEERING
TECHNOLOGY • MANUFACTURING
INDUSTRIAL ENGINEERING
TECHNOLOGY - MET**

MET-1100 Technology Orientation

02 Semester Credits

Orientation and exploration of technician's role as part of industrial team including technical careers, opportunities and job hunting skills. Topics include use of the computer, basic measurement and calculation skills and engineering drawing concepts. Introduction to oral, technical writing and graphic methods of communication. Introduction to professional organizations, journals and tools for professional enhancement to provide a path for lifelong learning.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): MATH-0965 Intermediate Algebra, or appropriate Math placement score to place into MATH-1530 College Algebra.

OAN Approved: OES001

MET-1120 Computer Applications and Programming

02 Semester Credits

Design and debug windows-based application software in Microsoft Visual Basic and C Programming languages.

Apply designed software and spreadsheets in technological problem solving. Applying programming concepts to customize spreadsheets and chosen engineering specific application software.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): MATH-0955 Beginning Algebra, or appropriate Math placement score to place into MATH-0965 Intermediate Algebra.

MET-1230 Drawing & AutoCAD

03 Semester Credits

Apply visualization skills in the interpretation of orthographic projections and pictorial drawings. Applied geometry, use of scales, sections, and auxiliary views are studied. Dimensioning standards and conventions as applied to detail and assembly drawings in manual drafting as well as use of CAD system to accomplish drafting tasks are emphasized. Includes overviews of computer terms and functions of the Windows Operating System. Covers special terms and definitions used in computer-assisted drafting, the roles technical drawings play in production, manufacturing and products design process.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MATH-0955 Beginning Algebra, or appropriate Math placement score to place into MATH-0965 Intermediate Algebra.

MET-1240 Machine Tools and Manufacturing Processes
03 Semester Credits

Application of traditional and contemporary machine tools processes to accomplish the mechanical parts production or the maintenance and/or repairs of mechanical parts or equipment. Laboratory experiences include measuring and inspection, layout and fundamentals of machine tool setup and techniques for drilling, turning, milling and grinding. Manufacturing processes including the production of metals and alloys, polymers and plastics, forming, machining, fabrication, conditioning and finishing of metallic, plastic and composite engineering parts.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MATH-0955 Beginning Algebra or appropriate Math placement score to place into MATH-0965 Intermediate Algebra.

OAN Approved: OET010; CTAN Approved: CTMET004

MET-1250 Introduction to Additive Manufacturing
03 Semester Credits

Principles of the applications of Additive Manufacturing. Advantages of using Additive Manufacturing over traditional Subtractive Manufacturing processes are studied.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0955 Beginning Algebra or appropriate Math placement test to enroll in 1000-Level Mathematics.

MET-1260 Product Ideation and Design
03 Semester Credits

Provides knowledge of the theory of Rapid Prototyping, the enabling critical thinking in new product development, process building, sustainability, and innovation theories. Advantages of using Lean Manufacturing and (6) Sigma are studied.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-0955 Beginning Algebra or appropriate Math placement test to enroll in 1000-Level Mathematics.

MET-1300 Engineering Materials and Metallurgy
03 Semester Credits

Analysis of the behavior and characteristics of metals and other materials used in manufacturing including polymers, ceramics, and composites: their structure, physical and mechanical properties. Examining and interpreting phase diagrams and crystallized microstructures of metals and alloys; heat treatment of ferrous and nonferrous metals; hardness, tensile, and Charpy impact tests.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MATH-0955 Beginning Algebra, or appropriate score on Math Placement Test to enroll in MATH-0965 Intermediate Algebra.

OAN Approved: OET013

MET-1400 CNC Programming and Operation
03 Semester Credits

Emphasis on blueprint analysis, using math concepts to determine programming points; ascertaining implied part dimensions; calculation of speeds; feeds and tool offset; establishment of work zero and tools home positions. Manual programming of computer numerical control (CNC) machines using G-codes for FANUC controllers; tooling and set-up of CNC lathes and milling machines for machining operations; verification of tool paths by simulation; operating CNC machines to produce mechanical parts.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MET-1240 Machine Tools and Manufacturing Processes, or concurrent enrollment; or departmental approval: work experience.

MET-1601 Technical Statics
03 Semester Credits

Study of forces on structures and machines at rest. Topics include composition and resolution of forces, moments, freebody diagrams, trusses, frames, simple machines, friction, centers of gravity, centroids, and plane and polar moments of inertia.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1530 College Algebra; and PHYS-1210 College Physics I or concurrent enrollment.

OAN Approved: OET007

MET-1621 Technical Dynamics
03 Semester Credits

Study of motion and forces on rigid members. Includes plane and curvilinear motion, kinetics, work, energy, power, efficiency, impact and momentum. Introduction to balancing and vibrations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MET-1601 Technical Statics.

MET-1630 Industrial Supply Logistics
03 Semester Credits

An introduction to supply chain logistics and warehouse operations for manufacturing processes. Fundamentals of supply chains, transportation modes, inventory control, documentation required in warehouses, types of warehouse equipment, workplace safety, proper handling of material, quality control systems, inspection methods, specifications, ISO 9001, product handling, and print reading. Designed to prepare students to take the MSSC CLA examination.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MET-1100 Technology Orientation, and MATH-1530 College Algebra or concurrent enrollment.

MET-2000 CAD/CAM Processes

03 Semester Credits

Using Mastercam and other Computer-Aided Design/Computer-Aided Manufacturing (CAD/CAM) software to graphically model parts; graphic display manipulation; geometrical analysis; graphic and data files management; exchange and conversion of graphic files to formats readable by Mastercam or given CAD/CAM software; generating codes, post processing to G-codes interpretable by given computer numerical controller; verification and validation of tool-paths by graphical simulation; downloading path programs to machine; tooling and setting up parts on CNC lathe and milling machines; operating CNC machines to produce parts.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MET-1400 CNC Programming and Operation or concurrent enrollment.

MET-2041 CAD II & GD&T

03 Semester Credits

Advanced engineering drawing concepts used with computer-aided drafting software. Drawing applications include size tolerancing, geometric dimensioning, thread and fastener specifications, detail and assembly drawings, weldments, external references, bill of materials and standardized drawing formats. Introduction to solid modeling.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MET-1230 Drawing & AutoCAD, and MET-1120 Computer Applications and Programming, or departmental approval.

OAN Approved: OET012; CTAN Approved: CTMET005

MET-2140 Manufacturing Automation and Control

03 Semester Credits

Automation and control of manufacturing machines and their auxiliary equipment to enable manufacturing systems integration applying fundamental concepts of Programmable Logic Controllers (PLCs); basic programming and interface of robots to facilitate materials transfer in an integrated manufacturing environment

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MET-1120 Computer Applications and Programming.

MET-2150 3D Printing & Scanning for Reverse Engineering and Inspection

03 Semester Credits

Engineering parts inspection and reverse engineering processes employing 3D printing, scanning, and Coordinate Measuring (CMM technologies.) Emphasis on performing Laser Arm Scanning to generate images for conversion into 2D/3D drawings; using applicable software to produce 3D models or converting scanned images into 2D/3D models; using CMM for parts inspection and generating points cloud for 3D modeling;

interfacing generated models with reverse engineering methods.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MET-2601 3D Solid Modeling, or concurrent enrollment.

MET-2190 Additive Manufacturing Project Based/Team Oriented Capstone

03 Semester Credits

Examines the key elements of product development from the concept through design to production. Application technologies learned in the Additive Manufacturing curricula to complete group projects involving product development and production.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval: Must be taken in the last semester of the program.

MET-2200 Strength of Materials

03 Semester Credits

Study of stress, strain and deformation of mechanical bodies due to static tensile, compressive, torsional, bending and combined loading. Deflection of beams and columns, design of beam for strength and structural connections.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MET-1601 Technical Statics.

OAN Approved: OET008

MET-2220 Advanced CAD/CAM Processes

03 Semester Credits

Applying Mastercam for advanced CAD/CAM operations; creating wireframe, surface and solid models; generating, editing, verifying, and postprocessing codes interpretable by given CNC controllers, with emphasis on FANUC controller; downloading path programs to CNC machines; tooling and setting up parts; operating CNC machines to produce parts.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MET-1240 Machine Tools and Manufacturing Processes, MET-1400 CNC Programming and Operations, and MET-2000 CAD/CAM Processes.

MET-2240 Mechanical Engineering Lab

01 Semester Credit

Introduction to fundamental laboratory measurement techniques, data acquisition and analysis, and technical report writing in the form of engineering reports and executive summaries. Troubleshoot and correct hydraulic/electromechanical equipment and digital data acquisition hardware. Experiments are drawn from thermal sciences, dynamics, solid mechanics and materials science.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): MET-1601 Technical Statics.

MET-2300 Fluid Power

03 Semester Credits

Concepts and practices related to modern hydraulic and pneumatic systems. Includes basics of fluid flow, fluid dynamics, properties of hydraulic fluid, components of hydraulic system, hydraulic circuit, design, operation and control of hydraulic/pneumatic system.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): PHYS-1210 College Physics I or PHYS-2310 General Physics I, or concurrent enrollment; or students in Integrated Systems Engineering Technology program may fulfill prerequisite requirements with ISET-1320 Fundamentals of Fluid Power; or departmental approval.

OAN Approved: OET009

MET-2320 Thermal Dynamics

03 Semester Credits

Heat, work, kinetic theory of gases, equation of state, thermodynamics system, control volume, first and second laws of thermodynamics, reversible and irreversible processes, and introduction to basic thermodynamic cycles.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1620 Calculus II, and PHYS-2310 General Physics I.

MET-2400 Statistical Quality Control

03 Semester Credits

Statistical quality control is the collection, analysis, and interpretation of data for use in quality control activities. Introduction to quality; fundamentals of probability and statistics; process capability; control chart applications; sampling systems; lot-by-lot acceptance sampling by attributes; reliability; quality control methods and tools; applications of computers and software to quality control.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1530 College Algebra; and MET-1240 Machine Tools and Manufacturing Processes or concurrent enrollment; or departmental approval: work experience.

MET-2422 Fundamentals of Engineering Economics

03 Semester Credits

Analysis of cost elements in engineering projects and operations. Topics include: comparison of project alternatives; selecting an alternative by applying Benefit/Cost Analysis, Present Worth Method, Annual Worth Method, and Internal Rate of Return; introduction to risk analysis, accounting fundamentals, financial statements, and capital financing and allocation. Ethical and social responsibilities as applied to engineering project decisions. Practical applications of cost concepts and the application towards the different phases of manufacturing or project implementation. Use of Microsoft Excel in performing analysis.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1530 College Algebra or higher.

OAN Approved: OES005

MET-2430 Engineering Probability and Statistics

03 Semester Credits

Course covers probability and statistics for engineers.

Course topics include: measures of central tendency and dispersion, probability axioms and rules, standard discrete distributions, standard continuous distributions, point and confidence interval parametric values, central limit theorem, sampling distributions, hypothesis testing for one-sample and two-sample means and proportions, relationships between two random variables, correlation analysis, and simple linear regressions. Examples, problems, and case studies can be from manufacturing, mechanical, civil, electrical, and construction engineering.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1610 Calculus I.

OAN Approved: OES004

MET-2500 Fundamentals of Products Development and Manufacture

03 Semester Credits

This course examines the fundamentals of new product development (NPD) including: preparing for product innovation, success factors of product innovation, ideation and concept creation, customers input, market analysis, use of social media, strategies for developing products, product launches and supply chain, post launch product management, and intellectual property implications.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MET-1240 Machine Tools and Manufacturing Processes.

MET-2550 Engineering Analysis Using MATLAB

03 Semester Credits

Provide basic programming concepts and apply computational methodologies to solve engineering problems by emphasizing MATLAB interactive environment software. Particularly focused on matrix/vector computation, built-in MATLAB functions, numerical analysis, scientific and engineering graphics, m-files (source code), and introduction to visualization tools. Designed for people who may not have any previous MATLAB, computer or programming experience.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MATH-1610 Calculus I, and highly recommend concurrent enrollment in MATH 1620 Calculus II.

MET-2601 3D Solid Modeling

03 Semester Credits

Introduction to computer-aided engineering, design of mechanical component and system using computer-aided design technique, AutoCAD solid and surface model for product development, optimization of design and design documentation. Complete set of production drawings created using 3D drawing environments. Principles of parametric design, and functional assemblies directly applied. Emphasis tailored to 3D modeling for enhanced part description. Students work on individual design projects to stimulate spatial abilities and problem-solving techniques.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MET-1230 Drawing & AutoCAD.

MET-2610 Statics

03 Semester Credits

Course designed for students planning to transfer to a 4-year engineering program. Covers mechanics of forces and loads in static equilibrium. Includes fundamentals of particle statics in 2D and 3D. Emphasis on rigid bodies equivalent force systems, equilibrium of rigid bodies in 2D and 3D, centroids and centers of gravity, friction, and analysis of trusses, frames, and beams; Also covers moments of inertia and radii of gyration; and method of virtual work.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1610 Calculus I, and PHYS-2310 General Physics I or concurrent enrollment.

OAN Approved: OES002

MET-2620 Dynamics

03 Semester Credits

Covers mechanics of forces and torques and the effects on motion. Emphasis on kinematics of particles and rigid bodies, Newton's Laws of Motion, Work and Kinetic Energy, Kinetics of rigid bodies, and 3D dynamics of rigid bodies. Also includes vibration and time response.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MET-2610 Statics.

OAN Approved: OES003

MET-2630 Engineering Strength of Materials

03 Semester Credits

Course designed for students planning to transfer to a 4-year engineering program. Focused on fundamental principles and methods of solid mechanics and their applications. Topics covered include normal, shear, torsional, and thermal stress-strain analysis; generalized Hooke's law; bending moment and shear force diagrams; transformation of stress-strain and principle stresses; Mohr's circle for plane stress; state of stress in three-dimension; stress due to combined loading; deflection of beams; plane stress in thin-walled members; strain

measurements; analysis of columns; and design principles based on mechanics of solids.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MET-2610 Statics, and PHYS-2310 General Physics I.

MET-2700 Machine Design

04 Semester Credits

Capstone course in Mechanical Engineering Technology. Study of mechanical motion and design of machine elements. Includes displacement, velocity and acceleration in linkages, cams and power transmission devices. Design of machine elements include checking of assembled machines, fasteners, weldments, springs, bearings, belts, chains, shafts, clutches and brakes. Laboratory consists of using CAD, computer programming and manufacturer's catalogs, and professional journals to aid in design. Proper completion of the project depends on the team as a whole.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): MET-1621 Technical Dynamics, or MET-2620 Dynamics; and MET-2041 CAD II & GD&T or concurrent enrollment; and MET-2200 Strength of Materials, or MET-2630 Engineering Strength of Materials.

MET-2730 Lean Manufacturing

03 Semester Credits

Application of Lean manufacturing concepts and Lean tools in structuring industrial manufacturing processes in efforts to minimize manufacturing costs, enhance workplace safety, improve work flow, eliminate process variations, and to shorten products delivery time.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MET-1230 Drawing & AutoCAD, and MET-1120 Computer Applications and Programming, and MATH-1530 College Algebra or higher; or departmental approval.

MET-2740 Quality Manufacturing

03 Semester Credits

Practical application of quality principles to process improvement and reduction of variation. Application of statistical techniques and concepts used in quality control; acceptance sampling; quality cost; reliability; applications of computers, software to other quality control tools to quality improvement.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MET-2400 Statistical Quality Control and MATH-1530 College Algebra.

**MET-2750 Technical Operations Management
03 Semester Credits**

Introduction to the design and management of manufacturing operations. Emphasis is focused on identifying appropriate management processes and potential management models used to efficiently manage industrial resources. Various techniques and methodologies for solving industrial operations management problems will be explored including statistical models, linear programming, and Microsoft Excel.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MET-2430 Engineering Probability and Statistics, or MET-2400 Statistical Quality Control.

**MET-2830 Cooperative Field Experience
01-03 Semester Credits**

Limited to students in Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): Formal application into the Cooperative Education Program.

**MET-2941 Additive Manufacturing Internship
01-04 Semester Credits**

Engage in actual hands-on, on-the-job training using Additive Manufacturing technology in Additive Manufacturing with field experience. May be repeated for up to 4 credits total. Requirement for each credit hour is 180 hours of approved work.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 12 hours a week of internship/field experience per credit (total of 180 hours per credit hour).

Prerequisite(s): MET-1230 Drawing & AutoCAD, or MET-1240 Machine Tools and Manufacturing Processes, or MET-1250 Introduction To Additive Manufacturing, or MET-1260 Product Ideation and Design, or MET-2601 3D Solid Modeling; or departmental approval.

**MEDIA ARTS AND FILMMAKING - MARS
(formerly Media Arts and Studies)**

**MARS-1020 Story: Pre-production Methods and the Art of Story in Motion Media
03 Semester Credits**

Focus on the power of story structure in communications. Explore the craft of storytelling, whether it be to entertain, teach, motivate, sell or provoke with examples from film, television, literature, commercials, music videos, even video games. Take real-life scenarios and respond to them with arguments constructed by the traditional aspects of drama. Discuss all facets of pre-production. Learn the

organizational skills and techniques necessary to create a production notebook used for planning a motion media production.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

**MARS-1120 Media Arts and Studies Colloquium
01 Semester Credit**

Introduces students to the leading local producers, strategists and clients in the field of video and interactive communications. Industry professionals representing the broadcasting, commercial production, corporate, non-profit and entertainment industries present specific case histories.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

**MARS-1180 Introduction to Media Arts and Filmmaking
03 Semester Credits**

Provides a technical foundation for further study and practice in the art and technology of digital filmmaking. Analysis of examples of visual storytelling with regard to how lighting, color palette, picture composition, sound, performance, staging, editing and graphics work in concert to communicate theme. Hands-on instruction in producing and maintaining desired image and sound quality in production and post-production. Introduces the three phases of a media production: pre-production, production, and post-production.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): None.

OAN Approved: OCM008

**MARS-2110 Editing
03 Semester Credits**

Basic motion media editing using industry standard, non-linear, editing software and hardware. Students will learn the basic concepts and techniques used to edit a project from the organizational phase through fine-tuning a completed project including delivery.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MARS-1180 Introduction to Media Arts and Filmmaking, or departmental approval.

**MARS-2120 Advanced Editing
03 Semester Credits**

Advanced motion media editing using industry standard, non-linear, editing software and hardware. Preparation for industry recognized certification exam in professional editing software. Builds upon concepts introduced in prerequisite coursework including the basics in motion media editing using industry standard, non-linear, editing software and hardware. Concepts and techniques used to edit a project from the organizational phase through fine-tuning a completed project including delivery.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MARS-1180 Introduction to Media Arts and Filmmaking, and MARS-2110 Editing.

MARS-2180 Digital Cinematography**03 Semester Credits**

Focus on issues facing cinematographers, camera operators, digital imaging technicians, and others working in digital cinematography. Basic introduction to microphones and sound recording. Discussion of current options in acquisition format for digital filmmaking. Introduction to crew roles and set etiquette. Hands-on experience in using a variety of lighting instruments to produce desired effects. Emphasis on the practical use of light, color, picture composition, and camera movement to communicate a mood and tell a story.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MARS-1180 Introduction to Media Arts and Filmmaking, and VCPH-1261 Photography I, or concurrent enrollment, or departmental approval.

MARS-2220 Advanced Crew and Set Operations for Motion Media**03 Semester Credits**

Learn to work as a skilled crew member for a film or video production on location and/or soundstage environment.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): MARS-2180 Digital Cinematography; or departmental approval.

MARS-2280 Short Films: Exploring Genre and Technique**03 Semester Credits**

Intensive, intermediate-level course in scripting, directing, and editing short films with a focus on genre. Participate in acting and directing exercises designed to evoke believable performances on screen. Editing approaches to narrative and experimental film are examined in relation to film theory and conventions of genre. Emphasis on expanding global awareness through examination of genre-specific themes, characters, and archetypes in international film. Exploration of the relationship between main-stream media production and the avant-garde. Application of practical methods of collaboration in professional filmmaking and media production.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MARS-2180 Digital Cinematography, or departmental approval.

MARS-2380 Visual Effects**03 Semester Credits**

Focus on planning, producing and editing visual effects for motion media. Digitally combine multiple motion and graphic sources to create convincing moving image composites. Emphasis on shot composition, matching lighting and color, focus, depth of field, camera angles and movement. Hands-on projects involve green screen filming, motion mattes, vector-based animation for mattes, titles and motion graphics, rotoscoping and digital painting.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCPH-1450 Digital Imaging I.

MARS-2480 Motion Graphics**03 Semester Credits**

Focus on combining visual elements from a variety of sources into a composite motion graphic. Projects include film titles, logo animation, broadcast graphics, and kinetic digital display. Emphasis on the interplay of typography, animated graphics, movie clips and sound. Exploration of the literal and stylistic communication of meaning through interaction of type and image.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCPH-1450 Digital Imaging I, and MARS-1180 Introduction to Media Arts and Filmmaking, or departmental approval.

MARS-2620 Applied Integrated Media (AIM) I: Real World Pre-production**03 Semester Credits**

Practical experience in a real-world pre-production environment. Skills learned in introductory media arts courses and related technical classes are applied to an actual communications mission. Students take on roles as members of the pre-production team as they cover all facets of planning and pre-production for a major motion media project. Diverse media projects may include: advertising/public service campaigns, feature films, documentaries, media-centered performances, or media installations.

Lecture 00 hours. Laboratory 06 hours.

Other Required Hours: Seminar: 1 hour per week.

Prerequisite(s): MARS-1180 Introduction to Media Arts and Filmmaking, and MARS-1020 Story: Pre-production Methods and the Art of Story in Motion Media, or departmental approval.

MARS-2680 Digital Cinematography II**03 Semester Credits**

Focus on advanced issues facing directors of photography working in digital formats both in the studio and on location. Study of current acquisition formats for motion media productions and their limitations vs. advantages. Gain professional level competency in controlling lighting instruments and cameras, to produce desired effects for a variety of productions. Emphasis on practical use of light, color, picture composition, lens choice and camera movement to communicate a mood or theme, and how the craft of cinematography is used as a storytelling device.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MARS-2180 Digital Cinematography.

MARS-2720 Applied Integrated Media (AIM) II: Real World Production and Post-Production for Motion Media

03 Semester Credits

Application of skills learned in introductory media arts courses and related technical classes to a motion media production. Collaborate on a project as a member of a student-lead production team. Project may include: advertising/public service campaigns, short or feature film, documentary, media-centered live performance, or media installation. Course may be repeated once for up to six credits.

Lecture 00 hours. Laboratory 06 hours.

Other Required Hours: Seminar: 1 hour per week.

Prerequisite(s): MARS-2620 Applied Integrated Media (AIM) I: Real World Pre-production, or departmental approval: permission of instructor.

MARS-2780 Motion Graphics II

03 Semester Credits

Focus on technical proficiency in industry-standard motion graphics software application. Builds upon concepts and techniques introduced in MARS-2480 Motion Graphics.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MARS-2480 Motion Graphics, or departmental approval.

MARS-2940 MARS Field Experience

01-02 Semester Credits

Planned activity within the professional community, which relates to students' occupational objectives. Experience should reinforce classroom/lab skills. May be repeated for a maximum of six credits with departmental approval.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 12 hours per week per credit hour.

Prerequisite(s): Departmental approval.

MARS-2990 Media Arts and Filmmaking Professional Prep and Portfolio Review

02 Semester Credits

Capstone Course. Preparation to interview for jobs within the field of motion media, along with professional resume and portfolio development for completion. Focuses on individual attributes in presentation skills and creativity. Students refine their best work completed during the program, adding items that might enhance their transfer into the job market.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): Concurrent enrollment in MARS-2720 Applied Integrated Media (AIM) II: Real World Production and Post-Production for Motion Media, or departmental approval.

MEDICAL ASSISTING - MA

MA-1010 Introduction to Medical Terminology

02 Semester Credits

Introduction to medical terminology used by health care professionals with emphasis on the basics of word building, defining, spelling, reading practice, and pronunciation. Designed to provide students with a foundation for medical word building and to help students who intend to enroll in Medical Terminology I and/or Anatomy and Physiology.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

MA-1020 Medical Terminology I

03 Semester Credits

Terminology utilized by health care professionals. Emphasis on correct spelling, definition, pronunciation, and use of a medical dictionary. Usage of basic and complex medical terms related to the body as a whole, and to the musculoskeletal, digestive, respiratory, urinary, female reproductive, male reproductive, and cardiovascular systems.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OHL020

MA-1321 Medical Office Laboratory Procedures

02 Semester Credits

Basic principles of laboratory knowledge in the operations of a physician's office laboratory. Safety regulations along with the regulatory agency guidelines and requirements. A heavy emphasis is placed on patient instruction in the collection of a specimen, the proper processing of specimen to ensure a reliable result, and the reporting of test results.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Concurrent enrollment in MA-132L Medical Office Laboratory Procedures and departmental approval: admission to Medical Assisting program.

**MA-132L Medical Office Laboratory Procedures
01 Semester Credit**

Laboratory component to the Medical Office Laboratory Procedures course. Includes the importance of quality control and quality assurance in the physician's office laboratory. Technical procedures for venipuncture and capillary sticks, and collection and processing of specimens covered. Laboratory testing including basic urinalysis, microbiology testing, serological testing, hematology testing and point of care testing. Occupational Safety & Health Administration (OSHA) and Clinical Laboratory Improvement Amendment (CLIA) regulations will be taught as they apply to the Physician Office Laboratory (POL).

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Concurrent enrollment in MA-1321 Medical Office Laboratory Procedures.

**MA-1402 Basic Clinical Medical Assisting
02 Semester Credits**

Discuss theory of fundamental clinical procedures in physician offices and related ambulatory care settings. Review of basic anatomy and physiology of the cardiovascular system as relate to diseases, disorders and diagnostic testing. Provide patient communication focusing on diverse populations and special needs. Theory and practice of pharmacology and pharmacology math associated with the ambulatory setting. Completion of course requires ten mandatory hours outside class time in the Preventive Care Center under supervision of faculty and staff.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Concurrent enrollment in MA-140L Basic Clinical Medical Assisting Lab.; and MATH-1060 Survey of Mathematics; and ENG-1010 College Composition I or ENG-101H Honors College Composition I; and MA-1010 Introduction to Medical Terminology; or MA-1020 Medical Terminology I, and MA-2010 Medical Terminology II.

**MA-140L Basic Clinical Medical Assisting Lab.
01 Semester Credit**

Laboratory component to Basic Clinical Medical Assisting course. Perform fundamental clinical assisting procedures in the physician's office, clinic, family practice centers, urgent cares, or hospital. Perform procedures used in patient examinations including medical asepsis, vital signs including anthropometric measurements, positioning and draping, visual and hearing acuity screenings, perform EKG's, Holter Monitors, Pulmonary Function Tests, Phlebotomy, Capillary sticks, and the administration of injections.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Concurrent enrollment in MA-1401 Basic Clinical Medical Assisting, and departmental approval: admission to Medical Assisting program.

**MA-1503 Administrative Procedures for the Medical Office
02 Semester Credits**

Prepares students to handle the day-to-day front office operations in a medical facility. Office communications are simulated by typing various forms of correspondences seen in the physician's office. Receiving and sorting of incoming mail, scheduling appointments and surgeries, setting up new offices, phone techniques and etiquette, maintaining medical records, and Health Insurance Portability and Accountability Act (HIPAA) emphasized. Learn the skills necessary to become an office manager, including terminations, hirings, bookkeeping and finances. Emphasis is placed on electronic technology used in today's medical office practices.

Lecture 02 hours. Laboratory 00 hours.

*Prerequisite(s): Concurrent enrollment in MA-150L Administrative Procedures Laboratory, and departmental approval: admission to Medical Assisting program.
CTAN Approved: CTMAT004/CTMAT005*

**MA-150L Administrative Procedures Laboratory
01 Semester Credit**

Laboratory component of Administrative Procedures for the Medical Office course. Practice handling the day-to-day operations in the front office of a medical practice. Communicate both verbally and non-verbally, receiving and sorting mail, appointment scheduling (both manually and electronically), filing, handling prescription refills, telephone techniques, maintaining medical records, finances and banking of the practice, human resources, marketing and customer service techniques. Protection of patient information and records, including the Health Insurance Portability and Accountability Act (HIPAA). Strong emphasis in teaching and learning the Electronic Medical Health Record.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Concurrent enrollment in MA-1503 Administrative Procedures for the Medical Office and departmental approval: admission to Medical Assisting programs.

CTAN Approved: CTMAT004/CTMT005

**MA-2010 Medical Terminology II
02 Semester Credits**

Terminology utilized by health care professionals. Emphasis on spelling, definition, pronunciation, and usage of basic and complex medical terms related to hematology, lymphatic, integumentary, special senses, nervous, psychiatric and endocrine systems. Emphasis on reading, translating and composing medical documents. Proficient use of medical dictionary emphasized.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MA-1020 Medical Terminology I, or departmental approval: related work experience.

MA-2110 Reimbursement for Physician Services

02 Semester Credits

Basic overview of insurance forms, terms, and coding methodologies used in the physician office. Introduction to reimbursement methodologies and claims processing procedures for the medical office. Review basics of CPT, ICD 9, and HCPCS. Includes electronically filing a CMS1500 form and completing "clean claims", and how to follow up on rejected claim forms. Also provides a brief introduction of ICD 10.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental Approval.

MA-241L Advanced Clinical Assisting Lab

01 Semester Credit

Laboratory component to Advanced Clinical Assisting course. Practice psychomotor skills required by the medical assistant to perform advanced procedures in the physicians office, clinic, or family practice centers. Emphasis will be placed on mastering those skills related to Ophthalmology, Otology, Gastroenterology, Urinary, Male Reproduction, Obstetrics, Gynecology, Pediatrics, Orthopedics, Neurology, Mental Health, Endocrinology, Pulmonary, and Geriatric Medicine.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): MA-1321 Medical Office Laboratory Procedures, and MA-132L Medical Office Laboratory Procedures, and MA-1402 Basic Clinical Medical Assisting, and MA-140L Basic Clinical Medical Assisting Lab, and MA-1503 Administrative Procedures for the Medical Office, and MA-150L Administrative Procedures Laboratory, and concurrent enrollment in MA-2413 Advanced Clinical Medical Assisting.

MA-2413 Advanced Clinical Medical Assisting

03 Semester Credits

Theory necessary for the medical assistant (MA) to perform and assist with advanced procedures in the physician's office, clinic, and other ambulatory settings. Coverage of body systems in relation to specialized exams/treatments, laboratory/diagnostic.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MA-1321 Medical Office Laboratory Procedures, and MA-132L Medical Office Laboratory Procedures, and MA-1402 Basic Clinical Medical Assisting, and MA-140L Basic Clinical Medical Assisting Lab., and MA-1503 Administrative Procedures for the Medical Office, and MA-150L Administrative Procedures Laboratory, and concurrent enrollment in MA-241L Advanced Clinical Assisting Lab.

MA-2860 Medical Assisting Practicum

02 Semester Credits

Capstone course in Medical Assisting. Supervised clinical experience in a physician's office, clinic or family practice center. Students perform duties of a medical assistant while rotating through administrative and clinical areas of

a physician's office, clinic or family practice center.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 210 hours per semester.

Prerequisite(s): Concurrent enrollment in MA-2413 Advanced Clinical Medical Assisting and MA-2980 Medical Assisting Seminar.

CTAN Approved: CTMAT011 (2 of 3 courses)

MA-2980 Medical Assisting Seminar

01 Semester Credit

Principles, procedures, and practical application of administrative, clinical and special medical assisting procedures. Opportunity to compare and contrast practices in various clinical settings. Discussion of certification and preparation to function as a certified medical assistant. Discussion of future trends in medical assisting profession.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Seminar: 1 hour per week.

Prerequisite(s): Concurrent enrollment in MA-2860 Medical Assisting Practicum, or departmental approval.

CTAN Approved: CTMAT011 (3 of 3 courses)

MEDICAL LABORATORY TECHNOLOGY - MLT

MLT-1000 Introduction to Medical Laboratory Technology

03 Semester Credits

This introduction to Medical Laboratory Technology provides an overview of the profession, safety, blood collection and processing, code of ethics, basic clinical laboratory equipment and instrumentation, basic lab math, quality control and assurance.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MATH-0955 Beginning Algebra, or appropriate score on Math placement test, and departmental approval.

OAN Approved: OHL008

MLT-1300 Introduction to Blood Collection

03 Semester Credits

Introduction to theory and practice of phlebotomy. Principles of aseptic technique and familiarity with phlebotomy equipment. Performance of venipunctures and capillary punctures. Universal precautions and safety of phlebotomist and patient strictly enforced.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I, and departmental approval: admission to Health Career/Nursing program.

MLT-1351 Problem Solving Techniques for the Medical Laboratory
02 Semester Credits

Review of basic algebra and measurement systems. Study of formula evaluation, unit analysis and conversions, dilutions, concentrations, calculations specific to clinical analytes and Beer's Law. Construction of standard curves, calculations and application of quality control parameters related to clinical laboratory medicine. Application and activities to build skills in problem solving.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MATH-1410 Elementary Probability and Statistics I, and departmental approval.

MLT-1491 Urinalysis and Body Fluids
03 Semester Credits

Theory and application of urine and body fluid analysis. Includes the anatomy and physiology of the kidney, physical, chemical and microscopic examination of the urine, cerebrospinal and other body fluids. Also includes diagnostic significance of test results and correlation with disease states, quality control, quality assurance and safety.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MLT-1000 Introduction to Medical Laboratory Technology, or departmental approval: related work experience.

OAN Approved: OHL010

MLT-1850 Medical Laboratory Practicum I
03 Semester Credits

Supervised clinical experience. Students rotate through inpatient or outpatient phlebotomy departments of local clinical sites for 26.25 hours per week (8 weeks) meeting performance objectives for laboratory phlebotomy technician.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 26.25 hours per week for 8 weeks (210 total hours).

Seminar: 2 hours per week for 8 weeks.

Prerequisite(s): MLT-1300 Introduction to Blood Collection, or concurrent enrollment, and departmental approval.

MLT-2461 Hematology
03 Semester Credits

An introduction to the theory, principles and procedures used in Hematology and Coagulation (Hemostasis). Hematopoiesis, enumeration, differentiation and evaluation of blood formed elements and the basic process of coagulation are discussed. Manual and automated techniques are explained, demonstrated and performed. Anemias, leukemias and other hematological disorders are studied, correlating test results with disease states. Problem solving skills are applied in related case studies and unknowns.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): MA-1020 Medical Terminology I, and departmental approval.

OAN Approved: OHL009

MLT-2471 Immunohematology and Serology
05 Semester Credits

Study of immunohematologic (blood banking), immunologic and serologic principles and the application of testing procedures. Antigen-antibody reactions for ABO antigens, Rh (Rhesus) and other major blood group systems, compatibility testing, component therapy and production, acceptable donor criteria, transfusion transmitted diseases, diagnostic uses of serological tests. Performance of associated laboratory tests. Analysis of case studies, problem solving and clinical significance of results in diagnosis.

Lecture 03 hours. Laboratory 06 hours.

Prerequisite(s): MLT-1000 Introduction to Medical Laboratory Technology.

MLT-2482 Clinical Microbiology
05 Semester Credits

Application of the principles and procedures utilized in clinical microbiology, mycology, parasitology and virology in the collection, identification and serological detection of organisms. Pathogenesis and prevention of disease. Media, methods of culture and isolation, biochemical and susceptibility testing, aseptic and staining techniques, sterilization and safety protocols are studied. Analysis of case studies, problem solving and clinical significance of results in diagnosis.

Lecture 03 hours. Laboratory 06 hours.

Prerequisite(s): MLT-1000 Introduction to Medical Laboratory Technology, and BIO-2500 Microbiology.

MLT-2501 Clinical Chemistry
05 Semester Credits

Principles, procedures and application of basic and advanced diagnostic tests in clinical chemistry for all body fluids. Emphasis on correlation of results with clinical significance, interpreting quality control data, and mastering basic lab skills.

Lecture 03 hours. Laboratory 06 hours.

Prerequisite(s): MLT-1000 Introduction to Medical Laboratory Technology, and MLT-1351 Problem Solving Techniques for the Medical Laboratory.

MLT-2940 Medical Laboratory Field Experience
03 Semester Credits

Capstone course in Medical Laboratory Technology. Supervised clinical experience. Students rotate through chemistry, microbiology, serology, immunohematology, hematology/coagulation, body fluids laboratories, and phlebotomy departments for thirty-six (36) hours per week meeting performance objectives of medical laboratory personnel at the MLT level.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 36 hours per week.

Prerequisite(s): MLT-2990 Advanced MLT Applications.

MLT-2970 Advanced Phlebotomy

01 Semester Credit

Review of theory and techniques for advanced phlebotomy procedures. Presentation of basic procedures involved in point-of-care testing. Emphasis on communication, interpersonal skills, and ethical considerations relating to patients. Professional development. Seminar discussion of practicum experience.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Seminar: 1 hour per week.

Prerequisite(s): MLT-1300 Introduction to Blood Collection, or departmental approval.

MLT-2980 Professional Development and Life Skills Seminar

01 Semester Credit

Integration of knowledge acquired in basic, technical and non-technical areas in preparation for professional roles and lifelong professional growth and development. Seminar discussion of clinical experience.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Seminar: 1 hour per week.

Prerequisite(s): MLT-2990 Advanced MLT Applications; and concurrent enrollment in MLT-2940 Medical Laboratory Field Experience.

MLT-2990 Advanced MLT Applications

06 Semester Credits

Manual laboratory skills related to clinical chemistry, hematology, coagulation, body fluids, microbiology, parasitology, mycology, immunohematology/serology are refined. The operation and maintenance of laboratory equipment, function verification, analysis of quality control and application of corrective action is studied and performed. Emphasis on organization, increased speed, accuracy, confidence and independent performance. Case studies are analyzed, data interpreted and findings are correlated to clinical significance and differential diagnoses. Advanced concepts in parasitology, mycology, immunohematology/serology, principles of education, molecular diagnostics, point of care, information systems and troubleshooting are introduced.

Lecture 01 hour. Laboratory 15 hours.

Prerequisite(s): MLT-1491 Urinalysis and Body Fluids, and MLT-2461 Hematology, and MLT-2501 Clinical Chemistry, and BIO-2500 Microbiology.

MUSIC - MUS

MUS-1010 Survey of European Classical Music

03 Semester Credits

Introduction to elements and styles of European classical music. Composers, works, instrumentation and forms studies in their cultural and historical context. Focus on listening and understanding European classical music.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

MUS-1020 Survey of Jazz

03 Semester Credits

Introduction to basic elements and techniques of jazz. Function of jazz instrumentation, forms, improvisation and other musical elements and conventions indigenous to jazz. Characteristic features of various styles and artists studied. Focus on listening to and understanding jazz.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

MUS-1030 Survey of Rock and Roll

03 Semester Credits

Survey of the most influential and innovative works and artists of rock music from origins to present. Includes terminology, techniques, style, instrumentation and lyrics, with references to cultural and historical context. Course involves listening to, reading and discussing artists and recordings. Focus on listening to and understanding rock and roll music.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

MUS-1040 Survey of African-American Music

03 Semester Credits

Chronological study of history of African-American music from eighteenth century through 1920s. Oral traditions and performance practices studied in cultural and historical context. Sacred, folk, popular, and classical music and precursors of jazz discussed. Focus on listening to and understanding African-American music.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

MUS-1050 Survey of World Music

03 Semester Credits

Introduction to elements and styles of music of diverse ethnic cultures. Instruments, forms, and concepts of music explored through art and folk music to develop an understanding of how basic materials of music work together. Focus on listening to and understanding music of diverse cultures.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

MUS-1100 Music for Elementary Education**03 Semester Credits**

Designed to orient elementary teachers to role of music in growth and development of children. Emphasis on creating musical environment in the elementary school classroom. Study of young voice, basic theory, piano keyboard, music symbols and terms, and use of elementary classroom instruments.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

MUS-1110 Music Business I**03 Semester Credits**

Examination of multiple facets of music industry. Includes exploration of career options, recording industry, performance and promotion, music business contracts, marketing of songs, music publishing, copyrights, and retail.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

MUS-1120 Music Business II**03 Semester Credits**

Artist promotion, management, music agents, music in advertising, concert promotion, arts administration, and music entrepreneurship.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1110 Music Business I.

MUS-1130 MIDI Technology I**03 Semester Credits**

Basic audio signal flow, MIDI (Music Instrument Digital Interface) principles and techniques, the virtual studio concept, computer-based sequencing and notation software and the operation of modern keyboard equipment.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

MUS-1140 MIDI Technology II**03 Semester Credits**

Further development of concepts and skills introduced in MIDI Technology I. Advanced sequencing and editing techniques, synchronization, digital audio recording, music notation and MIDI studio organization.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MUS-1130 MIDI Technology I.

MUS-1170 Songwriting I**02 Semester Credits**

Instruction in the art of contemporary songwriting. Includes consideration of form, rhythm, melody, lyric content, harmony, arranging, and development of individual style. Development of listening skills and criticism utilizing songs of class members and established artists.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

MUS-1200 Music Reading Skills**03 Semester Credits**

Introduction to concepts and skills of reading music and music theory for pre-music and non-music majors. Includes study of notation, rhythm, scales, key signatures, intervals and triads.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

MUS-1210 Introduction to Music Theory**03 Semester Credits**

Terminology, symbols, skills, and concepts of music theory for pre-music and non-music majors. Includes study of intervals, chords, voice leading and figured bass, compositional devices, transposition, analysis, and basic forms.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1200 Music Reading Skills, or departmental approval.

MUS-1220 Basic Ear Training**02 Semester Credits**

Introduction to the development of aural skills for pre-music and non-music majors. Students develop discrimination skills including pitch and rhythm perception through sight singing and dictation.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): MUS-1200 Music Reading Skills, or departmental approval.

MUS-1230 Critical Listening**01 Semester Credit**

Use of critical and analytic listening methods to evaluate frequency, sound quality, musical mix structure and to analyze common sound problems.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

MUS-1250 Class Keyboard I**02 Semester Credits**

Basic piano techniques and performance skills for pre-music and non-music majors. Emphasis on keyboard development in sight reading, improvising, transposing and harmonizing melodies in various styles. Includes solo and ensemble literature.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

OAN Approved: OAH019 (1 of 2 courses, both must be taken)

MUS-1260 Class Keyboard II**02 Semester Credits**

Functional piano techniques and keyboard skills for pre-music and non-music majors. Keyboard development in second-level sight reading, transposing, improvising, and ensemble playing in various styles. Development of second level solo and ensemble repertoire.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): MUS-1250 Class Keyboard I.

OAN Approved: OAH019 (2 of 2 courses, both must be taken)

MUS-1270 Class Voice**02 Semester Credits**

Basic techniques of voice production. Includes breath control, diction, projection, tone-color, and interpretation for pre-music and non-music majors. Progressive vocal exercises and studies. Application of principles to performance of simple songs.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

MUS-1280 Class Guitar**02 Semester Credits**

Basic guitar techniques and performance skills for non-music majors, and music majors studying guitar as a second instrument. Special focus on skills for beginning guitarists and students pursuing music therapy careers. Emphasis on left hand development, plectrum technique, and chord and scale vocabulary and performance. Application of principles to solo and ensemble literature. Students will need their own guitar.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

MUS-1290 Basic Applied Music I**01 Semester Credit**

Individual instruction for pre-music and non-music majors on any standard band, orchestral instrument or voice. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: A private lesson and 7 hours of concentrated practice each week.

Prerequisite(s): Departmental approval.

MUS-1301 Applied Piano Minor I**01 Semester Credit**

Private piano instruction for music majors with piano as minor instrument. Development of technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature for first semester. End of semester performance jury required.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: A private lesson and 7 hours of concentrated practice each week.

Prerequisite(s): Departmental approval: audition.

MUS-1302 Applied Piano Minor II**01 Semester Credit**

Second-level private piano instruction for music major with piano as minor instrument. Development of technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature for second semester. End of semester performance jury required.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: A private lesson and 7 hours of concentrated practice each week.

Prerequisite(s): MUS-1301 Applied Piano Minor I.

MUS-1460 Applied Music I**02 Semester Credits**

(See page 250 for enrollment instructions.) Applied instruction in musical instruments and voice for college students pursuing degrees in music. Development of tone production, intonation, technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature appropriate for first semester music majors. End of semester performance jury required. May be repeated up to 8 credits per instrument; only 2 credits total may be applied to degree requirements.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: A private lesson and 14 hours of concentrated practice each week. As a final exam, students will play a performance jury in front of music faculty at the end of the term of study to demonstrate proficiency.

Prerequisite(s): Departmental approval.

OAN Approved: OAH020

MUS-1470 Applied Music II**02 Semester Credits**

(See page 250 for enrollment instructions.) Second-level private instruction for music majors. Continued development of tone production, intonation, technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Standard repertoire including selected solo and method literature appropriate for second semester music majors. End of semester performance jury required. May be repeated up to 8 credits per instrument; only 2 credits total may be applied to degree requirements.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: A private lesson and 14 hours of concentrated practice each week. As a final exam, students will play a performance jury in front of music faculty at the end of the term of study to demonstrate proficiency.

Prerequisite(s): MUS-1460 Applied Music I, or departmental approval.

OAN Approved: OAH020

MUS-1500 Choir**01 Semester Credit**

Performance class with concentration on standard repertoire, both sacred and secular, accompanied and a cappella for mixed voices. Public performance required. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval: audition.

OAN Approved: OAH022

MUS-1510 Choral Ensemble**01 Semester Credit**

Performance of choral literature from Renaissance through 20th century for small select ensemble. Public performance required. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval: audition.

OAN Approved: OAH022

MUS-1520 Jazz Ensemble**01 Semester Credit**

Study and experimentation in performance of jazz ensemble literature and styles. Public performance required. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval: audition.

MUS-1530 Concert Band**01 Semester Credit**

Performance of band and wind ensemble literature by woodwinds, brass, and percussion players. Public performance required. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval: audition.

OAN Approved: OAH022

MUS-1540 Orchestra**01 Semester Credit**

Performance of selected orchestral literature by string, woodwind, brass and percussion players. Public performance required. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval: audition.

MUS-1550 Instrumental Ensemble**01 Semester Credit**

Performance of traditional and contemporary ensemble literature. Public performance required. May be repeated for credit; however, no more than 4 credits may be applied

to degree requirements.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval: audition.

OAN Approved: OAH022

MUS-1570 Technology Tools I**02 Semester Credits**

Designed to give music students practical knowledge and skills in the use of current computer, MIDI (Musical Instrument Digital Interface), and electronic instrument technologies for application in music theory, arranging, composition and performance. Includes basic computer, MIDI principles and techniques, computer-based notation and sequencing software, and operation of modern electronic keyboard instruments.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): MUS-1210 Introduction to Music Theory, or departmental approval.

MUS-1580 Technology Tools II**02 Semester Credits**

Designed to give music students practical knowledge and skills in use of current computer, MIDI (Musical Instrument Digital Interface), and electronic instrument technologies for application in music theory, arranging, composition and performance. Includes advanced notation and sequencing editing techniques, digital audio recording and MIDI studio organization.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): MUS-1570 Technology Tools I, or departmental approval.

MUS-1600 Traditional Theory I**03 Semester Credits**

Manipulation of musical materials including harmonic, melodic, rhythmic, and basic formal procedures with correlated creative works and analysis. Harmonization of figured bass and chorale writing including diatonic harmony and voice leading, melodic procedures and all non-harmonic tones. Analysis of common practice literature. Integrates harmonic and contrapuntal approaches to analysis and composition.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1210 Introduction to Music Theory.

OAN Approved: OAH052 (1 of 8 courses, all must be taken)

MUS-1610 Ear Training I**02 Semester Credits**

Identification of diatonic and chromatic intervals, triad qualities, scales and phrases. Melodic and rhythmic dictation, sight singing, and analytic listening. Introduction to harmonic function and holistic listening.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): MUS-1220 Basic Ear Training.

OAN Approved: OAH052 (2 of 8 courses, all must be taken)

MUS-1620 Traditional Theory II**03 Semester Credits**

Introduction of modulation, chromatic materials and 20th century techniques. Integrates harmonic and contrapuntal approaches to analysis and composition.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1600 Traditional Theory I, and MUS-1610 Ear Training I.

OAN Approved: OAH052 (3 of 8 courses, all must be taken)

MUS-1630 Ear Training II**02 Semester Credits**

Second level identification of intervals, chord qualities, scales, phrases and harmonic function. Melodic and rhythmic dictation, sight singing, analytic and holistic listening.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): MUS-1610 Ear Training I.

OAN Approved: OAH052 (4 of 8 courses, all must be taken)

MUS-1650 Jazz Theory I**02 Semester Credits**

Introduction to theoretical foundations of jazz including a systematic examination of scales, hybrid modes and their practical applications, chord construction and notation, chord/scale relationships and applications, melodic construction and development, and analysis of transcribed solos and compositions from the jazz repertoire including the American standard song.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1600 Traditional Theory I.

MUS-1670 Jazz Performance and Improvisation I**02 Semester Credits**

Improvisation within the jazz style and presentation as performance. Investigates essential relationship of the blues, American standard song and swing rhythm as central to the character of jazz. Memorization of standard repertoire.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): MUS-1210 Introduction to Music Theory, and audition.

MUS-1680 Jazz Performance and Improvisation II**02 Semester Credits**

Improvisation within the jazz style and presentation as performance. Includes modal combinations and chord change sequences, scale-tone 7th, harmonic movement within blues and standard song, phrasing, paraphrasing, playing in various keys and memorization of standard repertoire.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): MUS-1670 Jazz Performance and Improvisation I.

MUS-1720 Arranging I**02 Semester Credits**

Writing and arranging for the modern rhythm section including piano (keyboards), guitar, bass, drums and auxiliary percussion; writing and arranging techniques address the rhythm section as a unit and as part of a small or large ensemble.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1600 Traditional Theory I, or departmental approval.

MUS-179H Honors Contract in Music**01 Semester Credit**

Honors Contract complements and exceeds requirements and objectives for an existing MUS 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Must be taken concurrently with a 1000-level course in Music, whose instructor approves the Honors Contract.

MUS-1970 Music Seminar**01 Semester Credit**

Discussion of current topics related to music careers including presentations, performances, recitals and clinics, music academic and career exploration. May be repeated for an accrued maximum of six credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 1 seminar hour per week.

Prerequisite(s): Departmental approval.

MUS-2030 British Invasion**02 Semester Credits**

Survey of influential and representative works and artists of British Invasion beginning in 1964 including the Beatles, The Who, Rolling Stones, Kinks, and their contemporaries. Aesthetics, terminology, technique, style, instrumentation, lyrics, and technology.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1030 Survey of Rock and Roll.

MUS-2130 Music Production for Video and Film**03 Semester Credits**

Using tools of the modern MIDI studio to write and produce an appropriate musical score for video and film. Topics include music scoring techniques and sound design, role of music in advertising and film industries, and communicating with client to determine musical direction.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): MUS-1140 MIDI Technology II.

MUS-2140 Studio Maintenance**02 Semester Credits**

Reviews basic electronics and sound principles, discusses set-up, calibration and operation of digital and analog recording and test equipment. Topics include studio layout, technical signal routing, equipment interface, grounding, maintenance and troubleshooting.

Lecture 00 hours. Laboratory 04 hours.

Prerequisite(s): RAT-1500 Recording Theory I, RAT-1511 Recording Lab I, and EET-1130 Basic Audio Electronics; or departmental approval.

MUS-2290 Basic Applied Music II**02 Semester Credits**

Individual instruction for pre-music and non-music majors on any standard band, orchestral instrument or voice. May be repeated for credit; however, no more than 4 credits may be applied to degree requirements.

Lecture 00 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

MUS-2301 Applied Piano Minor III**01 Semester Credit**

Third-level private piano instruction for music major with piano as minor instrument. Development of technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature for third semester. End of semester performance jury required.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: A private lesson and 7 hours of concentrated practice each week.

Prerequisite(s): MUS-1302 Applied Piano Minor II.

MUS-2302 Applied Piano Minor IV**01 Semester Credit**

Fourth-level private piano instruction for music major with piano as minor instrument. Development of technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature for fourth semester. End of semester performance jury required.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: A private lesson and 7 hours of concentrated practice each week.

Prerequisite(s): MUS-2301 Applied Piano Minor III.

MUS-2460 Applied Music III**02 Semester Credits**

Third-level applied instruction in musical instruments and voice for college students pursuing degrees in music. Continued development of tone production, intonation, technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature appropriate for third semester music majors.

Analysis of the forms of music for the individual instrument and their historical perspective. End of semester performance jury required. May be repeated up to 8 credits per instrument; only 2 credits total may be applied to degree requirements.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: A private lesson and 14 hours of concentrated practice are required each week.

Prerequisite(s): MUS-1470 Applied Music II, or departmental approval.

OAN Approved: OAH020

MUS-2470 Applied Music IV**02 Semester Credits**

Fourth-level applied instruction in musical instruments and voice for college students pursuing degrees in music. Continued development of tone production, intonation, technical facility, rhythmic control, phrasing, stylistic interpretation and sight-reading skills. Development of standard repertoire including selected solo and method literature appropriate for fourth semester music majors. Introduction to beginning teaching issues and techniques for the individual instruments. End of semester performance jury required. May be repeated up to 8 credits per instrument; only 2 credits total may be applied to degree requirements.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: A private lesson and 14 hours of concentrated practice are required each week.

Prerequisite(s): MUS-2460 Applied Music III, or departmental approval.

OAN Approved: OAH020

MUS-2500 Music History and Literature I**03 Semester Credits**

Chronological study of the history and development of European classical music from origins through the 18th century. Detailed attention to selected pieces from Medieval, Renaissance, Baroque, and Classical periods.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1620 Traditional Theory II.

MUS-2510 Music History & Literature II**03 Semester Credits**

Chronological study of history and development of European classical music from 19th century through present time. Detailed attention to selected pieces.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1620 Traditional Theory II.

MUS-2520 Jazz History I**02 Semester Credits**

Chronological study of history and development of classic jazz from origins through the Swing period. Detailed attention to selected jazz masters and analysis of their most important works.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1650 Jazz Theory I.

MUS-2530 Jazz History II**02 Semester Credits**

Chronological study of history and development of modern jazz from Bebop through present time. Detailed attention to selected jazz masters and analysis of their most important works.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1650 Jazz Theory I.

MUS-2540 Jazz History Listening I**01 Semester Credit**

Through directed, analytical and comparative listening experiences, students gain detailed knowledge of and familiarity with selected works of jazz masters (circa 1850s-1940s) from pre-jazz roots music and early jazz through swing jazz. A listening laboratory and aural training course, this is a companion and supplement to MUS-2520 Jazz History I.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): MUS-1650 Jazz Theory I, and concurrent enrollment in MUS-2520 Jazz History I, or departmental approval.

MUS-2550 Jazz History Listening II**01 Semester Credit**

Through directed, analytical and comparative listening experiences, students gain detailed knowledge of and familiarity with selected works of Modern Jazz masters from Bebop (1940s) to the present. A listening laboratory and aural training course, this is a companion and supplement to MUS-2530 Jazz History II.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): MUS-1650 Jazz Theory I, and concurrent enrollment in MUS-2530 Jazz History II, or departmental approval.

MUS-2600 Traditional Theory III**03 Semester Credits**

Theory, analysis, and composition of European classical music from origins through 18th century. Detailed attention to selected pieces from Medieval, Renaissance, Baroque and Classical periods.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1620 Traditional Theory II, and MUS-1630 Ear Training II.

OAN Approved: OAH052 (5 of 8 courses, all must be taken)

MUS-2610 Ear Training III**02 Semester Credits**

Third-level identification of intervals, seventh chords, scales, phrases and harmonic function. Melodic and rhythmic dictation, sight singing, analytic and holistic listening.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): MUS-1630 Ear Training II.

OAN Approved: OAH052 (6 of 8 courses, all must be taken)

MUS-2620 Traditional Theory IV**03 Semester Credits**

Theory, analysis, and composition of European classical music from 19th century through present time. Detailed attention to selected pieces.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): MUS-2600 Traditional Theory III, and MUS-2610 Ear Training III.

OAN Approved: OAH052 (7 of 8 courses, all must be taken)

MUS-2630 Ear Training IV**02 Semester Credits**

Fourth level identification of intervals, seventh chords, scales, phrases and harmonic function. Melodic and rhythmic dictation, sight singing, analytic and holistic listening.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): MUS-2610 Ear Training III.

OAN Approved: OAH052 (8 of 8 courses, all must be taken)

MUS-2650 Jazz Theory II**02 Semester Credits**

Second level study of theoretical foundations of jazz. Includes diatonic and chromatic harmony, harmonic embellishment and substitution, voicings, rhythm, blues progressions and forms, phrase analysis, lyric import and analysis of transcribed solos and compositions from jazz repertoire.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1650 Jazz Theory I.

MUS-2660 Jazz Theory III**02 Semester Credits**

Third-level of study of theoretical foundations of jazz. Includes modal structures, rhythm changes and substitutions; composition and improvisation; implications of lyrics on structure and articulation; and analysis of transcribed solos and compositions from jazz repertoire, including the American standard song.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MUS-2650 Jazz Theory II.

MUS-2670 Jazz Performance and Improvisation III**02 Semester Credits**

Third-level study of improvisation within jazz style and presentation as performance. Includes phrasing, minor ii-V-i, modal minor, chord structures and common progressions in all keys, and memorization of standard repertoire.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): MUS-1680 Jazz Performance and Improvisation II.

MUS-2680 Jazz Performance and Improvisation IV
02 Semester Credits

Fourth-level study of improvisation within jazz style and presentation as performance. Includes performance of accumulated repertoire, blues composition, refined group playing and performance of memorized standard repertoire in all keys.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): MUS-2670 Jazz Performance and Improvisation III.

MUS-2710 Arranging II
02 Semester Credits

Building on the rhythm section, this study concentrates on writing for trumpet, trombone and saxophone individually, in combination and as instrumental families. Ranges, tonal color, combinations in the context of an arrangement are investigated. Further development of skills introduced in Arranging I.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MUS-1720 Arranging I, or departmental approval.

MUS-2720 Arranging III
02 Semester Credits

Development of the linear approach to multiple horn scoring, focusing on backgrounds, supporting lines, and contrapuntal devices as well as melodic presentation; further development of the skills introduced in Arranging II. Elements of arranging for the large ensemble and studio orchestra will be introduced.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): MUS-2710 Arranging II, or departmental approval.

MUS-2740 Internship
01-03 Semester Credits

Provides student with on-the-job application of skills learned in the liberal arts and specifically music. Each internship based on individualized learning contract. Requirement for one credit is 180 hours of approved work per semester.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Internship: 180 clock hours of approved work per credit hour.

Prerequisite(s): Department approval: completion of 30 semester credits; completion of 15 semester credits at Cuyahoga Community College; 2.75 GPA; completion of 20 semester credits in liberal arts; completion of 9 semester credits in Music; two letters of recommendation from liberal arts faculty, one of which must be from area of placement.

NUCLEAR MEDICINE - NMED

NMED-1010 Nuclear Medicine Math and Statistics
01 Semester Credit

Examines the mathematics associated with the field of nuclear medicine including formulas and calculations involving radioactive decay, radiations safety, quality control, clinical procedures, statistical analysis, and kit and dose preparation.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to program.

NMED-1100 Computers in Nuclear Medicine
01 Semester Credit

Study of computer systems used in the field of nuclear medicine. Topics include the gamma camera computer system interface, data acquisition, image processing software and techniques, quality control, tomography, and radiopharmacy record keeping. Teleradiography and medical informatics is included.

Lecture .5 hours. Laboratory 01 hours.

Prerequisite(s): Departmental approval: admission to specified program.

NMED-1200 Radiation Safety & Biology
02 Semester Credits

Potential effects of ionizing radiation on biological systems, especially humans including known high dose effects and theories of low dose effects. Radiation risks and applicable quantities and units. Estimating absorbed doses from internally administered radioactive materials. Safe handling of radioactive materials and the disposal of radioactive waste. Radiation safety regulations and safety guidelines including personnel monitoring and accurate record keeping.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to program.

NMED-1301 Nuclear Medicine Procedures I
03 Semester Credits

Methods of performing patient organ visualization procedures in nuclear medicine. Review of anatomy, physiology and pathology of the various organs, radiopharmaceuticals, applicable instrumentation, methodologies, and techniques utilized. Including radiation safety techniques, patient care, patient preparation, and patient imaging for nuclear studies.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Concurrent enrollment in NMED-130L Nuclear Medicine Laboratory I and departmental approval: admission to the program.

NMED-130L Nuclear Medicine Laboratory I 01 Semester Credit

Introduction to and application of lab practices of a Nuclear Medicine Technologist including radiopharmaceutical and instrumentation principles. Emphasis on radiation safety, practicing quality assurance, and instrumentation controls.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): Concurrent enrollment in NMED-1301 Nuclear Medicine Procedures I, and departmental approval: admission to program.

NMED-1401 Patient Care for Nuclear Medicine 01 Semester Credit

Practice of advanced patient care skills, essential to providing high-quality patient care. Includes patient positioning skills, patient safety, communication, age-specific needs, and emergency care. Respect for individuals from different cultures, beliefs, gender orientations, and socioeconomic backgrounds are discussed. Legal and compliance issues, scopes of practice, and patients' rights are addressed. Includes certification in cardiopulmonary resuscitation.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): NMED-1301 Nuclear Medicine Procedures I, and departmental approval: admission to program.

NMED-1501 Radiation Physics 02 Semester Credits

Study of physics as it relates to radiation and medical imaging. Focuses on the principles of radioactivity, effects of radiation on matter, and emerging technologies as they relate to nuclear medicine and advanced molecular imaging. Topics include applicable classical physics concepts, atomic structure, mass-energy relationships, types of radiation, calculations of radioactive decay, production of radionuclides and x-rays, and principles and operation of SPECT, PET, CT, MRI and fusion imaging systems.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the Nuclear Medicine Program or the Magnetic Resonance Imaging Program.

NMED-1602 Nuclear Radiopharmacy and Pharmacology 04 Semester Credits

Theory and practice of radiopharmacy including non-radioactive interventional drugs and contrast media. Addresses the routes of administration, bio-distribution mechanisms, interfering agents, contraindications, and adverse effects for all administered materials. Preparation and calculation of the dose to be administered, quality control, radiation safety, and applicable regulations are also covered.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: Admission to the program.

NMED-1701 Nuclear Medicine Instrumentation 03 Semester Credits

Demonstration of instrumentation use for both non-imaging and imaging such as: monitoring equipment (surveys), dose calibrators, well counters, uptake probes, laboratory equipment, gamma probe and gamma camera. Provide Review regarding imaging components, use, and QC performance and requirements. Explain and demonstrate configuration, function and application of computers and networks used in the reconstruction of images. Includes practical considerations, concepts, data analysis, measurement concerns, and spectroscopy.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): NMED-1501 Radiation Physics, or concurrent enrollment, and NMED-1602 Nuclear Radiopharmacy and Pharmacology, or concurrent enrollment.

NMED-1770 Immunology and Pathophysiology for Sectional Imaging 02 Semester Credits

Introduction to pathophysiology and immunology. Emphasis is on common pathologies found in nuclear medicine, computed tomography, and magnetic resonance imaging and the appearance of these pathologies across multiple planes in various imaging protocols. Includes all commonly-imaged body systems with recognition of abnormal conditions across multiple planes and ability to make the associated imaging changes required to adequately demonstrate the patient's pathology.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Concurrent enrollment in NMED-1780 Sectional Anatomy for Advanced Molecular Imaging.

NMED-1780 Sectional Anatomy for Advanced Molecular Imaging 02 Semester Credits

Study of human anatomy and its appearance in multiple planes. Includes all commonly imaged body systems and areas as well as discernment of abnormal pathology and how to make the associated imaging changes required to adequately demonstrate the patients anatomy and pathology. Covers imaging planes and anatomy imaged by nuclear medicine, computed tomography, and magnetic resonance imaging.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): NMED-1301 Nuclear Medicine Procedures I; and concurrent enrollment in NMED-1770 Immunology and Pathophysiology for Sectional Imaging, and departmental approval: admission to program.

NMED-2301 Nuclear Medicine Procedures II**03 Semester Credits**

Study of diagnostic nuclear medicine procedures relating to the central nervous, genitourinary, and cardiovascular systems as well as tumor imaging. This course includes anatomy and physiology, pathophysiology, and protocols or routine and non-routine nuclear medicine procedures.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): NMED-1301 Nuclear Medicine Procedures I NMED-1602 Nuclear Radiopharmacy and Pharmacology NMED-1701 Nuclear Medicine Instrumentation, and NMED-1501 Radiation Physics.

NMED-230L Nuclear Medicine Laboratory II**01 Semester Credit**

Continued application of lab practices of a Nuclear Medicine Technologist including experimentation with radiopharmaceutical and instrumentation principles. Emphasis on radiation safety, practicing quality assurance, and instrumentation.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): NMED-1301 Nuclear Medicine Procedures I and NMED-130L Nuclear Medicine Laboratory I and NMED-1501 Radiation Physics and NMED-1602 Nuclear Radiopharmacy and Pharmacology; and concurrent enrollment in NMED-2301 Nuclear Medicine Procedures II.

NMED-2600 Molecular and Fusion Imaging**02 Semester Credits**

Examines the methodology of advanced molecular imaging and fusion imaging in the field of nuclear medicine and analyze current trends and advances in the field. Focus is made on patient preparation, imaging protocols, radiation safety, and special considerations for fusing nuclear medicine studies with computed tomography and magnetic resonance imaging.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): NMED-1501 Radiation Physics and NMED-1701 Nuclear Medicine Instrumentation.

NMED-2660 Nuclear Medicine Therapy**01 Semester Credit**

Study the principles and practices of nuclear medicine therapies including palliation, cancer treatment, theranautics, radioimmunotherapies with monoclonal antibodies, and regulations for therapy. Examines special considerations in regards to patient preparation, radiation safety, and dose determination for various therapies. Examine radionuclides used in therapy including characteristics and production. Emerging technologies and clinical trials will be explored.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): NMED-1200 Radiation Safety & Biology.

NMED-2700 Nuclear Medicine Research Methods**01 Semester Credit**

Basic types of scientific and clinical research, research methods, and the components of a research study.

Requires the research, review, discussion, and analysis of current research related to the field of nuclear medicine and advanced molecular imaging.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): NMED-2600 Molecular and Fusion Imaging and NMED-2660 Nuclear Medicine Therapy.

NMED-2940 Nuclear Medicine Field Experience I**03 Semester Credits**

Clinical experience in the nuclear medicine department under the direct supervision of qualified personnel. Participation in variety of nuclear medicine procedures emphasizing application of theory related to nuclear imaging protocols, patient care, radiopharmaceutical preparation, quality control, survey and wipe techniques, instrumentation, radiation accident prevention and radiation safety to include clinical projects and case studies. Clinical rotations through variety of specialty areas including nuclear medicine studies of various patient age groups (pediatrics/geriatric) and pathologies.

Lecture 01 hour. Laboratory 00 hours.

Other Required Hours: Field Experience: 36 hours per week for 10 weeks (360 hours per semester).

Prerequisite(s): NMED-2301 Nuclear Medicine Procedures II, or departmental approval.

NMED-2950 Nuclear Medicine Field Experience II**04 Semester Credits**

Supervised sessions in nuclear medicine department with specific assignments and case studies to include math problems and instrumentation. Clinical rotations through variety of specialty areas including nuclear medicine studies of various patient age groups (pediatrics/geriatric) and pathologies.

Lecture 01 hour. Laboratory 00 hours.

Other Required Hours: Field Experience: 36 hours per week for 16 weeks (576 hours per semester).

Prerequisite(s): NMED-2940 Nuclear Medicine Field Experience I, or departmental approval.

NMED-2960 Nuclear Medicine Field Experience III**04 Semester Credits**

Capstone course in Nuclear Medicine. Supervised sessions emphasizing team approach to daily operation of a nuclear medicine department. Includes patient care, procedures, radiation safety, quality control, equipment manipulation and patient positioning. Clinical rotations through a variety of specialty areas including nuclear medicine studies of various patient age groups (pediatrics/geriatric) and pathologies. Preparation for employment in nuclear medicine and for the American Registry of Radiologic Technologists' examination in Nuclear Medicine to include mock examinations.

Lecture 01 hour. Laboratory 00 hours.

Other Required Hours: Field Experience: 36 hours per week for 16 weeks (576 hours per semester).

Prerequisite(s): NMED-2950 Nuclear Medicine Field Experience II, or departmental approval.

NURSING - NURS**NURS-1300 Health Assessment****02 Semester Credits**

Focuses on development of assessment skills including obtaining a health history, performing physical assessment of the adult, and evaluating physiologic changes related to aging. Major emphasis on developing interviewing skills, assessing cultural factors, and utilizing basic assessment techniques. Documentation and reporting of findings discussed. Laboratory screening procedures introduced.

Lecture 01 hour. Laboratory: On-campus: 02 hours.

Prerequisite(s): Departmental approval: admission to Associate Degree Nursing program or Practical Nursing program.

CTAN Approved: CTADNUR002

NURS-1451 Self-Care Needs: Adult Life Span**07 Semester Credits**

Study of basic nursing care of adults through the adult life span, using Orem's self-care deficit theory. Specialized care of the elderly is included. Introduces major nursing curriculum themes: nursing process, communication, human development, cultural diversity, critical thinking and role of the associate degree nurse. Basic concepts of pharmacology and normal nutrition presented.

Lecture 04 hours. Laboratory on campus and clinical: 09 hours.

Prerequisite(s): BIO-1100 Introduction to Biological Chemistry, BIO-2331 Anatomy and Physiology I or concurrent enrollment; and ENG-1010 College Composition I, MATH-1240

Contemporary Mathematics, NURS-1300 Health Assessment or concurrent enrollment; and PSY-1010 General Psychology; and PSY-2020 Life Span Development, or concurrent enrollment; and departmental approval: admission to Nursing Program.

CTAN Approved: CTADNUR002

NURS-1601 Health Deviations I**07 Semester Credits**

Focuses on patients with acute and chronic health deviations. Critical thinking, Orem's self-care deficit theory, and the nursing process provide the framework for delivery of nursing care to adult patients. Emphasis on health deviations related to respiratory and musculoskeletal function, fluid and electrolyte balance, reproductive, and urologic disorders, surgery, diabetes, pain, HIV and oncology.

Lecture 04 hours. Laboratory: on-campus and clinical: 09 hours.

Prerequisite(s): NURS-1451 Self-Care Needs: Adult Life Span, and BIO-2341 Anatomy and Physiology II or concurrent enrollment; and BIO-2500 Microbiology, or concurrent enrollment; and departmental approval.

CTAN Approved: CTADNUR002

NURS-160A Access to Registered Nursing**03 Semester Credits**

Designed to facilitate transition of Licensed Practical Nurses into the Associate Degree Nursing program. Concepts related to role of associate degree nurse,

therapeutic communication, nursing process and teaching/learning.

Lecture 02 hours. Laboratory: On-campus: 02 hours.

Prerequisite(s): Departmental approval.

NURS-160D Health Deviations I for LPNs**03 Semester Credits**

Designed for Licensed Practical Nurses entering the Associate Degree Nursing program with advanced credit. Introduces nursing curriculum themes. Focuses on patients with acute and chronic health deviations related to fluid and electrolyte balance, urologic disorders, diabetes, and oncology.

Lecture 02 hours. Laboratory: Clinical: 03 hours.

Prerequisite(s): NURS-160A Access to Registered Nursing, or concurrent enrollment; and PSY-2020 Life Span Development, or concurrent enrollment; and BIO-2331 Anatomy and Physiology I, or concurrent enrollment; and departmental approval: admission to the Associate Degree Nursing Program.

NURS-1701 Community/Home Nursing**01 Semester Credit**

Critical thinking, Orem's self-care deficit theory, and the nursing process provide the framework for the delivery of nursing care to individuals and groups within the community. Emphasis is placed on health promotion, risk reduction, cultural sensitivity, and nursing management of vulnerable populations and patients with selected sexually transmitted, parasitic, and other infectious disease processes.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): NURS-1601 Health Deviations I, or concurrent enrollment, or NURS-160A Access to Registered Nursing and NURS-160D Health Deviations I for LPNs; and departmental approval.

NURS-2301 Specialized Health Care Needs**08 Semester Credits**

Critical thinking, Orem's self-care deficit theory, and the nursing process provide the framework for delivery of nursing care to the specialized populations of childbearing families, children and their families, and individuals with psychiatric-mental health needs. Emphasis is on therapeutic nurse-patient relationships and communication, and common psychiatric and behavioral health conditions; pediatric growth and development and common pediatric conditions; and care of childbearing women and their families.

Lecture 05 hours. Laboratory: Clinical: 09 hours.

Prerequisite(s): NURS-1601 Health Deviations I, or NURS-160D Health Deviations I for LPNs; and NURS-1701 Community/Home Nursing, and departmental approval.

OAN Approved: OHL012

NURS-2501 Health Deviations II

08 Semester Credits

Capstone Course in Nursing: Focuses on chronic, acute and critically ill patients. Orem's theory of self-care deficits, critical thinking, and the nursing process provide the framework for delivery of nursing care to groups of patients and their families. Concepts of communication, human development, and cultural diversity are integrated throughout course material. Emphasis is placed on care required to meet self-care deficits for patients with cardiac, hematological, gastrointestinal, respiratory, neurological, skin, autoimmune, and endocrine disorders. Principles of management and delegation are applied through a nursing leadership experience. Professional issues and career planning are incorporated in the clinical component of the course.

Lecture 04 hours. Laboratory: On campus and clinical: 12 required hours.

Prerequisite(s): NURS-2301 Specialized Health Care Needs.

OCCUPATIONAL THERAPY ASSISTING TECHNOLOGY - OTAT

OTAT-1300 Occupational Therapy Principles

02 Semester Credits

Overview of history, development, philosophy, theory and practice of occupational therapy profession. Discussion of role and responsibilities of occupational therapy assistant. Study of models of health, illness, wellness, therapeutic and professional relationships; exploration of cultural, ethical and legal issues in health care. Roles and education of occupational therapy personnel and professional organizations.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

OTAT-1310 Task Analysis

02 Semester Credits

Occupational therapy practice uses activities and tasks in achieving therapeutic goals in the treatment and rehabilitation of persons with occupational performance dysfunction resulting from disease or disability.

Instruction in activities and tasks used in therapy to facilitate communication: develop relationships; increase self-esteem and assess and develop specific sensory, motor, psychological, social, and cognitive skills for learning, organizing work, and solving problems.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): BIO-2331 Anatomy and Physiology I, or concurrent enrollment, and departmental approval.

OTAT-1320 Fundamentals of Developmental Disabilities

02 Semester Credits

Overview of developmental disabilities including physical and psychosocial conditions commonly referred to and treated by occupational therapists.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): OTAT-1300 Occupational Therapy Principles, and departmental approval.

OTAT-1330 Techniques in Developmental Disabilities

03 Semester Credits

Application of occupational therapy skills and techniques used in treatment programs planned for persons with developmental disabilities.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): OTAT-1310 Task Analysis, and departmental approval.

OTAT-1420 Fundamentals of Psychosocial Dysfunction

02 Semester Credits

Overview of psychosocial issues and psychiatric diagnoses in mental health and other clinical settings commonly referred to occupational therapy for treatment. Focuses on signs, symptoms and effects that mental illness and psychosocial issues have on an individual's life tasks and roles.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): PSY-2020 Life Span Development or concurrent enrollment, and OTAT-1320 Fundamentals of Developmental Disabilities.

OTAT-1430 Techniques in Psychosocial Dysfunction

03 Semester Credits

Designed to familiarize student with a variety of therapeutic techniques, processes, and programming used by occupational therapists treating individuals with psychosocial dysfunction. Emphasis on self awareness and group dynamics relevant to clinical settings serving clients with psychological and psychiatric disorders.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): OTAT-1330 Techniques in Developmental Disabilities, and departmental approval.

OTAT-1850 Practicum I

02 Semester Credits

Under supervision of assigned agency personnel, students apply knowledge, skills and techniques learned in concurrent OTAT courses and weekly discussion seminar. Assignment to agencies includes traditional and non-traditional settings servicing clients with developmental disabilities.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 105 hrs. per semester.

Seminar: 15 hrs. per semester.

Prerequisite(s): OTAT-1310 Task Analysis, and departmental approval.

OTAT-1860 Practicum II

02 Semester Credits

Under supervision of assigned agency personnel, students apply knowledge, skills and techniques learned in concurrent OTAT courses and weekly discussion seminar. Assignment to agencies includes traditional and non-traditional settings serving clients with psychosocial dysfunctions.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 105 hrs. per semester.

Seminar: 15 hrs. per semester.

Prerequisite(s): PSY-2020 Life Span Development or concurrent enrollment, and departmental approval.

OTAT-1980 Therapeutic Use of Self

02 Semester Credits

The student will learn the art of relating to others through experiential activities, self-assessments and role playing activities to gain practical experience in initiating and responding to communications with a flexible, authentic and confident approach

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

OTAT-2320 Fundamentals of Physical Dysfunction

04 Semester Credits

Overview of physical disabilities including physical and psychosocial conditions commonly referred to and treated by occupational therapist. Presented within a developmental frame of reference covering adult through old age.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): PTAT-1300 Functional Anatomy, OTAT-1420 Fundamentals of Psychosocial Dysfunction, and OTAT-1430 Techniques in Psychosocial Dysfunction.

OTAT-2330 Techniques in Physical Disabilities

04 Semester Credits

Overview of occupational therapy treatment strategies and techniques for physically disabled adults from late adolescence to the end of life. Emphasis on current, authentic and effective occupational therapy practice.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): PTAT-1300 Functional Anatomy, and OTAT-1430 Techniques in Psychosocial Dysfunction.

OTAT-2340 Occupational Therapy Issues

03 Semester Credits

Capstone course in Occupational Therapy Assisting. Integrates knowledge and skills acquired in academic work and field practice placements to clarify role and function of Certified Occupational Therapy Assistant; evolving issues, concepts and responsibility to professional organizations; credentialing process; research;

continuing education and public relations. Role of COTA as activities director.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): OTAT-2330 Techniques in Physical Disabilities, or concurrent enrollment.

OTAT-2860 Practicum III

02 Semester Credits

Under supervision of assigned agency personnel, students apply knowledge, skills and techniques learned in concurrent OTAT courses and weekly discussion seminar. Assignments to health care agencies include, but are not limited to hospitals, nursing homes, and rehabilitation centers serving adult and/or geriatric populations with physical conditions referred to occupational therapy.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 105 hrs. per semester.

Seminar: 15 hrs. per semester.

Prerequisite(s): OTAT-1860 Practicum II, and departmental approval.

OTAT-2940 Field Experience

03 Semester Credits

Students assigned to two consecutive 8-week full-time field placements under supervision of licensed occupational therapists. Provides student opportunities to apply principles and techniques learned in previous courses to actual treatment situations in preparation for entry level practice.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field experience: 576 hours per semester.

Prerequisite(s): OTAT-2320 Fundamentals of Physical Dysfunction, OTAT-2330 Techniques in Physical Disabilities, OTAT-2860 Practicum III, and departmental approval.

OPTICAL TECHNOLOGY - OPT

OPT-1310 Theoretical Optics I

02 Semester Credits

Study of ophthalmic and geometric optics, modern lens theory and construction as it relates to design, fitting and dispensing of spectacles and contact lenses.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to program.

OPT-1320 Theoretical Optics II**02 Semester Credits**

Study of theories of light, geometric laws of refraction, modern lens theory, and construction as it relates to finishing, surfacing, and dispensing of complex and special lens types. Includes calculation of refractive errors, corrective methods and calculating American National Standards Institute (ANSI) standards for complex ophthalmic eyewear.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): OPT-1310 Theoretical Optics I.

OPT-1410 Mechanical Optics I**02 Semester Credits**

Apply knowledge of the production flow, equipment use, and materials used in an optical finishing laboratory. Basic laboratory concepts and manipulative skills required to make a pair of single vision eyewear. Includes topics on laboratory safety, personal safety, application of machine and instrument maintenance.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): Departmental approval: admission to program.

OPT-1420 Mechanical Optics II**02 Semester Credits**

Apply knowledge of the production flow, equipment use, and materials used in an optical finishing laboratory. Basic laboratory concepts and manipulative skills required to make a pair of multifocal vision eyewear. Includes topics on laboratory safety, personal safety, application of machine and instrument maintenance.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): OPT-1410 Mechanical Optics I.

OPT-1510 Optical Dispensing I**03 Semester Credits**

Introduction, history, and development of modern opticianry, spectacles, and fitting procedures. Principles of interpersonal relationships. Instruction in basic frame types and parts.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval: admission to Optical Technology Program.

OPT-1520 Optical Dispensing II**03 Semester Credits**

Beginning principles of design, fitting, verification and dispensing of spectacles.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): OPT-1510 Optical Dispensing I.

OPT-1610 Contact Lens I**02 Semester Credits**

Focuses on history of contact lenses, differences between hard and soft contact lenses, and physical and physiological properties of contact lenses.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to the program.

OPT-1620 Contact Lens II**03 Semester Credits**

Principles of operation and design of instruments applicable to fitting of contact lenses. Optical principles and materials applicable to design processes and relationship to physical condition and structure of the eye in its abnormal state.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): OPT-1610 Contact Lens I.

OPT-1710 Introduction to Patient Care**03 Semester Credits**

Introduction to basic ophthalmic patient care procedures, metric conversion, basic optics, lensometry, ocular terminology and the fundamentals of microbial control.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

OPT-1720 Advanced Patient Care**03 Semester Credits**

Study of skills that are important to an allied health professional in the field of Ophthalmology such as refraction, tonometry, depth perception, pupillary evaluation, and instrument maintenance. Designed to prepare the student to work within an Ophthalmological practice as well as pursue certification as an Ophthalmic Assistant.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): OPT-1710 Introduction to Patient Care.

OPT-1911 Ophthalmic Assisting Directed Practice**04 Semester Credits**

Application of learned ophthalmic assisting techniques in a clinical setting. Emphasis on records keeping, preliminary examination of the eye, cleaning and disinfection of equipment, ophthalmic pharmacology, and professionalism.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 30 hours per week for the duration of 16 weeks.

Prerequisite(s): Concurrent enrollment in OPT-1720 Advanced Patient Care.

OPT-2501 Optical Business

03 Semester Credits

Covers organizations, sales, third party insurance, inventory, hiring and supervision. Interpret financial data; set sales goals; evaluate inventory control systems; attracting and retaining superior employees.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

OPT-2550 Advanced Optical Dispensing Lab

01 Semester Credit

Development of advanced dispensing techniques including troubleshooting, advanced lens design, advanced fitting theory and repair techniques.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): OPT-1520 Optical Dispensing II.

OPT-2650 License Review Spectacle

01 Semester Credit

Focus on key optical concepts as they relate to spectacles with in-depth look at theory, optical nomenclature, and test domains outlined by American Board of Opticianry Exam.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

OPT-2660 License Review Contact Lens

01 Semester Credit

Focus on key optical concepts as they relate to contact lenses with in-depth look at theory, optical nomenclature, and test domains outlined by the National Contact Lens Exam.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

OPT-2670 Optical Development

02 Semester Credits

Focus on key industry updates as they relate to opticianry and the health care profession. Noted guest speakers in industry will discuss present day realities of opticianry and health care profession.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

OPT-2701 Refractometry

03 Semester Credits

Entry-level knowledge of theory and performance of refraction as it relates to human eye. Study of ocular structures, ametropia neutralization, astigmatism, objective and subjective refraction, anomalies of vision, and clinical refraction and retinoscopy.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): OPT-1710 Introduction to Patient Care, or departmental approval.

OPT-2750 Ophthalmic Third Party Insurance

01 Semester Credit

Specialized study of third party insurance as it relates to Ophthalmology and Optical Dispensing. Discussion of the interpretation of ophthalmic benefits and proper submission of claims form to ophthalmic third party insurance providers.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I.

OPT-2940 Optical Field Experience I

02 Semester Credits

Supervised field experience in an ophthalmic health care setting designed to emphasize role of dispensing optician. Students gain exposure to professional practice through direct supervision by a licensed optician. Expect students to demonstrate advancing assessment skills and assume more individual responsibility as member of an ophthalmic department.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 24 hours per week for 16 Weeks (384 hours per semester)

Prerequisite(s): Concurrent enrollment in OPT-2971 Optical Field Experience Seminar I.

OPT-2950 Optical Field Experience II

02 Semester Credits

Supervised field experience in a clinical ophthalmic setting designed to emphasize role of dispensing optician. Students assigned to clinical sites under direct supervision of licensed optician. Students take on advanced responsibilities and have more input into decision making process. Demonstrate advanced assessment skills in patient care and business management and assume more individual responsibility as member of optical team.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 24 hours per week for 16 Weeks (384 hours per semester)

Prerequisite(s): OPT-2940 Optical Field Experience I, and concurrent enrollment in OPT-2971 Optical Field Experience Seminar I.

OPT-2971 Optical Field Experience Seminar I

03 Semester Credits

Integrates concepts and knowledge gained from field experience rotations into total learning process. Focuses on patient and professional communication and lifelong learning. Discusses current issues.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Seminar: 3 hours per week.

Prerequisite(s): Concurrent enrollment in OPT-2940 Optical Field Experience I.

OPT-2981 Optical Field Experience Seminar II
03 Semester Credits

Capstone course in Optical Technology. Integrates advanced concepts and knowledge gained from field experience into total learning process. Focus on organization of health care delivery system. Use of more advanced skills and management techniques, payroll, hiring, termination skills, and labor relations. Discussions on current issues included.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Seminar: 3 hours per week.

Prerequisite(s): Concurrent enrollment in OPT-2950 Optical Field Experience II.

PARALEGAL STUDIES - PL

PL-1001 Introduction to Paralegal Profession
03 Semester Credits

Introduction to the practical aspects of working within the paralegal field. Instruction includes the legal status of paralegals, ethical constraints placed upon those in the legal profession, sources of American law, an overview of the U.S. legal system, legal settings, and paralegal skills, including organizational skills and attention to detail, with particular emphasis on legal writing. Students are encouraged to begin professional development, including membership in paralegal organizations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

PL-1010 Introduction to Legal Writing
02 Semester Credits

Introduces paralegal students to a systematic approach to legal writing, including grammar and word usage. Categories of legal writing will include client letters, private documents, and pleadings.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

PL-1300 Civil Procedure
03 Semester Credits

Examine Rules of Courts which govern civil lawsuits, with emphasis on the Ohio Rules of Civil Procedure. Analyze and apply rules pertaining to commencement of action, service, motion practice, discovery issues (including Federal Rules pertaining to e-Discovery), and appellate practice. Students begin portfolio of legal documents developed throughout program of study. Survey alternatives to litigation such as arbitration, negotiation, and mediation.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I; and PL-1001 Introduction to Paralegal Profession or concurrent enrollment.

PL-1400 Basic Legal Research and Writing
03 Semester Credits

Introduction to skills essential to effective identification, analysis and research of legal issues. Students learn to formulate research plans that require efficient use of basic research tools to locate primary and secondary authority. Practice in accessing sources, in print and online, commonly used by state court system and drafting projects, such as in-house legal memorandum and opinion letter, consistent with professional standards of style and citation. Emphasis on validating research and quickly accessing statutory and case law.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): ENG-1010 College Composition I and PL-1001 Introduction to Paralegal Profession.

PL-1460 Workers' Compensation Law
03 Semester Credits

[This course is cross-listed as BADM-1460. Credit can only be earned once for either course.] Study of Ohio Bureau of Workers' Compensation and Industrial Commission of Ohio, with emphasis on claims and procedures involving injured workers and benefits available. Preparation of injured worker forms and employer forms. Practice in calculating compensation for injuries, determining and preparing employer defenses, and determining and creating both injured worker and employer appeals.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

PL-1502 Law Office Technology
03 Semester Credits

Designed for student already conversant with basic functions of word processing, presentation software, database management, and spreadsheet design. Student will perform advanced word processing, spreadsheet and presentation operations to create and manage legal documents and files. Focus on use of computers related to paralegal functions in timekeeping, docket control, litigation support, and case management. Activities constructed to replicate law office experiences and tasks, including E-Discovery fact-finding simulations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): IT-1010 Introduction to Microcomputer Applications, or departmental approval: equivalent experience or skills.

PL-1600 Alternative Dispute Resolution

02 Semester Credits

Description and overview of a variety of dispute resolution mechanisms, including litigation, voluntary arbitration, court-annexed or mandatory arbitration, negotiation, and mediation, in order to demonstrate their interrelationships and their use in the American legal system. Paralegal involvement will be discussed in the context of each of these techniques.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

PL-1700 Employment Law

03 Semester Credits

Emphasizes both statutory and common laws, which govern the employment relationship. Specific attention is given to the laws that create, as well as terminate the employment relationship, documentation of employment practices, and litigation of employment-related claims, including discrimination and wrongful termination. Research involving the laws governing the rights of the employer and the employee regarding privacy in the work place. Emphasis on client interviewing as a role of the paralegal in the employment litigation process.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I.

PL-1710 Immigration Law and Procedure

03 Semester Credits

Introduces students to immigration law as an integral part of the administrative process affecting a multitude of socio-economic and geo-political disciplines in the United States and abroad. Reviews substantive immigration law and procedure as it relates to non-immigrants and immigrants.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PL-1001 Introduction to Paralegal Profession.

PL-1720 Elder Law & Estate Planning

03 Semester Credits

Introduction to the paralegal concepts and documents used in pre-death estate planning and issues in regards to the elderly. Wills, Trusts, Powers of Attorney, the unified gift/estate tax, gifting options, Social Security, and the methods and advantages/disadvantages of avoiding probate. Covers the documentation regarding guardianship, living wills, and health care powers of attorney, along with medical and care options of the elderly, including Medicare options and Medicaid.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PL-1001 Introduction to Paralegal Profession, or concurrent enrollment, and ENG-1010 College Composition I, or concurrent enrollment; or departmental approval: permission from program manager.

PL-1730 Criminal Law for Paralegals

03 Semester Credits

Introduction to the American Criminal Justice System and the role of the paralegal in that system. Criminal law and procedure will be explored along with legal documents relevant to criminal law practice.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PL-1001 Introduction to Paralegal Profession, or concurrent enrollment; and ENG-1010 College Composition I, or concurrent enrollment; or departmental approval: permission from program manager.

PL-2000 Law Office Administration

02 Semester Credits

Fundamentals of law office management and organization. Includes basic principles and structure of management, employment opportunities for paralegal, accounting systems, marketing issues, administrative and substantive systems in law office, and law practice technology.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): Departmental approval or admission to program.

PL-2030 Legal Nurse Consulting

02 Semester Credits

Study of functions of Legal Nurse Consultant and exploration of career opportunities available. Focus on applicable principles of medical and legal ethics and how to apply them to professional situations.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

PL-2301 Torts and Evidence

04 Semester Credits

Fundamental principles of tort law (personal injury, malpractice, intentional tort, and products liability) to explore paralegal responsibilities in trial setting. Students collect and prepare evidence according to Ohio and Federal rules of evidence.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): PL-1300 Civil Procedure, and PL-1400 Basic Legal Research and Writing.

PL-2330 Advanced Medicolegal Research

03 Semester Credits

Lexis, Medline, and Internet research. Emphasis on legal and medical resources using legal and medical databases online, including the internet. Focuses on medical research used in determining appropriate standards of care and medical research tools.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): PL-2030 Legal Nurse Consulting, and PL-1400 Basic Legal Research and Writing, or concurrent enrollment.

PL-2400 Computer-Assisted Legal Research**03 Semester Credits**

Advancement of skills learned in Basic Legal Research & Writing with advanced research assignments using Internet and computer resources for research of state and federal cases, codes, administrative regulations, factual information and secondary authorities. Assess legal problems, locate authority and law-related resources on the Internet. Utilize legal specialty Internet resources as well as LEXIS® and/or Westlaw®. Prepare an appellate brief, using Ohio Citation format.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PL-1400 Basic Legal Research and Writing; or departmental approval.

PL-2410 Intellectual Property**03 Semester Credits**

Overview of intellectual property, including review of basics of personal property law, contract law and how and why each relates to ownership and transfer of intellectual property. Examination of trade secrets, patents, trademarks and service marks, and copyrights. Discussion of what is protected, duration of protection, fair use doctrine, and theft of service statutes.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PL-1300 Civil Procedure, and PL-1400 Basic Legal Research and Writing.

PL-2420 Probate Law**03 Semester Credits**

Survey common forms of estate administration with focus on study of Ohio Probate Code relating to post-mortem estate administration. Define procedure for estate administration including discovery and determination of assets, appointment of fiduciary, taxation and transfer of property from decedent to beneficiaries. Define modes of property ownership.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PL-1300 Civil Procedure, and PL-1400 Basic Legal Research and Writing.

PL-2430 Medical Record Review and Analysis**04 Semester Credits**

Study of production and preparation of medical record summaries. Focus on performance of investigative functions and witness preparation. Includes identifying standards of care; accessing, interpreting, and summarizing medical records; and interviewing clients, medical witnesses and experts. Lab component offers variety of computer and professional experience. Continued development of professional portfolio.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): PL-2301 Torts and Evidence or concurrent enrollment; and PL-2330 Advanced Medicolegal Research or concurrent enrollment.

PL-2440 Business Transactions**03 Semester Credits**

Introduction to the laws that structure various business relationships such as agency, contracts, bailments, sales, secured transactions and commercial paper. Utilization of appropriate forms to structure such relationships.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PL-1300 Civil Procedure, and PL-1400 Basic Legal Research and Writing.

PL-2460 Business Organizations**03 Semester Credits**

Introduction to various business entities including sole proprietorships, partnerships, corporations, and licensed professional associations. Drafting of partnership agreements and incorporation documents. Introduction to tax consideration and Securities and Exchange Commission ramifications.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PL-1300 Civil Procedure or concurrent enrollment, and PL-1400 Basic Legal Research and Writing or concurrent enrollment.

PL-2510 Juvenile Law**02 Semester Credits**

Designed to train students to effectively assist the juvenile law practitioner. Topics covered include abuse-neglect-dependency; juvenile delinquency; custody, support, and visitation issues; and paternity. The student will learn the basics of Ohio juvenile law, and how to analyze juvenile issues. Students will survey and discuss current and ongoing juvenile law-related issues of importance and concern.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): PL-1300 Civil Procedure.

PL-2520 Debtor/Creditor Law**03 Semester Credits**

Study of basic legal principles governing rights and duties of debtors and creditors. Introduction to the Law of Bankruptcy, specifically Chapters 7, 11 and 13 of the United States Bankruptcy Code and applicable Ohio law. Preparation of bankruptcy petitions, related schedules and documents needed for initial filing of petitions. Debt counseling protection, compromise and collection techniques including garnishment, foreclosure and attachment of personal property explored.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PL-1300 Civil Procedure, and PL-1400 Basic Legal Research and Writing.

PL-2530 Marketing and Management for the Legal Nurse Consultant

01 Semester Credit

Development of skills necessary to be independent consultant. Focus on marketing techniques, client development, case management, billing, promotional tools, and tax implications for legal nurse consultant.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): PL-1300 Civil Procedure, PL-2430 Medical Record Review and Analysis or concurrent enrollment.

PL-2540 Family Law

03 Semester Credits

Basic principles and trends in Family Law including marriage, annulment, dissolution, divorce, child support, child custody, visitation, paternity, surrogacy and adoption. Emphasis on ethical issues, drafting of appropriate documents, preparing discovery, court proceedings, computer-assisted calculations, and conducting interviews to obtain sensitive client information.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PL-1300 Civil Procedure.

PL-2560 Advanced Litigation

03 Semester Credits

Preparation of case for litigation using creation of trial notebook and mock trial. Students gather, draft, organize and summarize trial documents and prepare for courtroom demonstration of litigation process.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PL-1300 Civil Procedure, PL-1400 Basic Legal Research and Writing, and PL-2301 Torts and Evidence.

PL-2851 Paralegal Practicum

01 Semester Credit

Provides supervised work experience in law firm or other legal setting. Student obtains actual work experience by performing paralegal duties under direct supervision of attorney and/or paralegal.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 10 hours per week.

Prerequisite(s): Concurrent enrollment in PL-2990 Paralegal Capstone, and departmental approval: completion of all required courses and completion of all program requirements.

PL-2991 Paralegal Capstone

01 Semester Credit

Capstone course in Paralegal Studies. This course is designed to ready the student for entry into the legal community through intensive study of the paralegal profession and additional development of the student's organizational, communication and critical analysis skills using modalities such as portfolio preparation, mock

interviews and advanced research and writing assignments.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: completion, or in process of completion, of all required courses and completion of all program requirements.

PHARMACY TECHNOLOGY - PHM

PHM-1300 Introduction to Pharmacy Practice

03 Semester Credits

Overview of fundamentals of pharmacy practice including technician's role in drug distribution in various settings, pharmacy abbreviations and terminology, management, organizations, information resources, regulations, law and ethics.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0990 Language Fundamentals II or eligibility for ENG-1010 College Composition I by placement testing or prior coursework.

CTAN Approved: CPT001 (2 of 2 courses)

PHM-1350 Pharmacy Practice I

03 Semester Credits

Overview of fundamentals of pharmacy practice in various practice settings with respect to safe and accurate preparation and distribution of sterile and non-sterile topical and parenteral medications. Students learn the technician's role in drug preparation, drug packaging, and drug labeling.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval: admission to program.

PHM-1360 Pharmacy Practice II

03 Semester Credits

Fundamentals of pharmacy practice including technician's role in drug distribution in community, home health care, nursing home, and alternative practice settings. Focuses on oral and topical dosage forms including handling, preparation, packaging, labeling, and distribution.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): PHM-1350 Pharmacy Practice I, or departmental approval.

PHM-1450 Pharmacology and Therapeutic Principles I

03 Semester Credits

Overview of fundamentals of pharmacology including drug classification, brand and generic drug nomenclature, common drug therapy associated with various disease states, drug indications, side effects, and parameters for safe drug usage.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: admission to program.

PHM-1460 Pharmacology and Therapeutic Principles II
03 Semester Credits

Fundamentals of pharmacology including drug classification, brand and generic drug nomenclature, common drug therapy associated with various disease states, drug indications, side effects, and parameters for safe drug usage.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PHM-1450 Pharmacology and Therapeutic Principles I, or departmental approval.

PHM-1750 Medication Calculations**01 Semester Credit**

Applications and activities to build skills in medication calculations, conversions, and measurements for pharmacy, nursing, and allied health. Includes metric system, formula manipulation, solving algebraic equations and systems, children's dosages, body surface area (BSA), and weight-based dose calculations. Basic skill reviews on fractions, ratios and percentages.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): MATH-0955 Beginning Algebra; or appropriate math placement score; or departmental approval.

PHM-1860 Pharmacy Technology Practicum I**03 Semester Credits**

Supervised practical field experience designed to emphasize role of technician in various traditional practice settings. Students assigned to practicum training sites and work under direct supervision of registered pharmacists and certified pharmacy technicians to gain exposure to professional practices.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 14 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): PHM-1300 Introduction to Pharmacy Practice, PHM-1350 Pharmacy Practice I, PHM-1450 Pharmacology and Therapeutic Principles I, and departmental approval: site assignments.

PHM-2080 Pharmacy Technician Examination Review**01 Semester Credit**

Global review of pharmacy practice, pharmacy law, pharmacology, compounding, and calculations. Test taking skills and registration procedure covered. Special focus on exam content outline topics to assist student preparing to take certification examinations for pharmacy technicians.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): PHM-1360 Pharmacy Practice II, or concurrent enrollment or departmental approval may be extended to students with adequate documentation showing familiarity with pharmacy practice and ability to perform calculations.

PHM-2701 Current Topics in Pharmacy Practice**04 Semester Credits**

Capstone course in Pharmacy Technology. Current topics and changes in practice of pharmacy detailed. Among topics discussed: current advances in medications; changing role of pharmacist and pharmacy technician; review of pharmaceutical calculations, substance abuse, biotechnology, AIDS and other communicable diseases; current health issues facing men, women, and children of diverse cultures; drug approval process; critical thinking and problem solving in pharmacy practice; consumer awareness of natural products including current information on herbal products, medication errors, and current status of automation in pharmacy.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): PHM-1350 Pharmacy Practice I, PHM-1360 Pharmacy Practice II, PHM-1860 Pharmacy Technology Practicum I, and departmental approval.

PHM-2860 Pharmacy Technology Practicum II**03 Semester Credits**

Supervised practical field experience. Emphasis on role of technician in various traditional and non-traditional practice settings. Students assigned to practicum training sites and work under direct supervision of registered pharmacists and certified pharmacy technicians to gain exposure to professional pharmacy practices. Students expected to assume more responsibility and work with less individualized attention.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 14 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): PHM-1860 Pharmacy Technology Practicum I, PHM-2701 Current Topics in Pharmacy Practice or concurrent enrollment, and departmental approval.

PHM-2870 Pharmacy Technology Practicum III**03 Semester Credits**

Supervised practical field experience. For students who need additional experience in IV admixture, sterile technique, or other advanced pharmacy practice.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 14 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): PHM-2860 Pharmacy Technology Practicum II, and departmental approval.

PHILOSOPHY - PHIL

PHIL-1000 Critical Thinking
03 Semester Credits

Principles of critical and creative thinking with emphasis on practical applications using theories to improve the quality of mindfulness. Incorporation of skillful analysis, assessment and communication in the problem-solving process.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PHIL-1010 Introduction to Philosophy
03 Semester Credits

Basic concepts, reasoning skills, and attitudes employed in philosophical inquiry. Study and analysis of perennial philosophical problems through critical examination of writings of classical and contemporary philosophers. Preparation for further work in philosophy and any area of learning requiring reasoned views.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I.

OAN Approved: OAH045

PHIL-101H Honors Introduction to Philosophy
03 Semester Credits

Introduction to basic concepts, reasoning skills, and attitudes employed in philosophical inquiry. Study and analysis of perennial philosophical problems through critical examination of writings of classical and contemporary philosophers. Emphasis on an in-depth study of primary sources within philosophical tradition. Prepares students for further work in philosophy and any area of learning requiring reasoned views.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval or eligibility for ENG-101H Honors College Composition I.

OAN Approved: OAH045

PHIL-1020 Introduction to Logic
03 Semester Credits

Introduction to evaluation of arguments. Concentration on basic principles of formal logic and application to evaluation of arguments. Explores notions of implication and proof and use of modern techniques of analysis including logical symbolism.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PHIL-179H Honors Contract in Philosophy
01 Semester Credit

Honors Contract complements and exceeds the requirements and objectives for an existing PHIL 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order

to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions. May be repeated for a maximum of six credits of different topics.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Must be taken concurrently with a 1000-level honors course in Philosophy, whose instructor approves the Honors Contract.

PHIL-2010 Comparative World Religions
03 Semester Credits

Study of origin, nature, and meaning of major world religions: Judaism, Christianity, Islam, Buddhism, Hinduism and Confucianism.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PHIL-2020 Ethics
03 Semester Credits

Study of systems and problems of human conduct with applications to moral problems and decisions. Prepares students with work in philosophy, applied ethics, and any area of learning requiring reasoned views.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I.

OAN Approved: OAH046

PHIL-202H Honors Ethics
03 Semester Credits

Study of systems and problems of human conduct with applications to moral problems and decisions. Emphasis on an in-depth study of primary sources within philosophical tradition. Prepares students for further work in philosophy, applied ethics, and any area of learning requiring reasoned views.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I with a grade of "B" or higher, or ENG-101H Honors College Composition I, or departmental approval.

OAN Approved: OAH046

PHIL-2031 Philosophy of Science
03 Semester Credits

Study of concept formation in science and examination of patterns of scientific investigation and method. Treatment of concepts such as observation, classification, causality, law of nature, explanation, and theory.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I or departmental approval.

PHIL-2040 Philosophy of Art

03 Semester Credits

Examination of types of art theories, their implications for art interpretation, art criticism, creative activity of artist, and appreciation of art objects.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PHIL-2050 Bioethics

03 Semester Credits

Study and analysis of moral philosophy as applied to issues in healthcare with emphasis on developing students' abilities to correctly identify moral problems and defend their moral judgments.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PHIL-205H Honors Bioethics

03 Semester Credits

An in-depth study and analysis of moral philosophy as applied to issues in health and life sciences with emphasis on developing students' abilities to correctly identify moral problems and defend their moral judgments.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-101H Honors College Composition I, or departmental approval.

PHIL-2060 Business Ethics

03 Semester Credits

Application of moral philosophy including ethical theories and moral principles to issues in business and other organizations with an emphasis on developing the student's ability to identify and analyze ethical issues.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PHIL-208H Honors Social Justice

03 Semester Credits

An advanced intensive study of systems and problems of human conduct with practical application and decision making components. Emphasis on an in-depth study of primary sources within philosophical tradition. Prepares students for further work in philosophy, applied ethics, and any area of learning requiring reasoned views. Participants will select a theme that addresses questions of social justice and civic responsibility. Mentor supported, student-directed study, seminars and excursions will serve as basis for examination of the chosen theme. Students will create theme-related project proposals for eventual presentation.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-101H Honors College Composition I, or departmental approval: 3.5 GPA.

PHYSICAL EDUCATION - PE

PE-1000 Personal Fitness

02 Semester Credits

Introduction to techniques, principles and benefits of personal conditioning program including flexibility, cardiovascular fitness and muscle endurance training.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

CTAN Approved: CTBPO

PE-1010 Personal Strength Development

02 Semester Credits

Activities which incorporate the five components of fitness: body composition, cardiovascular fitness, muscle strength, muscle endurance and flexibility with emphasis on strength training.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

PE-1020 Weight Training

01 Semester Credit

Basic instruction in theory of using weights to improve muscular fitness and in fundamentals of correct lifting techniques using dumbbells, nautilus, universal and/or various other machines.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1031 Introduction to Lifetime Fitness I

02 Semester Credits

Participation in basic total wellness/fitness education program. Through instruction, supervision, and evaluation, student will exercise with increased knowledge on how to develop a safe fitness program for his/her goals and needs.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

PE-1041 Introduction to Lifetime Fitness II

01 Semester Credit

Designed for students who have completed PE-1031 Introduction to Lifetime Fitness I; PE-1000 Personal Fitness; or PE-1010 Personal Strength Development and desire a more individualized total wellness/fitness education program.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): PE-1031 Introduction to Lifetime Fitness I, or PE-1000 Personal Fitness, or PE-1010 Personal Strength Development.

Physical Education

PE-1051 Adapted Lifetime Fitness

01 Semester Credit

Designed for student who desires to participate in individualized circuit training program and has physical limitations which prevent participation in individualized current fitness courses. Students must be registered with the Access Office to enroll. Contact campus director for physical education.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): Departmental approval: must be registered with Access Office.

PE-1060 Cardio-Fitness

01 Semester Credit

Cardio/respiratory conditioning class, consisting of flexibility and aerobic conditioning exercises and use of variety of training machines.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1070 Walking/Jogging

01 Semester Credit

Introduces walking/jogging activities including warm-up, stretching, and cool down.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1080 Low Impact Aerobics

01 Semester Credit

Instruction and practice in aerobic dance movements which involve minimum stress of joints. Includes exercises to improve cardiovascular fitness, flexibility, and muscle tone.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1100 Step Aerobics

01 Semester Credit

Instruction and practice in aerobic dance movements utilizing a step with emphasis on individual performance levels including techniques to improve cardiovascular fitness, flexibility, muscle tone and strength.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1110 Intermediate Step Aerobics

01 Semester Credit

Emphasizes aerobic dance movements utilizing a step with emphasis on individual performance levels. Students should have step aerobics experience and knowledge of basic step movements and terminology.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): Departmental approval: comparable skills.

PE-1120 Adapted Physical Education

01 Semester Credit

Individualized program for students with temporary or permanent physical limitations. Contact campus director of physical education for registration procedures.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): Must be registered with Access Office.

PE-1130 Archery

01 Semester Credit

Instruction and practice for skill development, safety procedures, equipment care and value as a lifetime activity.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1140 Bowling

01 Semester Credit

Instruction and participation in bowling fundamental skills course.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1150 Golf for Beginners

01 Semester Credit

Instruction in and development of skills, fundamentals of the swing and physical skills of the game.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1160 Golf for Players

01 Semester Credit

Advanced class in golf emphasizing playing game of golf and improving already learned skills. Most of class time scheduled off-campus.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): PE-1150 Golf for Beginners, or departmental approval: comparable skill.

PE-1190 Self-Defense I

01 Semester Credit

Instruction, practice and skill development in basic self-defense. Students gain appreciation of fitness and self-discipline.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

CTAN Approved: CTBPO

PE-1215 Snowboarding

01 Semester Credit

Development of basic skills of snowboarding, selection and use of equipment, terminology, and safety rules. Extra fee required for off-site snowboarding.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1220 Skiing**01 Semester Credit**

Development of basic skiing techniques and safety practices and appreciation of skiing as lifetime activity. Extra fee required for off-site skiing.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1230 Tennis for Beginners**01 Semester Credit**

Instruction, practice and skill development of tennis as lifetime activity. Scoring, rules and etiquette of tennis included.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1240 Tennis for Players**01 Semester Credit**

Instruction, practice and skill development in tennis with emphasis on Singles and Doubles competition. Additional instruction and drills of beginners skills included.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): PE-1230 Tennis for Beginners, or departmental approval.

PE-1260 Basketball**01 Semester Credit**

Introduction to fundamentals of basketball for men and women. Rules, safety, and basketball skills stressed.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1270 Softball**01 Semester Credit**

Instruction and participation in softball for men and women. Basic softball skills, rules and game strategy stressed.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1280 Soccer**01 Semester Credit**

Instruction and participation in soccer for men and women. Basic soccer skills, rules and game strategy stressed.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1290 Volleyball**01 Semester Credit**

For men and women. Instruction and practice of volleyball skills including safety procedures, competitive experience, and appreciation of volleyball as lifetime activity.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1300 Aqua Fitness**01 Semester Credit**

Non-swimming water fitness class. Includes various types of water workouts in both the shallow and deep ends, cardio and toning components. Swimming skills not required.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1310 Shallow Water Exercise**01 Semester Credit**

Shallow water exercises to improve aerobic fitness, muscle tone and flexibility.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1320 Deep Water Exercise**01 Semester Credit**

Cardiovascular exercises, muscle toning, strengthening, and flexibility in deep water. Requires students to be comfortable in deep water wearing a buoyancy device.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1330 Swimming I**01 Semester Credit**

Fundamental swimming skills for non-swimmers and shallow water swimmers including water adjustment, floating, breathing techniques, basic swimming strokes, and water safety skills.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1340 Swimming II**01 Semester Credit**

Swimming for the intermediate and advanced swimmer in the development and/or refinement of a wide variety of swimming strokes. Includes front and back crawl, backstroke, breaststroke, butterfly, sidestroke, elementary backstroke, underwater swimming, turns, and diving. Also includes water safety skills, deep water entry, and treading water.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): PE-1330 Swimming I, or departmental approval: equivalent skill.

PE-1370 Cardio Kickboxing**01 Semester Credit**

Instruction and practice in a kickboxing/martial arts fitness based program. Emphasis on proper technique, safe kicks, punches, and combinations. Kickboxing movements performed to improve aerobic endurance, flexibility, balance, muscle strength and tone. Instruction and practice with kickboxing bags and gloves included.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

Physical Education

PE-1380 Aqua Kickboxing

01 Semester Credit

Traditional kickboxing moves, adapted for the water, conducted in both the shallow and deep ends. Swimming skill is NOT required.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1390 Horsemanship

01 Semester Credit

Instruction and practice for skill in the basics of horseback riding at the walk, trot, canter and trail riding. Basic knowledge of riding equipment, the tack (western), parts and health management of the horse.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1400 Whitewater Rafting

02 Semester Credits

Introduction to outdoor activities including instruction and participation in specific areas such as whitewater rafting, canoeing, or sailing. Includes lecture sessions in preparation for outdoor experience. Activity may include weekend and/or overnight participation. Additional laboratory fees vary according to activity. Check course schedule for specific information.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): Departmental approval.

PE-1410 Backpacking

02 Semester Credits

Introduction to outdoor activities, including instruction and participation in specific areas such as backpacking, hiking and orienteering. Includes lecture sessions in preparation for the outdoor experience. Weekend and/or overnight participation required.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): Departmental approval: physical fitness test.

PE-1421 Camping

02 Semester Credits

Fundamental class in camping designed to develop basic knowledge and skills pertinent to safe and enjoyable camping. Activity may include weekend and/or overnight participation. Additional laboratory fees vary according to activity. Check current Credit Schedule for specific information.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): None.

PE-1430 Physical Relaxation Techniques

01 Semester Credit

Introduces the student to basic physical techniques of relaxation including breathing, Jon Kabut-Zinn's body scan method, active and passive meditation. Includes awareness of body tension and stressors.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1440 Yoga

01 Semester Credit

Emphasis on basic Hatha yoga practice consisting of pranayama (breath control), asanas (postures), vinyasa (flow of postures), mantra (chanting), mudra (hand positioning) and dhyana (meditation) to benefit and bring balance to the body, mind, and spirit. Introduction to basic yoga philosophies also included.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1450 Intermediate Yoga

01 Semester Credit

Emphasis on various Hatha yoga practices at the intermediate and advanced levels. The class will consist of intermediate and advanced pranayama (breath control), asanas (postures), vinyasa (flow of postures), mantra (chanting), and dhyana (meditation) to benefit and bring balance to the body, mind, and spirit.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1460 Pilates

01 Semester Credit

Emphasis on proper breathing, core strength, kinesthetic awareness, mind over muscle, strengthening of opposing muscle groups and disease prevention as it relates to stress.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

PE-1470 Core Strength

01 Semester Credit

Focuses on strengthening the core muscles of the trunk of the body and improving balance. Consists of a warm up, conditioning segment using body weight, stability balls, and other core conditioning equipment, and concludes with a stretching segment.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1480 Yoga and Pilates

01 Semester Credit

Provides instruction, information, and exploration about the mind-body systems of yoga and pilates, with emphasis on physical exercise, relaxation, mindfulness, and self-awareness.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1490 Tai Chi

01 Semester Credit

Explores the traditional Chinese exercise of Tai Chi. Provides for the development of basic skills and techniques that lead toward an integration of mind and body to enhance fitness, health, and well-being. Focus is on the Yang style of 24 forms.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1510 Beginner Middle Eastern Belly Dance**01 Semester Credit**

Emphasizes beginner and advanced beginner Middle Eastern belly dance movements and patterns. Provides an overall body workout to improve and enhance cardiovascular fitness, muscle tone, coordination, balance and self-esteem. No prior experience is required.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1520 Intermediate Middle Eastern Belly Dance**01 Semester Credit**

This course will focus on Middle Eastern belly dance movements, patterns, and combinations at the intermediate and advanced levels. Emphasis will be on movements that enhance coordination, balance, flexibility, muscle tone, cardiorespiratory fitness, and self-confidence. Prior experience in Middle Eastern belly dance is required.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): PE-1510 Beginner Middle Eastern Belly Dance or departmental approval.

PE-1530 Zumba**01 Semester Credit**

Zumba is an aerobic exercise program with choreographed movement routines, featuring fast and slow Latin rhythms. Emphasizes cardiorespiratory fitness, muscular strength and toning, and proper, effective, and safe Zumba techniques at the beginner/advanced beginner level.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1540 Body Toning**01 Semester Credit**

Instruction, practice, and participation in group exercise class consisting of total-body muscular strength and endurance exercises using a variety of equipment and methods.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-1550 Hula Hoop Fitness**01 Semester Credit**

A low intensity aerobic exercise program that incorporates core and off-body hoop dance skill training. Students will learn choreographed hoop dance routines and drills targeting large muscle groups featuring a variety of rhythms. Introduces hoop dance and toning exercises at the beginner and intermediate levels.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): None.

PE-2000 Lifeguard Training**02 Semester Credits**

Minimum skills training to qualify individuals as nonsurf lifeguard with certification from the American Red Cross in Lifeguard, First Aid and CPR for the Professional Rescuer.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): Departmental approval: swimming test defined by Red Cross.

PE-2010 Lifeguard Instructor**02 Semester Credits**

Focuses on teaching skills contained in the American Red Cross Lifeguarding, First Aid, CPR for the Professional Rescuer and Community Water Safety courses with American Red Cross certification as a Lifeguard and CPR for Professional Rescuer Instructor.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): Departmental approval: 17 years of age by end of class; demonstrate knowledge of lifeguarding and CPR skills.

PE-2020 Water Safety Instructor**02 Semester Credits**

Instruction in teaching all skills and courses in the American Red Cross Learn-To-Swim program, Parent and Child Aquatics, Water Safety Courses, and Longfellow's Whale Tales. Includes American Red Cross certification.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): Must be 16 years of age by end of course.

Demonstrate the ability to perform the following swimming skills consistent with Stroke Performance charts, level 4: front crawl, back crawl, breaststroke, elementary backstroke and side stroke-25 yards each and butterfly 15 yards.

PE-2100 Personal Training**02 Semester Credits**

Preparation to pass typical national examination for certification as a personal trainer. Covers anatomy, physiology, biomechanics, strength and fitness theory, performance and weight management, exercise programming, and developing a client base.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): PE-1000 Personal Fitness, or departmental approval: based on comparable experience. (First Aid and CPR certifications are required by most personal training accrediting bodies.)

PHYSICAL SCIENCE - PSCI**PSCI-1010 Astronomy****03 Semester Credits**

[This course is cross-listed as PHYS-1010. Credit can only be earned once for either course.] Survey of astronomy. History of astronomy, planets, asteroids and comets, the sun, stars, galaxies, and cosmology. Contemporary issues and developments in astronomy and space science. Intended for non-science majors. To fulfill laboratory science requirements, students should enroll in related laboratory course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

PSCI-101L Astronomy Laboratory**01 Semester Credit**

[This course is cross-listed as PHYS-101L. Credit can only be earned once for either course.] Intended for non-science majors. Exercises on measurements, optics, telescopes, the sun, constellations, and other related astronomy topics. Laboratory activities complement and enrich related lecture course.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): PSCI-1010 Astronomy or concurrent enrollment.

PSCI-1020 Chemistry**03 Semester Credits**

[This course is cross-listed as CHEM-1000. Credit can only be earned once for either course.] Survey of chemistry as related to environment, health and nutrition, and application of chemical knowledge that affect quality of life. Basic concepts and applications of chemistry: consumer chemistry, periodicity, acids and bases, medicines and drugs, pollution and conservation. Intended for non-science majors. To fulfill laboratory science requirement, student should enroll in related laboratory course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990-Language Fundamentals II; or departmental approval.

PSCI-102L Chemistry Laboratory**01 Semester Credit**

[This course is cross-listed as CHEM-100L. Credit can only be earned once for either course.] Intended for non-science majors. Exercises on measurements, separation and synthesis methods, reaction rates, water analysis, household chemistry, forensic and environmental issues, and other related chemistry topics. Laboratory activities complement and enrich related lecture course.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): PSCI-1020 Chemistry or concurrent enrollment.

PSCI-1030 Earth**03 Semester Credits**

[This course is cross-listed as ESCI-1030. Credit can only be earned once for either course.] Survey of geology of Earth and its impact on the environment. Earth's structure and composition, earthquakes, plate tectonics, hydrologic cycle, weather, resources and energy alternatives, and current related issues. Intended for non-science majors. To fulfill laboratory science requirements, students should enroll in related laboratory course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

PSCI-103L Earth Laboratory**01 Semester Credit**

[This course is cross-listed as ESCI-103L. Credit can only be earned once for either course.] Intended for non-science majors. Exercises on rocks and minerals, soils, weather, plate tectonics, energy and may include other related earth science activities. Laboratory activities complement and enrich related lecture course.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): PSCI-1030 Earth or concurrent enrollment.

PHYSICAL THERAPIST ASSISTING TECHNOLOGY - PTAT**PTAT-1100 Introduction to Physical Therapist Assisting****02 Semester Credits**

History and principles of physical therapy. Role, responsibilities and supervision of the physical therapist assistant. Survey of physical therapy interventions and services. Legal, ethical responsibilities and Professional Behaviors relating to physical therapy service. Communication, cultural diversity, and introduction to medical record documentation.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I; and MA-1020 Medical Terminology I; and departmental approval.

PTAT-1300 Functional Anatomy**04 Semester Credits**

Study of anatomy and function of human body to include head, neck, shoulder girdle, trunk, and upper and lower extremities. Study of motion of human body as basic to application of exercise with emphasis on study of functional problems for analysis of body movement.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): MA-1020 Medical Terminology I, and BIO-2331 Anatomy and Physiology I, and departmental approval.

PTAT-1311 Fundamentals of Physical Therapy**02 Semester Credits**

Fundamental procedures and theories for practice of physical therapy. Posture, movement, body mechanics, lifting and moving patients. Gait, assistive devices, bandaging, massage and complimentary therapies. Wheelchair features, maintenance and mobility. Professional behaviors and the therapeutic relationship.
Lecture 1.5 hours. Laboratory 1.5 hours.
Prerequisite(s): PTAT-1300 Functional Anatomy, and HTEC-1000 Introduction to Patient Care; and departmental approval.

PTAT-1320 Introduction to Therapeutic Exercise**02 Semester Credits**

Introduction to the principles of therapeutic exercise including passive, active, active assistive and resistive exercise. Differentiation of strength, flexibility and stretching exercises.
Lecture 1.5 hour. Laboratory 1.5 hours.
Prerequisite(s): HTEC-1000 Introduction to Patient Care; and concurrent enrollment in PTAT-1300 Functional Anatomy, and departmental approval.

PTAT-1401 Clinical Pathophysiology**02 Semester Credits**

Introduction to medical conditions commonly encountered in the practice of physical therapy that affect such systems as the Endocrine, Immune, Peripheral Vascular and Vestibular systems. Discuss health and disease and process of inflammation and repair of tissue and mechanisms of pain.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): PTAT-1300 Functional Anatomy, and BIO-2341 Anatomy and Physiology II, and PTAT-1311 Fundamentals of Physical Therapy, and departmental approval.

PTAT-1411 Physical Therapy Procedures**03 Semester Credits**

Physical Therapy procedures, emphasizing treatment utilizing physical agents. Use and application of modalities that emanate from electromagnetic and acoustic spectra.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): PTAT-1100 Introduction to Physical Therapist Assisting, PTAT-1300 Functional Anatomy, and PTAT-1311 Fundamentals of Physical Therapy, and departmental approval.

PTAT-1420 Therapeutic Exercise**03 Semester Credits**

Physical therapy techniques and principles utilized in therapeutic exercise.
Lecture 02 hours. Laboratory 03 hours.
Prerequisite(s): PTAT-1300 Functional Anatomy, and PTAT-1311 Fundamentals of Physical Therapy, and PTAT-1320 Introduction to Therapeutic Exercise, and departmental approval.

PTAT-2200 Physical Therapy in Acute Care Setting**02 Semester Credits**

The procedures, equipment and common pathologies encountered in the practice of physical therapy in acute care. Burns, wound care, isolation techniques, infection control and transplantation as well as cardiac and respiratory pathologies and the physical therapy techniques for intervention.
Lecture 01 hour. Laboratory 02 hours.
Prerequisite(s): PTAT-1311 Fundamentals of Physical Therapy, and departmental approval

PTAT-2301 Long Term Physical Therapy Rehabilitation Procedures**04 Semester Credits**

Physical therapy techniques and procedures required for long term adult rehabilitation in selected diagnoses and impairments.
Lecture 03 hours. Laboratory 03 hours.
Prerequisite(s): BIO-2341 Anatomy and Physiology II, and PTAT-1401 Clinical Pathophysiology, and PTAT-1420 Therapeutic Exercise, and departmental approval.

PTAT-2310 Pediatric Physical Therapy**02 Semester Credits**

Special considerations of the physical therapy approaches, and procedures regarding infants and children. Typical fetal and postnatal growth and development. Examination of wide range of disease and disabilities affecting infants and children, and physical therapy skills necessary for interaction and treatment of this population.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): BIO-2341 Anatomy and Physiology II, and PTAT-1401 Clinical Pathophysiology, and PTAT-1411 Physical Therapy Procedures, and PTAT-1420 Therapeutic Exercise, and departmental approval.

PTAT-2330 Geriatric Physical Therapy**02 Semester Credits**

Special considerations of physical therapy approaches, role, and procedures regarding the older adult population. Statistics, myths, and legislation regarding aging population. Typical aging and its implications for treatment and wellness.
Lecture 02 hours. Laboratory 00 hours.
Prerequisite(s): PTAT-1401 Clinical Pathophysiology, and PTAT-1420 Therapeutic Exercise; and concurrent enrollment in PTAT-2301 Long Term Physical Therapy Rehabilitation Procedures, and departmental approval.

PTAT-2341 Psychosocial Issues in Physical Therapy
02 Semester Credits

Designed to familiarize the student with the common mental health illnesses and psychosocial issues that may affect physical therapy interventions.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): PTAT-1100 Introduction to Physical Therapist Assisting; and PSY-1010 General Psychology or concurrent enrollment; or PSY-101H Honors General Psychology or concurrent enrollment.

PTAT-2840 Clinical Practicum I
02 Semester Credits

Capstone course in Physical Therapist Assisting Technology. Application of learned physical therapy techniques in a clinical setting.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 320 hours per semester (40 hours per week for 8 weeks).

Prerequisite(s): Concurrent enrollment in PTAT-2970 Practicum Seminar, and departmental approval: completion of all didactic coursework in the PTAT program.

PTAT-2850 Clinical Practicum II
02 Semester Credits

Capstone course in Physical Therapist Assisting Technology. Application of learned physical therapy techniques in a clinical setting.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Clinical Practicum: 320 hours per semester (40 hours per week for 8 weeks).

Prerequisite(s): PTAT-2840 Clinical Practicum I, and concurrent enrollment in PTAT-2970 Practicum Seminar, and departmental approval.

PTAT-2940 Field Experience I
01 Semester Credit

Application of learned physical therapy techniques in a clinical setting.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field experience: 240 hours per semester. (40 hours per week for 6 weeks)

Prerequisite(s): PTAT-1410 Physical Therapy Procedures or concurrent enrollment, and PTAT-1420 Therapeutic Exercise, or concurrent enrollment, and departmental approval.

PTAT-2970 Practicum Seminar
01 Semester Credit

Integration of knowledge and skills acquired in academic coursework and clinical practicum. Clarify role and function of the physical therapist assistant in preparation for licensure and entry into the workforce.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Seminar: 15 hours per semester.

Prerequisite(s): Concurrent enrollment in PTAT-2840 Clinical Practicum I; and concurrent enrollment in PTAT-2850 Clinical Practicum II, and departmental approval: completion of all didactic coursework in PTAT program.

PHYSICIAN ASSISTANT - PA

PA-1200 History and Physical Exam Techniques I
03 Semester Credits

Introduction to the skills required for patient-practitioner communication and development of therapeutic interpersonal relations including obtaining and recording the complete medical history and portions of the physical exam. Emphasis on cultural diversity influences in the therapeutic relations, patient counseling and/or patient education techniques and proper documentation of historical and physical findings.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): Departmental approval: admission to program.

PA-1210 History and Physical Exam Techniques II
03 Semester Credits

Instruction, study, and practice of skills required for conduction of a complete physical examination using appropriate equipment, techniques and accurate medical terminology to document findings. Includes instruction to identify and discuss normal and abnormal anatomical structures, body system physiology, pathological conditions, common symptoms of disorders, clinical findings and provide appropriate patient education.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I.

PA-1222 Basic Technical & Surgical Skills
02 Semester Credits

Presentation and discussion of fundamental technical and surgical clinical skills required of Physician Assistant in diagnostic and therapeutic management of primary care and surgical patients. Focus on basic bedside procedures.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I.

PA-1232 Advanced Technical & Surgical Skills
02 Semester Credits

Presentation, discussion, and practice of advanced surgical skills in the preparation of patients for surgery, and to assist physicians in performing procedures in surgery, the emergency room, hospital, office and clinic.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I.

PA-1240 Clinical Anatomy

04 Semester Credits

Study of clinical anatomy of the human body with emphasis on important anatomical landmarks required in the physical evaluation of the patient and anatomical relationships of structures to each other. Includes anatomical components of body systems, blood and nerve supply to organs and body regions. Common pathological processes and topical landmarks related to common surgical procedures are covered.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I, or concurrent enrollment.

PA-1250 Clinical Pharmacology

04 Semester Credits

Application of the principles of pharmacodynamics to calculate drug doses, write and interpret legal and accurate prescriptions for medical conditions.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I.

PA-1350 Electrocardiography

01 Semester Credit

Designed to allow students to recognize and interpret electrocardiography (ECG) tracings and their clinical significance. Includes application of Advanced Cardiovascular Life Support (ACLS) treatment protocols, patient education and communication with other health care professionals utilizing appropriate medical terminology as it relates to the cardiac conduction system. Techniques of 12-lead EKG recording and interpretation presented.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I.

PA-1360 Adjuncts to Diagnosis

03 Semester Credits

Introduction to diagnostic and therapeutic procedures utilized to evaluate pulmonary, abdominal, cardiac, skeletal, genitourinary, neurological, and vascular systems. Includes laboratory, radiography, and respiratory methods and techniques, their indications and general principles of interpretation.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I.

PA-1370 Behavioral Medicine

02 Semester Credits

Focus on the detection and treatment of psychological symptoms and syndromes including stress, abuse (domestic, child and elder), violence, substance abuse through basic patient counseling, assessment of risk factors, pharmaceutical therapy, patient education and/or appropriate patient referrals. Emphasis on cultural

sensitivity and strategies to identify and ease patient reaction to illness (psychological/organic) and end of life issues with the application of those strategies to overcome resistance, encourage therapeutic cooperation and assistance in decreasing health risk behaviors.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I.

PA-1450 The Physician Assistant Profession and Health Care Issues

02 Semester Credits

Introduction to Physician Assistant profession, health care system, patient education, and issues encountered in primary-care and surgical practice settings. Includes discussion of health maintenance and disease prevention measures; psychiatric/social problems and their management; use of community resources; cultural diversity; home health, inner city, and rural health care; and current issues in health care.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval, or admission to the Physician Assistant program.

PA-1550 The Physician Assistant Profession

01 Semester Credit

Introduction to the Physician Assistant (PA) profession, including information about the history of the profession, the American Academy of Physician Assistants' (AAPA) Code of Ethics, credentialing and recertification requirements of the PA profession, the PA professional's role in health care delivery and reimbursement systems, relationship with the supervising physician and other health care professional; information about legislation and governing bodies that affect the profession. Use of appropriate referral sources when patient management is outside scope of PA practice.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I or concurrent enrollment.

PA-1590 Introduction to Clinical Medicine

02 Semester Credits

Presentation of medical problems and diseases encountered in primary care practice including etiology, signs, symptoms, diagnostic data interpretation, clinical course, methods of management, and potential complications of diseases. Differential diagnosis of related or similar disease processes included.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I, or concurrent enrollment.

PA-1600 Clinical Medicine I

04 Semester Credits

Presentation of medical problems and diseases of the head, eyes, nose, oral cavity/ throat (HEENT) respiratory and cardiovascular systems encountered in primary care practice. Topics include etiology, signs, symptoms, diagnostic data interpretation, clinical course, methods of management, and potential complications of the HEENT, respiratory and cardiovascular systems.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I, or concurrent enrollment.

PA-1610 Clinical Medicine II

04 Semester Credits

Medical problems and diseases encountered in primary care practice, emphasizing musculoskeletal, neurological, dermatological, genitourinary and gastrointestinal systems. Discussion of the etiology, signs, symptoms, diagnostic data interpretation, clinical course, methods of management and potential complications included.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I.

PA-1620 Clinical Medicine III

04 Semester Credits

Presentation of medical disorders and problems of obstetrics, gynecology and pediatrics with emphasis on age appropriate and culturally diverse patient clinical presentations. Includes recognition, descriptions and research of disease processes based on signs and symptoms, differential diagnoses with identification and utilization of appropriate diagnostic tools and development of a therapeutic plan and preventive medicine.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I.

PA-2302 Patient Management

02 Semester Credits

This course will provide the student with instruction in patient management by providing the tools for selection and interpretation of diagnostic and therapeutic procedures, correlation of medical history and physical examination data, and integration of diagnostic skills through simulated case studies and problem-solving activities.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): PA-1610 Clinical Medicine II, or concurrent enrollment; and PA-1250 Clinical Pharmacology, and admission to the Physician Assistant program.

PA-2501 Emergency Medicine

04 Semester Credits

Essentials of assessment and management of the initial evaluation, stabilization, and treatment including patient

education, disposition and follow-up of the acutely ill patient who requires expeditious medical, surgical, or psychiatric care. Particular attention is paid to awareness of special considerations and cultural diversity in patient care and professional conduct and communication.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): PA-1200 History and Physical Exam Techniques I.

PA-2611 Preparation for Practice

02 Semester Credits

Self-assess knowledge and skills to determine gaps, develop a learning plan and prepare for the Physician Assistant National Certification Exam (PANCE). Plan, develop and present health education to the community and develop a plan for life-long learning.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): Admission to the Physician Assistant program; and PA-1600 Clinical Medicine I, and PA-1610 Clinical Medicine II, and PA-1620 Clinical Medicine III.

PA-2910 Directed Practice I: Primary Care

01 Semester Credit

Supervised practical application in clinical health care settings designed to emphasize the role of Physician Assistant to the primary care physician. Students assigned to clinical rotations and under direct supervision of medical personnel gain exposure to professional practice.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 160 hours per rotation.

Prerequisite(s): Concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-2915 Directed Practice I: Surgery

01 Semester Credit

Supervised practical application in clinical surgical health care settings designed to emphasize the role of the physician assistant to the surgeon. Students assigned to clinical rotations, under direct supervision of medical personnel gain exposure to professional practice.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 160 hours.

Prerequisite(s): Concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-2920 Directed Practice II: Primary Care

01 Semester Credit

Supervised practical application in clinical health care settings designed to emphasize the role of Physician Assistant to the primary care physician. Students assigned to clinical rotations and under direct supervision of medical personnel gain exposure to professional practice.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 160 hours per rotation.

Prerequisite(s): Concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-2925 Directed Practice II: Surgery

01 Semester Credit

Supervised practical application in clinical surgical health care settings designed to emphasize the role of physician assistant to the surgeon. Students assigned to clinical rotations, under direct supervision of medical personnel gain exposure to professional practice.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 160 hours.

Prerequisite(s): Concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-2942 Field Experience I

04 Semester Credits

Supervised field experience in clinical health care settings designed to emphasize the role of Physician Assistant to primary care physicians. Students assigned to clinical rotations, under direct supervision of medical personnel, gain exposure to professional practice. Students at the beginning of clinical training should demonstrate beginning assessment skills. As clinical experience continues, the student should demonstrate intermediate to advanced skills, and assume increased individual responsibility as member of medical team. Modular courses PA-294A, PA-294B, PA-294C, and PA-294D together will also meet requirements for this course.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field experience: 640 hours (160 hours per rotation.)

Prerequisite(s): PA-2302 Patient Management and concurrent enrollment in PA-2972 Field Experience Seminar I or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-2952 Field Experience II

04 Semester Credits

Supervised field experience in clinical health care settings designed to emphasize the role of Physician Assistant to primary care physicians. Students assigned to clinical rotations, under direct supervision of medical personnel, gain exposure to professional practice. Students at the beginning of clinical training should demonstrate beginning assessment skills. As clinical experience continues, the student should demonstrate intermediate to

advanced skills, and assume increased individual responsibility as member of medical team. Modular courses PA-295A, PA-295B, PA-295C, and PA-295D together will also meet requirements for this course.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field experience: 640 hours (160 hours per rotation.)

Prerequisite(s): PA-2302 Patient Management and concurrent enrollment in PA-2972 Field Experience Seminar I, or concurrent enrollment in PA-2982 Field Experience Seminar II, or departmental approval.

PA-2960 Field Experience III

02 Semester Credits

Supervised field experience in clinical healthcare settings designed to emphasize the role of the Physician Assistant to primary care physicians. Students assigned to clinical rotations, under direct supervision of medical personnel, gain exposure to professional practice and clinical assessment skills.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 320 hours (160 hours per rotation)

Prerequisite(s): PA-2942 Field Experience I.

PA-2972 Field Experience Seminar I

01 Semester Credit

Pre- and post-rotational on campus seminars. Integrates concepts and knowledge gained from field experience rotations into total learning process. Focus on patient and professional communication, various professional practice issues and topics, and life-long learning. Other discussions on current issues included.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Seminar: 15 hours per semester.

Prerequisite(s): PA-1620 Clinical Medicine III.

PA-2982 Field Experience Seminar II

01 Semester Credit

Post-rotational on-campus seminars. Integrates concepts and knowledge gained from field experience rotations into total learning process. Focus on patient and professional communication, various professional practice issues and topics, and lifelong learning.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Seminar: 15 hours per semester.

Prerequisite(s): Concurrent enrollment in PA-2942 Field Experience I, or PA-2952 Field Experience II, or concurrent enrollment.

PHYSICS - PHYS**PHYS-1010 Astronomy****03 Semester Credits**

[This course is cross-listed as PSCI-1010. Credit can only be earned once for either course.] Survey of astronomy. History of astronomy, planets, asteroids and comets, the sun, stars, galaxies, and cosmology. Contemporary issues and developments in astronomy and space science. Intended for non-science majors. To fulfill laboratory science requirements, students should enroll in related laboratory course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0980 Language Fundamentals I, or eligibility for ENG-0990 Language Fundamentals II.

PHYS-101L Astronomy Laboratory**01 Semester Credit**

[This course is cross-listed as PSCI-101L. Credit can only be earned once for either course.] Intended for non-science majors. Exercises on measurements, optics, telescopes, the sun, constellations, and other related astronomy topics. Laboratory activities complement and enrich related lecture course.

Lecture 00 hours. Laboratory 03 hours.

Prerequisite(s): PHYS-1010 Astronomy or concurrent enrollment.

PHYS-1050 Everyday Physics**02 Semester Credits**

Introductory science course designed to develop an understanding of the phenomena of our everyday life via the laws of physics. The emphasis is not on problem-solving course, but on encouraging students to understand and appreciate their environment from a new perspective. Explores application of various fields of physics to everyday living, household applications, sports applications and other applications discussed.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I; and MATH-0955 Beginning Algebra, or appropriate score on Math placement test.

PHYS-1210 College Physics I**04 Semester Credits**

Kinematics, vectors, and Newtonian mechanics (forces and motion, gravitation, energy, momentum, rotational motion, simple harmonic motion), fluids, heat, and thermodynamics. Emphasis on problem-solving using algebra.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): MATH-0965 Intermediate Algebra, or departmental approval.

OAN Approved: OSC014

PHYS-1220 College Physics II**04 Semester Credits**

Introductory algebra-based physics course designed for non-physics majors covering areas of physics which include electricity, magnetism, waves, sound, light, special relativity, atomic and nuclear physics.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): PHYS-1210 College Physics I.

OAN Approved: OSC015

PHYS-1300 Physics of Optical Materials**04 Semester Credits**

Study of basic structure and properties of materials related to opticianry. Includes structure, density, conductivity, and effects of mechanical forces on materials. Special emphasis given to nature and theory of light and application to ophthalmic optics. Demonstrations by use of optical bench, blackboard optics, and other instruments used to facilitate understanding of how light functions.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): MATH-1060 Survey of Mathematics.

PHYS-2250 Radiographic Physics and Quality Control**04 Semester Credits**

Course designed for Radiography program students. Basic introduction to college physics. Reviews basic mathematical operations needed for this course. Discusses energy, matter, Newtonian laws, atomic structure, electrostatic, electrodynamics, magnetism, electromagnetism that will lead to the study of x-ray generators, x-ray circuitry, and automatic exposure devices. Includes laboratory application of related physics experiments and the use of quality assurance testing tools to ensure radiographic quality control.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): RADT-1351 Image Acquisition and Evaluation, and departmental approval: admission to Radiography program.

PHYS-2310 General Physics I**05 Semester Credits**

Physics for students majoring in science or engineering. Kinematics and dynamics in one, two, and three dimensions. Conservation laws (energy, momentum, angular momentum); gravitation; simple harmonic motion; heat and thermodynamics. Emphasis on problem-solving using algebra and calculus.

Lecture 04 hours. Laboratory 03 hours.

Prerequisite(s): MATH-1610 Calculus I or departmental approval.

OAN Approved: OSC016

PHYS-2320 General Physics II

05 Semester Credits

Second semester course for students majoring in science or engineering. Electricity and magnetism; light and optics; waves in elastic media; sound.

Lecture 04 hours. Laboratory 03 hours.

Prerequisite(s): PHYS-2310 General Physics I, and MATH-1620 Calculus II; or departmental approval.

OAN Approved: OSC017

PLANT SCIENCE AND LANDSCAPE TECHNOLOGY - PST

PST-1010 Career Opportunities in Horticulture

01 Semester Credit

Elective course providing an introduction to the diverse careers available in horticulture.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

PST-1300 Horticultural Botany

03 Semester Credits

[This course is crosslisted as BIO-1300. Credit can only be earned once for either course.] Plant structure and diversity is examined through the study of the cells, tissues, and organs of plants, as well as their life cycles and reproduction. The physiology of plants is explored through the study of plant transport, nutrients, hormones, growth, and metabolism. Additionally, horticulturally significant bacteria, protists, and fungi are examined.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): ENG-0990 Language Fundamentals II, or eligibility for ENG-1010 College Composition I.

PST-1311 Deciduous Woody Landscape Plants

03 Semester Credits

Covers the correct identification, cultural requirements, potential, and correct uses of deciduous trees and shrubs in the landscape.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PST-1321 Evergreens, Groundcovers, and Herbaceous Landscape Plants

03 Semester Credits

Covers the cultural requirements, growth habits, potential, and correct landscape uses of herbaceous annuals, perennials, hardy bulbs, groundcovers, and evergreen trees and shrubs.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

PST-1330 Plant Propagation

02 Semester Credits

Introduction to the techniques used to create new food and ornamental plant crops.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): None.

PST-1351 Plant Production

03 Semester Credits

Exploration of production and marketing of ornamental and food plant materials. Emphasis on basic greenhouse, garden center, small farm, and nursery operations from off season planning, crop timing, pest management, marketing, production, harvesting, and selling.

Alternative growing methods including hydroponics, high tunnel aeroponics and other soil-less methods.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): None.

PST-1400 Garden Center and Nursery Management

03 Semester Credits

An in-depth study of the management skills needed to successfully operate a garden center or a wholesale nursery growing establishment, including management of employees, inventory, suppliers, clients, and legal and regulatory environment. Emphasis placed on ensuring management practices are environmentally sustainable and use the most current technologies available.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I; or departmental approval.

PST-1411 Equipment Operations and Safety

02 Semester Credits

An overview of common horticultural hand tools, power tools, and large equipment. Emphasis on safe operation with hands on practice and basic preventative maintenance on each machine.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): None.

PST-1420 Landscape Practices

03 Semester Credits

Study of and practical experience in proper techniques of landscape installation and maintenance. Specifications of American Nursery Association standards emphasized. Diagnosis and resolution of plant problems considered.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): None.

PST-1431 Graphics for Landscape Design and Construction

02 Semester Credits

Foundation and preparatory course for graphic communication processes and methods used in landscape design and landscape construction. Production and applications of a variety of drawing types and the tools and techniques used to produce them. Types of drawings studied will include; plan, section, elevation, isometric, perspective and freehand sketching. Other graphic techniques studied will include color rendering and construction detailing.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): None.

PST-1441 Introduction to Landscape Design

03 Semester Credits

Foundation course for landscape design. Basic principles, elements, graphics and processes of design and their relationship to landscape design. Technical development of landscape drawings using hand-drawn techniques. Aesthetic, environmental and programmatic systems analysis and the development of basic site and landscape design projects. Preparation of various design drawing types and models provides exposure to design theories applicable to the use of landform, vegetation, water and structural landscape elements.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): None.

PST-1450 Landscape Design - CAD

03 Semester Credits

An introduction to the software's operational components and the methods and procedures to develop the types of drawings typically used for landscape design/sales presentations and construction implementation at a residential scale, from initial file set-up to printing the completed drawings. The software programs utilized in this class are Dynascape™ design, color and sketch 3D.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): PST-1441 Introduction to Landscape Design, and IT-1010 Introduction to Microcomputer Applications.

PST-1510 Landscape Contracting

03 Semester Credits

In depth study of the two major sides of landscape contracting. Study of landscape maintenance contracting business including turf-grass maintenance, fertilization services, mulching, pruning, bed maintenance, spring and fall clean up, bed edging, aerating, snow and ice removal, and other value added services. Study of landscape construction and installation contracting including the estimation process, construction documentation, permits and regulations, subcontracting, equipment and material logistics, job site management, project management, and basic landscape construction practices.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Eligibility for MATH-1000 level or higher.

PST-1600 Irrigation and Drainage

02 Semester Credits

Provides an operational knowledge of the theory, design, installation, and maintenance of landscape irrigation and drainage systems.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): Eligibility for MATH-1000 level or higher.

PST-2300 Interior Foliage Identification & Culture

02 Semester Credits

Identification, culture, and uses of tropical and other interior plants in the interior plantscape, workplace, and home.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): PST-1311 Deciduous Woody Landscape Plants, or PST-1321 Evergreens, Groundcovers, and Herbaceous Landscape Plants.

PST-2310 Soil Technology

03 Semester Credits

Understanding the critical roles soil plays in horticulture, agriculture, and construction. Emphasis on soil testing, analysis, and building healthier soils.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): CHEM-1000 Everyday Chemistry, or PSCI-1020 Chemistry, and eligibility for ENG-1010 College Composition I.

PST-2320 Plant Pest Diagnostics

04 Semester Credits

In depth study of Integrated Pest Management tactics as used in the green industry to provide a sustainable approach to care of plants in the agricultural, nursery, and landscape environments.

Lecture 02 hours. Laboratory 06 hours.

Prerequisite(s): PST-1311 Deciduous Woody Landscape Plants, or PST-1321 Evergreens, Groundcovers, and Herbaceous Landscape Plants; or departmental approval.

PST-2370 Introduction to Turfgrass

02 Semester Credits

Study of lawn maintenance and installation, including fertilization, spraying, mowing, irrigation, selection and establishment, weed and pest identification, and diagnosis of disorders as pertains to commercial, residential, and municipal applications.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): PST-1311 Deciduous Woody Landscape Plants.

PST-2380 Arboriculture

02 Semester Credits

Study of the tree-care industry, including fertilization, spraying, pruning, bracing and cabling, equipment operation, climbing techniques, safe work practices, diagnosis of plant disorders. Arborists' interaction with client are also studied.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): PST-1311 Deciduous Woody Landscape Plants, or departmental approval.

PST-2431 Planting Design

03 Semester Credits

Emphasis on the design relationships of plants to their optimum and intended environments. Basic and advanced planting design principles and techniques that address the aesthetic, environmental and engineering uses of plant material. Preparation of various design project drawing types and a personal plant palette including woody and herbaceous materials for more complex landscape design solutions.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): PST-1441 Introduction to Landscape Design, or departmental approval: Faculty may require samples of previous work to determine skill level.

PST-2450 Crop Cycles and Alternative Growing Methods

03 Semester Credits

Students will learn how to bring a food or ornamental crop to market for profit. Determination of which crops will have the highest margin and at what time of year that margin is highest. Non-traditional methods of raising food and ornamental crops and season extension. Applied practice will focus on using high-tunnels, grow pots, slabs, hydroponic, aeroponic, aquaponic growing systems, pot-in-pot, and other soil-less methods.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): PST-1351 Plant Production.

PST-2950 Field Experience

03 Semester Credits

Field experience in student's occupational objectives in plant science, landscaping and/or horticulture. Student and employer follow training agreement as developed by student, employer and supervising faculty.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 36 hours per week.

Prerequisite(s): Departmental approval: satisfactory completion of coursework deemed sufficient to prepare the student for entry level work in chosen work area.

POLITICAL SCIENCE - POL

POL-1010 American National Government

03 Semester Credits

Nature, purpose, theories and forms of government of the United States at national level. Relationships between structure, function, and process. Dynamics of political change, including role and significance of U.S.

Constitution. Current issues of American public policy.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OSS011

POL-101H Honors American National Government

03 Semester Credits

Nature, purpose, theories and forms of government of the United States at national level. Relationships between structure, function and process. Dynamics of political change, including role and significance of U.S.

Constitution. Current issues of American public policy.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I or eligibility for ENG-101H Honors College Composition I; or departmental approval.

OAN Approved: OSS011

POL-1020 State and Local Government

03 Semester Credits

Examination of state and local governments within federal system, intergovernmental relations, metropolitan problems, dynamics of electoral process, including impacts of public policy decisions on individual lives.

Several policy areas may be studied.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OSS014

POL-1040 Introduction to Peace and Conflict Studies

03 Semester Credits

Introduction to conflict analysis and conflict resolution.

Provide solid foundation for further inquiry and application. Examines definitions of conflict and diverse views of its resolution. Exploration of contemporary studies of individual behavior and social life as they relate to the origins of conflict and violent and peaceful social change. Specific conflict situations approached through models of sociocultural dynamics.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or concurrent enrollment; or eligibility for ENG-101H Honors College Composition I, or departmental approval: permission from instructor.

POL-179H Honors Contract in Political Science **01 Semester Credit**

Honors Contract complements and exceeds the requirements and objectives for an existing POL 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Must be taken concurrently with a 1000-level honors course in Political Science, whose instructor approves the Honors Contract.

POL-2030 Comparative Politics **03 Semester Credits**

Examination of selected industrialized democracies including the United Kingdom, France and Germany; transitional states including Russia; the theocratic regime in Iran; and one developing country from either Central America, Africa or Asia. Explores the ideological underpinnings, economic systems and most salient political and social issues of each of these case-study states.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, and POL-1010 American National Government.

OAN Approved: OSS013

POL-2040 Conflict Resolution Skills **03 Semester Credits**

Skills-based course in conflict management and resolution. Increase awareness, develop skills, and gain knowledge of constructive conflict management processes and approaches. Explore causes of conflict, conflict styles, and interpersonal conflict communication skills such as assertiveness and active listening. Introduce constructive conflict management approaches including negotiation, mediation, nonviolent action and Alternative Dispute Resolution approaches.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or departmental approval.

POL-2050 Study Abroad in Peace and Conflict Resolution **03 Semester Credits**

Study abroad opportunity covering theory and practice of Conflict Resolution and Peace Studies. Students will have an opportunity to meet with decision makers across fields while experiencing the rich culture of the country/countries. Students will begin to understand issues from multiple cultural perspectives, enhance their intercultural communication and adjustment skills, and analyze conflict resolution efforts and their impact at multiple levels. Basic language and cultural instruction

will be included along with excursions to areas of interest. Requires participation in a travel abroad experience. Additional costs required.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, and POL-1040 Introduction to Peace and Conflict Studies, and POL-2040 Conflict Resolution Skills, and departmental approval instructor permission required.

POL-2060 Political Systems of Africa **03 Semester Credits**

Comparative discussion of selected topics in Africa with particular focus on the interrelationship between internal and external affairs. Examination of colonial policies, party systems, interest groups and modes of development.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): POL-1010 American National Government is recommended.

POL-2070 International Relations **03 Semester Credits**

Study of International Relations. Explores how individuals, Nation-States, non-governmental and international organizations interact with one another. Emphasis on major subfields of security and political economy.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, and POL-1010 American National Government.

OAN Approved: OSS012

POL-2100 Constitutional Law **03 Semester Credits**

The origins and development of American constitutional and legal system. Emphasizes the structure and role of Supreme Court in constitutional interpretation and major decisions concerning important areas of litigation. Major areas of emphasis include federalism, separation of powers, civil liberties, civil rights, and rights of the criminally accused. Historical and current court cases discussed.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, and POL-1010 American National Government.

POL-2110 Terrorism and Counterterrorism **03 Semester Credits**

An interdisciplinary examination of the complex nature, types, and historical evolution of terrorism. Will analyze terrorism and its political, economic, religious, psychological, and ideological dimensions. Select acts of domestic and global terrorism will be examined to better understand terrorists' motives, methods, and objectives. Counterterrorism strategies and how democratic nations should respond to terrorism and future terrorist threats will be evaluated.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I.

POL-2120 Women and Politics**03 Semester Credits**

[This course is cross-listed as WST-2120. Credit can only be earned once for either course.] This course examines women's political life in the United States. Women's involvement in all aspects of the political process will be addressed. Substantive areas include women and democracy, their political participation, and role in governing institutions. The course also includes discussion on the struggle for equal rights and issues of public policy. *Lecture 03 hours. Laboratory 00 hours.*

Prerequisite(s): POL-1010 American National Government, or HIST-1020 History of Civilization II, or HIST-1520 United States History Since 1877.

POL-2130 Politics of Race**03 Semester Credits**

Analysis of minority group interactions within the American political system. Focus on the strategies employed both within and outside government to achieve political ideals and their roles and political behaviors in national, state, and local levels. *Lecture 03 hours. Laboratory 00 hours.*

Prerequisite(s): ENG-1010 College Composition I, or POL-1010 American National Government.

POL-2140 Implementing Peace Studies and Conflict Management Theories and Practices with Service Learning**03 Semester Credits**

This course will integrate theories and skills in Peace Studies and Conflict Management with service learning. Students will gain practical experience, serve their community, and engage with issues surrounding the promotion of social justice, social service, or conflict management at local, regional, national, or international levels. A minimum of 40 hours service learning required over the course of the semester.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): POL-1040 Introduction to Peace and Conflict Studies, and POL-2040 Conflict Resolution Skills.

PRACTICAL NURSING - PNUR**PNUR-1200 Physical Assessment for the Practical Nurse**
02 Semester Credits

Principles and practices of basic nursing care to individuals with selected health deviations. Develop assessment skills including physical assessment for the adult and evaluating physiologic changes related to aging. Incorporating skills in problem-solving using the nursing process as applied to individual situations with goal of providing safe and competent nursing care to individual adult patients. Laboratory screening procedures

introduced. Documentation and reporting findings are discussed.

Lecture 02 hours. Laboratory 01 hours.

Prerequisite(s): Departmental approval: admission to Practical Nursing Program, and concurrent enrollment in BIO-1050 Human Biology; and concurrent enrollment in BIO-105L Human Biology Laboratory; and concurrent enrollment in PNUR-1322 Nursing Management of the Adult I; and concurrent enrollment in PNUR-1210 Fundamentals of Practical Nursing.

PNUR-1210 Fundamentals of Practical Nursing
03 Semester Credits

This course discusses the principles and practices of basic nursing care of adults through the life span using Orem's self-care deficit theory. Introduction to evolution of nursing, legal aspects of nursing, and cultural diversity. Basic concepts of nutrition and medical/ surgical asepsis are presented.

Lecture 1.5 hours. Laboratory 4.5 hours.

Other Required Hours: On campus lab and clinical: 9 hours per week for 8 weeks. Lecture: 3 hours per week for 8 weeks.

Prerequisite(s): Departmental approval: admission to Practical Nursing Program, and concurrent enrollment in BIO-1050 Human Biology; and concurrent enrollment in BIO-105L Human Biology Laboratory; and concurrent enrollment in PNUR-1200 Physical Assessment for the Practical Nurse; and concurrent enrollment in PNUR-1322 Nursing Management of the Adult I.

PNUR-1322 Nursing Management of the Adult I
03 Semester Credits

Focuses on care of adults with acute and recurring medical and surgical conditions. Begin to develop critical thinking skills along with the nursing process providing the framework for delivery of nursing care to the adult patient.

Lecture 02 hours. Laboratory 05 hours.

Other Required Hours: On campus lab and clinical: 9 hours per week for 8 weeks.

Lecture: 03 hours per week for 8 weeks.

Prerequisite(s): Departmental approval: admission to Practical Nursing Program, and concurrent enrollment in PNUR-1210 Fundamentals of Practical Nursing, and concurrent enrollment in PNUR-1200 Physical Assessment for the Practical Nurse, and concurrent enrollment in BIO-1050 Human Biology, and concurrent enrollment in BIO-105L Human Biology Laboratory.

PNUR-1330 Nursing Management of Adults II
08 Semester Credits

Focuses on the provision of safe, competent care of adults with acute and recurring medical and surgical conditions. Students continue to develop skills in problem-solving and critical thinking through the use of the nursing process.

Lecture 04 hours. Laboratory 12 hours.

Other Required Hours: On campus lab and clinical: 12 hours.

Prerequisite(s): Departmental approval: admission to Practical Nursing Program; and PNUR-1322 Nursing Management of the Adult I; and concurrent enrollment in PSY-1010 General Psychology; and concurrent enrollment in ENG-1010 College Composition I.

PNUR-1341 Lifespan Nursing for the Practical Nurse
04 Semester Credits

Designed to provide nursing care to women of childbearing age, children, groups of patients, and their families. Emphasis on leadership and management role of the licensed practical nurse.

Lecture 02 hours. Laboratory 06 hours.

Other Required Hours: Laboratory: on campus and clinical hours 06.

Prerequisite(s): Departmental approval: admission to Practical Nursing Program; and PSY-2020 Life Span Development or concurrent enrollment; and PNUR-1330 Nursing Management of Adults II.

PSYCHOLOGY - PSY

PSY-1010 General Psychology

03 Semester Credits

Scientific study of human behavior. Topics include the history of psychology, scientific methods, biological processes, sensation and perception, consciousness, learning, intelligence, human development, motivation and emotion, personality, abnormal behavior, social psychology and diversity.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

OAN Approved: OSS0015

PSY-101H Honors General Psychology

03 Semester Credits

Examination of historical and conceptual foundations of modern psychology and its methodology and enduring issues within subdisciplines. Research basis of psychology and discussion of original source materials emphasized.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I with B or higher, or eligibility for ENG-101H Honors College Composition I, or psychology departmental approval.

OAN Approved: OSS0015

PSY-1050 Introduction to Industrial/Organizational Psychology

03 Semester Credits

Focuses on the application of research to the workplace and provides an overview of psychological principles as they relate to issues of industry and organizations. Topics include personnel selection, job analysis and design, job descriptions, training, motivational theories, job attitudes, performance appraisal, testing and assessment, teamwork, stress, workplace violence and U.S. employment laws related to personnel decisions.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

PSY-1060 Cross-Cultural Competency for Health Care Providers

01 Semester Credit

Focuses on cultural sensitivity, diversity awareness and multicultural communication skills for health care providers. Includes communicating with patients in ways that are culturally aware and sensitive. Practice communication skills using scenarios involving patients of diverse backgrounds.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): PSY-1010 General Psychology, and DMS-1303 Introduction to Sonography, and DMS-1351 Patient Care Skills.

PSY-179H Honors Contract in Psychology

01 Semester Credit

Honors Contract complements and exceeds the requirements and objectives for an existing PSY 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Must be taken concurrently with a 1000-level course in Psychology, whose instructor approves Honors Contract.

PSY-2010 Child Growth and Development

03 Semester Credits

Study of human growth and development from conception through puberty. Emphasis on biological, cognitive, social and emotional development. Physiological and psychological processes examined. Major developmental issues examined from diverse perspectives.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

OAN Approved: OSS045

PSY-201H Honors Child Growth and Development
03 Semester Credits

The physical, intellectual, personal and social development of humans from conception through adolescence is examined from the perspective of multiple psychological theories. Basic and applied research in developmental psychology is emphasized.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PSY-101H Honors General Psychology, or PSY-1010 General Psychology with a grade of "B" or higher; or departmental approval.

PSY-202H Life Span Development
04 Semester Credits

Study of human growth and development throughout the life span. Emphasis on biological, cognitive, social and emotional development. Major issues examined from diverse perspectives.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

UAN Approved: OSS048

PSY-202H Honors Life Span Development
04 Semester Credits

Study of human growth and development throughout the life span. Analysis and evaluation of major theories and research findings in the field of developmental psychology. Emphasis on biological, cognitive, social and emotional development. Examine the impact of diversity/culture on life span development. Appraise the major issues of life span development and the influence of diversity/culture. Students will analyze, appraise and apply the major developmental theories to everyday life scenarios. Students will construct an understanding of cross cultural development across the life span.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): PSY-1010 General Psychology with a grade of "B" or higher; or PSY-101H Honors General Psychology; and ENG-1010 College Composition I or ENG-101H Honors College Composition I.

PSY-204H Social Psychology
03 Semester Credits

Social influence on the individual's ideas and behaviors; emphasis on issues such as attraction, prejudice, conformity and interpersonal communication.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

UAN Approved: OSS016

PSY-205H Psychology of Personality
03 Semester Credits

Scientific study of personality, including motivation and development. Normal and abnormal personality considered along with its clinical applications and relevance to business and industry.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

UAN Approved: OSS018

PSY-206H Adolescent Psychology
03 Semester Credits

Examines human development from puberty to young adulthood from a variety of perspectives. Variations in development related to gender, social and cultural factors considered. Includes physical and sexual maturation; identity and self-image; family and peer relations; social, emotional and moral behavior; cognition and academic performance; work and leisure behavior; and transition to independence.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

UAN Approved: OSS046

PSY-207H Behavior Modification
03 Semester Credits

Basic conditioning and learning principles emphasizing primary, social and token reinforcement. Applications to normal and abnormal behavior and uses in the home, school, work, hospital and correctional settings. Implications and ethics of behavioral control examined.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

PSY-208H Abnormal Psychology
03 Semester Credits

Descriptive survey of behavioral and psychological disorders. Topics include past and present views of abnormal behavior; diagnostic and assessment procedures; classification; and causes, prevention and remediation of disorders.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

UAN Approved: OSS017

PSY-2090 Psychology of Human Sexuality
03 Semester Credits

Examines the scientific study of Human Sexuality from a psychological perspective. Includes an introductory overview of the biological, psychosocial, and developmental perspectives of sexuality. Introduces the diversity of human sexual expression. Topics include sexual anatomy, sexual arousal, gender identity, sexual orientation, and sexual health.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

PSY-2100 Introduction to Aging
03 Semester Credits

Overview of the psychological aspects of maturation. Consideration of biological, emotional, perceptual, cognitive and psychosocial conditions encountered in young, middle-aged and senior adults.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

WAN Approved: OSS047

PSY-2110 Educational Psychology
03 Semester Credits

Examines the psychological basis of teaching and learning. Topics include theories of development and learning, learner motivation, learner differences, instructional strategies and assessment. Effects of cultural, social, and emotional factors on educational processes are also examined. This course is a requirement of teacher education programs.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

WAN Approved: OED003

PSY-2120 Multicultural Health Psychology
03 Semester Credits

Exploration and study of current topics, research, and theory in the specialty of Health Psychology across many cultures. An overview of topics such as psychoneuroimmunology and health, the basic issues and processes. Examination of the connections between the mind and body and the impact of cognition, emotions and behavior (lifestyle choices) on the physiology of common acute and chronic illnesses and cultural influences.

Exploration of stress and coping styles with an emphasis on prevention and treatment. A survey of quality-of-life issues as created by health needs and resources available in the community for treatment.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

PSY-2150 Quantitative Methods in Behavioral Science
04 Semester Credits

Introduction to quantitative analysis of behavioral data. Application of descriptive and inferential statistics (includes correlation, t-test and ANOVA) and SPSS computer software to data presentation, hypothesis testing and design and interpretation of behavioral research

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): SOC-1010 Introductory Sociology or SOC-101H Honors Introductory Sociology or PSY-1010 General Psychology or PSY-101H Honors General Psychology - a 2000 level psychology course, and a sufficient score on math assessment tests; or departmental approval: previous Algebra II course in high school or college.

RADIOGRAPHY - RADT

RADT-1300 Fundamentals of Radiography
04 Semester Credits

Basic study of ionizing radiation relative to its nature, production, interaction with matter and effect on radiographic quality. Includes the fundamentals of radiation protection and image acquisition methods.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): Departmental approval: admission to program.

RADT-1351 Image Acquisition and Evaluation
03 Semester Credits

Analysis and application of radiographic factors influencing the acquisition and evaluation of the radiographic image, considering both analog and digital technology. Students are required to conduct x-ray exposure experiments, under supervision, using standard energized imaging equipment.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): RADT-1300 Fundamentals of Radiography, or departmental approval.

RADT-1400 Radiographic Positioning
03 Semester Credits

Introduction to and application of radiographic positioning for upper and lower extremities, chest, pelvis, abdomen, gastrointestinal and urinary systems including use of contrast media. Techniques and positioning variations for pediatric age specific patients. Basic concepts of patient care and the role of the radiographer as a member of the health care team. Specific radiological patient care skills used in radiology practices. Discussion of legal issues and doctrines with introduction of medicolegal terminology. Special emphasis on the American Registry of Radiologic Technologists' Standards of Ethics.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval: admission to program.

RADT-1410 Intermediate Radiographic Positioning
03 Semester Credits

Essentials of radiographic procedures involving cerebral and facial cranium, vertebral column, thoracic cage, and specific projections of upper extremity articulations. Techniques and positioning variations for trauma and geriatric age specific patients. Communication skills for patient-focused care, being mindful of standard precautions, and appropriate safety practices. Additional hours required for practicing radiographic positioning assignments under direct supervision of registered radiographer.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): RADT-1400 Radiographic Positioning, and departmental approval: admission to program.

RADT-1911 Clinical Radiography I
07 Semester Credits

Supervised sessions provide the student with practical experience to apply basic positioning and patient care skills acquired in didactic studies. Selection of appropriate radiographic exposures and methods of radiation protection as they correlate to radiographic procedures. Clinical experience is gained through general diagnostic procedures, fluoroscopy, mobile radiography and emergency procedures using a competency based format in hospital environment.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 576 hours. This includes 16 hours of embedded lecture, delivered at clinical site.

Prerequisite(s): Departmental approval: admission to program.

RADT-191A Clinical Radiography I
06 Semester Credits

Supervised sessions provide the student with practical experience to apply basic positioning and patient care skills acquired in didactic studies. Selection of appropriate radiographic exposures and methods of radiation protection as they correlate to radiographic procedures. Clinical experience is gained through general diagnostic procedures, fluoroscopy, mobile radiography and emergency procedures using a competency based format in hospital environment.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 496 hours. This includes 16 hours of embedded lecture, delivered at clinical site. Total hours required 496.

Prerequisite(s): Departmental approval: admission to program.

RADT-191B Clinical Radiography I
01 Semester Credit

Supervised sessions provide the student with practical experience to apply basic positioning and patient care skills acquired in didactic studies. Selection of appropriate radiographic exposures and methods of radiation protection as they correlate to radiographic procedures. Clinical experience is gained through general diagnostic procedures, fluoroscopy, mobile radiography and

emergency procedures using a competency based format in hospital environment.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 80 hours to be completed in the two week intersession.

Prerequisite(s): RADT-191A Clinical Radiography I, and departmental approval: admission to program.

RADT-191S Clinical Radiography I
05 Semester Credits

Supervised sessions provide the student with practical experience to apply basic positioning and patient care skills acquired in didactic studies. Selection of appropriate radiographic exposures and methods of radiation protection as they correlate to radiographic procedures. Clinical experience is gained through general diagnostic procedures, fluoroscopy, mobile radiography and emergency procedures using a competency based format in hospital environment.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 375 hours. This includes 15 hours of embedded lecture, delivered at clinical site. Total hours required 375.

Prerequisite(s): Departmental approval: admission to program.

RADT-2350 Radiographic Pathology
03 Semester Credits

Study and identification of selected pathologic conditions. Manifestation of diseases of the human body and their radiographic appearance. Adjustment of techniques due to pathologic changes and best imaging procedures will be covered.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): BIO-1221 Anatomy and Physiology for Diagnostic Medical Imaging, and RADT-1350 Radiographic Technique, or departmental approval.

RADT-2362 Interventional Radiography and Pharmacology
01 Semester Credit

Introduction to specialized procedures and interventional imaging within diagnostic radiography. Foundational knowledge and skills to enable effective contribution as a member of a specialized imaging team. Basic concepts of pharmacology in interventional and diagnostic radiography. Laboratory demonstration of related patient care and technical skills.

Lecture 00 hours. Laboratory 02 hours.

Prerequisite(s): BIO-1221 Anatomy and Physiology for Diagnostic Medical Imaging; and concurrent enrollment in RADT-2350 Radiographic Pathology; and departmental approval.

RADT-2401 Imaging Systems

02 Semester Credits

Presentation of imaging systems and imaging modalities. Topics include conventional and digital fluoroscopy, image intensification, conventional tomography, computerized tomography, magnetic resonance imaging, mammography, bone densitometry, ultrasound, nuclear medicine, radiation therapy, digital imaging processing and cross-sectional anatomy.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): RADT-1351 Image Acquisition and Evaluation or concurrent enrollment, or departmental approval.

RADT-2510 Fundamentals of Mammography

04 Semester Credits

Introduction to mammography, historical development, patient education and assessment. Anatomy, physiology and pathology of the breast, including benign and malignant conditions, stages of breast cancer and treatment options. Basic and advanced positioning techniques including special cases such as the post-surgical breast. Case studies and mammography image critique. Study of physics of mammography, instrumentation equipment and quality assurance emphasizing image processing quality control. Modular courses RADT-251A, RADT-251B, RADT-251C and RADT-251D together will also meet requirements for this course.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): Admission to Mammography program, or departmental approval.

RADT-251A Introduction to Mammography

01 Semester Credit

Introduction to mammography, historical development, patient education and assessment.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Admission to Mammography program, or departmental approval.

RADT-251B Anatomy and Pathology of the Breast

01 Semester Credit

Anatomy, physiology and pathology of the breast, including benign and malignant conditions, stages of breast cancer and treatment options.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Admission to Mammography program, or departmental approval.

RADT-251C Positioning Techniques for Breast Imaging

01 Semester Credit

Basic and advanced positioning techniques including special cases such as the post surgical breast. Case studies and mammography image critique.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Admission to Mammography program, or departmental approval.

RADT-251D Physics of Mammography

01 Semester Credit

Study of physics of mammography, instrumentation equipment and quality assurance emphasizing image processing quality control.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Admission to Mammography program, or departmental approval.

RADT-2520 Advanced Procedures in Mammography

04 Semester Credits

Study of sterile technique, infection control, interventional procedures and OSHA regulations. Ultrasound breast imaging, including anatomy on ultrasound images. Ultrasound physics and ultrasound imaged pathologies. Comprehensive Registry Review. Standards of care, legal issues, and MQSA guidelines for the Breast Center addressed. Accreditation process and preparation for FDA/MQSA inspection. Modular courses RADT-252A, RADT-252B, RADT-252C and RADT-252D together will also meet requirements for this course.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): RADT-2510 Fundamentals of Mammography; or RADT-251A Introduction to Mammography, and RADT-251B Anatomy and Pathology of the Breast, and RADT-251C Positioning Techniques for Breast Imaging, and RADT-251D Physics of Mammography; and concurrent enrollment in RADT-2930 Mammography Applications.

RADT-252A Sterile Technique and Interventional Procedures

01 Semester Credit

Study of sterile technique, infection control, interventional procedures and OSHA regulations as applicable to the Breast Imaging Department.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): RADT-2510 Fundamentals of Mammography, or RADT-251A Introduction to Mammography, and RADT-251B Anatomy and Pathology of the Breast, and RADT-251C Positioning Techniques for Breast Imaging, and RADT-251D Physics of Mammography; and concurrent enrollment in RADT-2930 Mammography Applications.

RADT-252B Ultrasound Breast Imaging and Registry Review

01 Semester Credit

Ultrasound breast imaging, including anatomy on ultrasound images. Ultrasound physics and ultrasound imaged pathologies. Comprehensive Registry Review.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): RADT-2510 Fundamentals of Mammography, or RADT-251A Introduction to Mammography, and RADT-251B Anatomy and Pathology of the Breast, and RADT-251C Positioning Techniques for Breast Imaging, and RADT-251D Physics of Mammography; and concurrent enrollment in RADT-2930 Mammography Applications.

RADT-252C Legal Issues and MQSA Guidelines**01 Semester Credit**

Standards of care, legal issues, and MQSA guidelines for the Breast Center will be addressed.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): RADT-2510 Fundamentals of Mammography, or RADT-251A Introduction to Mammography, and RADT-251B Anatomy and Pathology of the Breast, and RADT-251C Positioning Techniques for Breast Imaging, and RADT-251D Physics of Mammography; and concurrent enrollment in RADT-2930 Mammography Applications.

RADT-252D Accreditation Process for Mammography**01 Semester Credit**

Accreditation process and preparation for FDA/MQSA/ACR inspection. Study required QC test frequencies and corrective action for ACR/MQSA and manufacturer specifications.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): RADT-2510 Fundamentals of Mammography, or RADT-251A Introduction to Mammography, and RADT-251B Anatomy and Pathology of the Breast, and RADT-251C Positioning Techniques for Breast Imaging, and RADT-251D Physics of Mammography; and concurrent enrollment in RADT-2930 Mammography Applications.

RADT-2911 Clinical Radiography II**07 Semester Credits**

Supervised sessions focusing on further development of medical imaging skills. Emphasis on cranium, vertebra, and articular system for patients including pediatric and geriatric populations. Experience gained through general diagnostic procedures, fluoroscopy, mobile radiography, emergency procedures, surgery, and digital imaging using a competency based system. Adjunct area rotations include computed tomography, magnetic resonance imaging, diagnostic medical sonography, radiation oncology, and nuclear medicine. Clinical experience in hospital environment.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 576 hours. This includes 16 hours of embedded lecture, delivered at clinical site. Total hours required 576.

Prerequisite(s): RADT-1911 Clinical Radiography I, and departmental approval: admission to program.

RADT-291A Clinical Radiography II**06 Semester Credits**

Supervised sessions focusing on further development of medical imaging skills. Emphasis on cranium, vertebra, and articular system for patients including pediatric and geriatric populations. Experience gained through general diagnostic procedures, fluoroscopy, mobile radiography, emergency procedures, surgery, and digital imaging using a competency based system. Adjunct area rotations include computed tomography, magnetic resonance imaging, diagnostic medical sonography, radiation

oncology, and nuclear medicine. Clinical experience in hospital environment.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 496 hours. This includes 16 hours of embedded lecture, delivered at clinical site. Total hours required 496.

Prerequisite(s): RADT-191A Clinical Radiography I, and RADT-191B Clinical Radiography I, and departmental approval: admission to the program.

RADT-291B Clinical Radiography II**01 Semester Credit**

Supervised sessions focusing on further development of medical imaging skills. Emphasis on cranium, vertebra, and articular system for patients including pediatric and geriatric populations. Experience gained through general diagnostic procedures, fluoroscopy, mobile radiography, emergency procedures, surgery, and digital imaging using a competency based system. Adjunct area rotations include computed tomography, magnetic resonance imaging, diagnostic medical sonography, radiation oncology, and nuclear medicine. Clinical experience in hospital environment.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 80 hours to be completed during the two week intersession.

Prerequisite(s): RADT-191A Clinical Radiography I and RADT-191B Clinical Radiography I, and RADT-291A Clinical Radiography II, departmental approval and admission to the program.

RADT-291S Clinical Radiography II**07 Semester Credits**

Supervised sessions focusing on further development of medical imaging skills. Emphasis on cranium, vertebra, and articular system for patients including pediatric and geriatric populations. Experience gained through general diagnostic procedures, fluoroscopy, mobile radiography, emergency procedures, surgery, and digital imaging using a competency based system. Adjunct area rotations include computed tomography, magnetic resonance imaging, diagnostic medical sonography, radiation oncology, and nuclear medicine. Clinical experience in hospital environment.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 576 hours. This includes 16 hours of embedded lecture, delivered at clinical site. Total hours required 576.

Prerequisite(s): RADT-191S Clinical Radiography I, and departmental approval: admission to program.

RADT-2921 Clinical Radiography III

05 Semester Credits

Capstone course in Radiography. Supervised sessions provide further development and practical application of radiographic positioning during general radiographic procedures, fluoroscopy, mobile imaging and emergency procedures. Rotations include surgery, cardiovascular and interventional radiography, and digital imaging. Adjunct area rotations include computed tomography, magnetic resonance imaging, diagnostic medical sonography, radiation oncology, and nuclear medicine. Includes use of specialized equipment. Clinical experience in hospital environment.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 375 hours. This includes 15 hours of embedded lecture, delivered at clinical site. Total hours required 375.

Prerequisite(s): RADT-2911 Clinical Radiography II or RADT-291A Clinical Radiography II and RADT-291B Clinical Radiography II, departmental approval and admission to the program.

RADT-292S Clinical Radiography III

07 Semester Credits

Capstone course in Radiography. Supervised sessions provide further development and practical application of radiographic positioning during general radiographic procedures, fluoroscopy, mobile imaging and emergency procedures. Rotations include surgery, cardiovascular and interventional radiography, and digital imaging. Adjunct area rotations include computed tomography, magnetic resonance imaging, diagnostic medical sonography, radiation oncology, and nuclear medicine. Includes use of specialized equipment. Clinical experience in hospital environment.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 576 hours. This includes 16 hours of embedded lecture, delivered at clinical site. Total hours required 576.

Prerequisite(s): RADT-291S Clinical Radiography II, and departmental approval: admission to program.

RADT-2930 Mammography Applications

03 Semester Credits

Supervised sessions emphasizing practical application of mammography patient preparation and positioning for diagnostic and screening examinations using appropriate exposures, radiation protection and demonstrating professional/ethical skills. Performance, evaluation and recording of quality control tests, as required by the Mammography Quality Standards Act (MQSA) and the American College of Radiology (ACR), will be documented. Clinical experience in the mammography

department of hospital environment for 16 weeks also includes interventional/special examinations.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 16 hours per week.

Prerequisite(s): RADT-2510 Fundamentals of Mammography; or RADT-251A Introduction to Mammography, and RADT-251B Anatomy and Pathology of the Breast, and RADT-251C Positioning Techniques for Breast Imaging, and RADT-251D Physics of Mammography; and concurrent enrollment in RADT-2520 Advanced Procedures in Mammography; or concurrent enrollment in RADT-252A Sterile Technique and Interventional Procedures, and RADT-252B Ultrasound Breast Imaging and Registry Review, and RADT-252C Legal Issues and MQSA Guidelines, and RADT-252D Accreditation Process for Mammography; or departmental approval.

**RECORDING ARTS AND TECHNOLOGY -
RAT**

RAT-1010 Survey of the Recording Industry

03 Semester Credits

Introduction to the recording industry, intended for students who have a general interest in music, sound recordings and the entertainment industry. Topics include recording industry elements and practices; employment trends and outlook; copyrights, publishing and legal issues; impact of the personal computer and the Internet on the recording industry; how traditional and non-traditional record companies work; tools of the modern recording studio; the history of recorded sound; "critical listening" exercises identifying key elements of popular recorded music styles.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

RAT-1100 Sound Recording and Design

03 Semester Credits

Introduction to theory of sound and recording process for media production. Course topics include principles of sound and hearing, audio terminology, recording equipment operation, storage mediums and recording techniques for location and studio applications. This is an introductory audio course for students interested in audio for video, television, film and digital media arts.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): Departmental approval.

RAT-1160 Making Independent Recordings**03 Semester Credits**

Basic guide to making and selling independent recordings. Topics include operation of record companies, recording procedures, planning, budgets, copyrights, publishing, graphics and printing, manufacturing process, promotion and sales strategies, and setting up your own small business.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

RAT-1300 Introduction to Recording**03 Semester Credits**

Introduction to theory of sound and the recording process. Study of audio terminology, principles of sound and hearing, basic equipment, recorder operation, analog and digital signal storage methods.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I, and MATH-1xxx 1000-level MATH course or higher, and MUS-1010 Survey of European Classical Music, or MUS-1020 Survey of Jazz, or MUS-1030 Survey of Rock and Roll, or MUS-1040 Survey of African-American Music, or MUS-1050 Survey of World Music, and RAT-1311 Studio Operations, and departmental approval: admission to program.

RAT-1311 Studio Operations**03 Semester Credits**

Theory and practical applications of the recording studio. Topics include equipment setup and interface, small console signal flow and operating levels, patch bays, studio documentation, basic voice and commercial recording, editing and mixing techniques.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I, and MATH-1xxx 1000-level MATH course or higher, and MUS-1010 Survey of European Classical Music, or MUS-1020 Survey of Jazz, or MUS-1030 Survey of Rock and Roll, or MUS-1040 Survey of African-American Music, or MUS-1050 Survey of World Music, and RAT-1300 Introduction to Recording, and departmental approval.

RAT-1320 Audio Transducers**03 Semester Credits**

Theory, characteristics and operation of various microphone types, loudspeakers, crossovers and speaker/room monitoring considerations.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): RAT-1300 Introduction to Recording, and RAT-1311 Studio Operations, and departmental approval.

RAT-1400 Concert Promotion**03 Semester Credits**

Provides a basic guide to concert promotion. Topics include concert planning, organization, partnering, booking, sponsorships, contracts, unions, radio, press, television, street teams, flyers, budgets, graphics, printing,

promotion and sales strategies, performance rights organizations, insurance, security, governmental regulations, and setting up your own small business. Work as a team to produce an actual concert or concert series.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

RAT-1450 Concert Tour Management**03 Semester Credits**

Comprehensive study of live concert tour and road management, and is intended for individuals interested in careers in live music production, recording artists, artist managers, booking agents and record company personnel. Topics include types of tours, budgets, accounting, logistics, tour coordination, interaction with other tour professionals, contracts and merchandising.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): None.

RAT-1500 Recording Theory I**03 Semester Credits**

Introduction to practical techniques of multi-track recording. Session operating procedures, multiple microphone placement, track assignment, overdubbing, mixdown, and console and recorder operation included.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): RAT-1300 Introduction to Recording, and RAT-1311 Studio Operations; and concurrent enrollment in RAT-1511 Recording Lab I, and departmental approval.

RAT-1511 Recording Lab I**02 Semester Credits**

Practical applications of analog and digital theory and techniques covered in Recording Theory I. Student will record and mix multi-track music and audio for video projects in a professional studio environment.

Lecture 00 hours. Laboratory 06 hours.

Prerequisite(s): RAT-1311 Studio Operations, and RAT-1320 Audio Transducers; and concurrent enrollment in RAT-1500 Recording Theory I, and departmental approval.

RAT-1520 Audio Signal Processing**03 Semester Credits**

Theory and operation of audio processing equipment. Introduction to entire range of studio effects devices including equalizers, variable gain amplifiers including compressors, limiters, gates and expanders, analog and digital delays and reverberation.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): RAT-1500 Recording Theory I, and RAT-1511 Recording Lab I, and departmental approval

RAT-1530 Digital Audio Theory

03 Semester Credits

Theory, methods and practical applications of current digital recording systems. Topics include tape and disc-based recorders, operating system installation and maintenance, data storage methods, recording, editing and digital signal processing, and integration of digital recording equipment into modern studio environment. Student will demonstrate fundamental proficiencies in current digital recording methods and procedures.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): RAT-1300 Introduction to Recording, and RAT-1311 Studio Operations, and MUS-1130 MIDI Technology I, and departmental approval.

RAT-1600 Concert Technical Production

03 Semester Credits

Concert Technical Production is a comprehensive applied study of all aspects of venue and show production. Topics include production, lighting, sound, staging, personnel, stage management, stagehand training, touring road crew protocol, venue load in/load out procedures and musical instrument technical support at live music events.

Students will apply above principles in weekly labs at live music concerts.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): None.

RAT-2300 Recording Theory II

03 Semester Credits

Continuation of practical techniques of recording. Topics include intermediate recording and mixing theory, recording techniques, critical listening and intermediate ear training.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): RAT-1320 Audio Transducers, RAT-1500 Recording Theory I, and RAT-1511 Recording Lab I; and concurrent enrollment in RAT-2311 Recording Lab II, and departmental approval.

RAT-2311 Recording Lab II

02 Semester Credits

Practical applications of theory and techniques covered in Recording Theory. Student will produce, record and mix various styles of musical and audio for video projects.

Includes human relations and talent management.

Lecture 00 hours. Laboratory 06 hours.

Prerequisite(s): RAT-1320 Audio Transducers, and RAT-1500 Recording Theory I, and RAT-1511 Recording Lab I; and concurrent enrollment in RAT-2300 Recording Theory II.

RAT-2330 Digital Audio Mixing

03 Semester Credits

Advanced applications of digital audio recording, editing and mixing using current digital console and non-linear workstation environments. Topics include virtual console basics, digital signal processing, plug-ins, digital signal

routing, digital automation basics, file interchange and basic project mastering techniques.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): RAT-1530 Digital Audio Theory, or departmental approval.

RAT-2341 Location Recording

02 Semester Credits

Techniques used in non-studio recording for news gathering, conference, public speaking, music and sound effects recording. Main emphasis will be hands-on, and students will record, edit and mix a variety of location projects.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): RAT-1320 Audio Transducers, or departmental approval.

RAT-2350 Audio Mastering

03 Semester Credits

Comprehensive applied study of the CD mastering process. Topics include theory and processes of preparing masters for various types of duplication and distribution, including CD, DVD and internet-distributed media formats. Students will perform CD pre-preparation using analog and disc-based editing tools, including current state of the art equalizers, compressors and limiters. The course will also cover current mastering trends, genre specific mastering considerations and archiving from analog and digital source material.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): RAT-1520 Audio Signal Processing, RAT-1530 Digital Audio Theory, RAT-2300 Recording Theory II, RAT-2311 Recording Lab II, or departmental approval.

RAT-2440 Sound for Theatre

03 Semester Credits

Introduction to the essentials of theatrical sound. Topics covered include microphone use, microphone placement, amplifications, theatrical acoustics, Foley sound, recorded effects, and production methodology.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): THEA-1430 Introduction to Scenery and Stagecrafts, and RAT-1300 Introduction to Recording, and RAT-1310 Studio Operations.

RAT-2520 Acoustics and Recording Studio Design

03 Semester Credits

Principles of sound, room measurement techniques, and discussion of acoustical properties of room materials and their effect on room acoustics. Special emphasis on cost-effective studio design -- how to build a recording studio with limited budget.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

RAT-2540 Live Sound Reinforcement**03 Semester Credits**

Theory and operation of various live sound reinforcement systems. Includes acoustics, system setup, signal flow, mixing consoles, microphones, signal processing, amps, crossovers and speaker systems.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): RAT-1320 Audio Transducers, or departmental approval.

RAT-2550 Advanced Live Sound Reinforcement**03 Semester Credits**

Setup and operate sound systems at live music concerts under the direction of a faculty supervisor. Topics include sound system components, assembly, operation, location recording, technical maintenance and performance. Serve as crew for a minimum of twelve shows during the semester at local venues using small and medium size sound systems.

Lecture 00 hours. Laboratory 06 hours.

Prerequisite(s): RAT-1520 Audio Signal Processing, and RAT-2540 Live Sound Reinforcement.

RAT-2940 Audio Recording Field Experience**01-02 Semester Credits**

Cooperative effort between the College and local and national audio-related businesses to provide students with work experience in industry setting. Student, instructor and internship supervisor will develop and implement an "Individual Field Experience Training Plan" which includes general responsibilities, and a training sequence designed to maximize hands-on industry training under actual working conditions.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 12 to 24 hours per week.

Prerequisite(s): RAT-1520 Audio Signal Processing, and RAT-2300 Recording Theory II, and RAT-2311 Recording Lab II, and RAT-2330 Digital Audio Mixing, and RAT-2341 Location Recording, and departmental approval.

RAT-2990 Recording Arts and Technology Capstone**03 Semester Credits**

Capstone course in Recording Arts and Technology. Student will design and implement a capstone recording project that applies the technical, oral, behavioral and written skills learned in previous RAT coursework, resulting in a cumulative evaluation of student recording skills based on established RAT standards. Includes discussion of emerging audio technologies and their impact on recording industry career opportunities.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): RAT-1520 Audio Signal Processing, and RAT-2300 Recording Theory II, and RAT-2311 Recording Lab II, and RAT-2330 Digital Audio Mixing, and RAT-2341 Location Recording, and departmental approval.

RELIGIOUS STUDIES - REL**REL-1010 Introduction to Religious Studies****03 Semester Credits**

Comprehensive introduction to concepts of religion, attributes of God, myth and symbol, faith and reason, rituals, and overview of major historical religions.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

REL-179H Honors Contract in Religious Studies**01 Semester Credit**

Honors Contract complements and exceeds the requirements and objectives for an existing REL 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Must be taken concurrently with a 1000-level course in Religious Studies, whose instructor approves the Honors Contract.

REL-2010 Religious Traditions of Western Christianity**03 Semester Credits**

Comprehensive introduction to history, writings, teachings, and liturgical practices of Western Christianity. Includes historical Jesus, new testament church, patristic church, medieval church, Protestant Reformation, and Church today (including ecumenical concerns following the Second Vatican Council).

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

REL-2020 Religious Traditions of Judaism**03 Semester Credits**

Comprehensive introduction to history, writings, teachings, and liturgical practices of Judaism. Includes historical background, Old Testament, special Jewish festivals, and Judaism's adaptation to modern society.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

REL-2030 Religious Traditions of Islam**03 Semester Credits**

Comprehensive introduction to history, writings, teachings, and liturgical practices of Islam. Includes historical background, the Quran, special Islamic festivals, and Islam's adaptation to modern society.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

REL-2040 Religious Traditions of India

03 Semester Credits

Comprehensive introduction to history, writings, teachings, and liturgical practices of the religious traditions of India. Focus on Hinduism, Jainism and Sikhism.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

REL-2050 Religious Traditions of China and Japan

03 Semester Credits

Comprehensive introduction to history, writings, teachings, and liturgical practices of Buddhism, Confucianism, Taoism, and Shinto. Topics include lives and teachings of Buddha, Confucius, and Lao Tzu.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

REL-2060 African-American Religious Experience

03 Semester Credits

Comprehensive introduction to religious movements and institutions of African-Americans from the period of slavery to present. Includes historical background, Protestantism, Islam, civil rights movement and modern role of religion in African-American life.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

RESPIRATORY CARE - RESP

RESP-1300 Respiratory Care Equipment

04 Semester Credits

Overview of application of physical principles pertaining to physiologic function and diagnostic and therapeutic modalities employed in field of Respiratory Care.

Function and operation of respiratory care equipment: primary gas systems, gas regulating devices, oxygen controllers, humidifiers, nebulizers, oxygen administering devices, oxygen analyzers, airways, manual resuscitators, monitoring and measuring equipment, and sterilization methods.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): Departmental approval.

RESP-1310 Cardiopulmonary Physiology

03 Semester Credits

Physiology of cardiovascular and pulmonary systems with emphasis on electrophysiology of the heart, electrocardiography interpretation, blood flow characteristics, and hemodynamics. Pulmonary system emphasis on lung volumes, dynamics of ventilation, pulmonary function tests, diffusion, ventilation to

perfusion characteristics, gas transport, oxygenation studies, and control of ventilation.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

RESP-1320 Acid-Base and Hemodynamics

02 Semester Credits

Overview of acid-base regulation, integrating the physiologic functions of the renal and respiratory systems. Emphasis is on body buffer systems, oxygen and carbon dioxide transport systems, basic chemistry, and circulating blood forces through the body. Patient analysis and principles of equipment used in the analysis of acid base, oxygenation status, cardiac output and cardiac blood pressures will be addressed.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): RESP-1300 Respiratory Care Equipment, and RESP-1310 Cardiopulmonary Physiology.

RESP-1330 Cardiopulmonary Assessment and Pulmonary Diseases

05 Semester Credits

Theory and application of cardiopulmonary assessment, medical records, and charting. Includes physical assessment, assessment of lab values, radiologic evaluation, vital signs, EKG and pulmonary function testing and interpretation. Discussion of diseases including emphysema, chronic bronchitis, asthma, bronchiectasis, cystic fibrosis, pneumoconiosis, adult respiratory distress syndrome, pneumonia, pulmonary edema, cancer, acquired immune deficiency syndrome, tuberculosis, myasthenia gravis, Guillain-Barre and amyotrophic lateral sclerosis. Emphasis is on identifying signs and symptoms of pulmonary diseases and basic respiratory management of the patient.

Lecture 04 hours. Laboratory 03 hours.

Prerequisite(s): RESP-1300 Respiratory Care Equipment, and RESP-1310 Cardiopulmonary Physiology.

RESP-1340 Pharmacology for Respiratory Care

02 Semester Credits

General principles of pharmacology and calculations of drug dosages. Discussion of pharmacological principles and agents used in the treatment of cardiopulmonary disorders.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): RESP-1300 Respiratory Care Equipment, and RESP-1310 Cardiopulmonary Physiology.

RESP-1700 Asthma Management

01 Semester Credit

Introduction to asthma pathology and treatment. Emphasizes web-based education to asthma symptoms, risk factors, severity, pharmacologic treatment, and care plans. Cultural concepts of health and disease.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

RESP-2210 Introduction to Mechanical Ventilation
01 Semester Credit

Introduction to mechanical ventilation with special emphasis on ventilator terminology. Covers information necessary to understand basic functions of a life-support ventilator.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Concurrent enrollment in RESP-2940 Respiratory Care Field Experience I.

RESP-2300 Basic Therapeutic Procedures
03 Semester Credits

Theory, clinical application and analysis of basic respiratory care procedures. Emphasis on oxygen therapy, medical gas therapy, tracheal suctioning and airways, humidity and aerosol therapy, postural drainage therapy, incentive spirometry, asthma management, inhaled medications, positive pressure adjuncts, intermittent positive pressure breathing, airway management, bronchoscopy, and thoracotomy tubes.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): RESP-1330 Cardiopulmonary Assessment and Pulmonary Diseases.

RESP-2310 Mechanical Ventilation
04 Semester Credits

Theory and application of mechanical ventilation techniques with emphasis on mechanical ventilator characteristics, physiologic effects, patient set-up and evaluation, maintenance of oxygenation, weaning techniques, ventilation safety, and nutritional concerns. Discussion on ventilator management and the medicolegal issues involving life support systems.

Lecture 03 hours. Laboratory 03 hours.

Prerequisite(s): RESP-2210 Introduction to Mechanical Ventilation; and concurrent enrollment in RESP-2950 Respiratory Care Field Experience II.

RESP-2320 Pediatric/Neonatal Respiratory Care
02 Semester Credits

Presentation of theory and its practical application to pediatric and neonatal respiratory disease states. Includes pathophysiology, etiology, patient assessment and treatment using equipment unique to this specialty area.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): RESP-2300 Basic Therapeutic Procedures and concurrent enrollment in RESP-2310 Mechanical Ventilation.

RESP-2330 Respiratory Home Care/Rehabilitation
01 Semester Credit

Identification of the therapist's role in home care and pulmonary rehabilitation. Presentation of oxygen therapy and delivery systems in the private home. Procedure for institution and maintenance of home mechanical ventilation. Outline of new trends in homecare and pulmonary rehabilitation. Guidelines on setting up

hospital-based pulmonary rehabilitation programs along with patient management and follow-up strategies.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): RESP-2950 Respiratory Care Field Experience II.

RESP-2341 Patient Management Problems
01 Semester Credit

Reinforces the clinical education components of information gathering and decision-making specific to assessment and treatment of cardiopulmonary impairment. Specific emphasis placed on the methodologies involved in obtaining and prioritizing diagnostic information. Comprehensive self-assessment at advanced practitioner level of respiratory care steps involved in the research process.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): RESP-2950 Respiratory Care Field Experience II.

RESP-2940 Respiratory Care Field Experience I
01 Semester Credit

Field experience in the clinical setting on respiratory care equipment, policies, and procedures. Emphasis on patient assessment, bedside pulmonary function testing, aerosol therapy, arterial blood gas punctures and oxygen therapy.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 240 hours (24 hours per week for 10 weeks)

Prerequisite(s): RESP-1320 Acid-Base and Hemodynamics, and RESP-1330 Cardiopulmonary Assessment and Pulmonary Diseases, and RESP-1340 Pharmacology for Respiratory Care.

RESP-2950 Respiratory Care Field Experience II
02 Semester Credits

Field experience in the clinical setting on respiratory therapy equipment, policies, and procedures. Emphasis on intubation, pulmonary function testing, airway clearance techniques, hyperinflation techniques, manual ventilation and suctioning, and mechanical ventilation. Clinical activities also include proficiencies completed in patient assessment, aerosol therapy, bedside pulmonary function testing, arterial blood gas sampling and analysis, and oxygen therapy.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 360 hours (24 hours per week for 15 weeks).

Prerequisite(s): RESP-2210 Introduction to Mechanical Ventilation RESP-2310 Mechanical Ventilation or concurrent enrollment, and RESP-2910 Respiratory Care Directed Practice I.

RESP-2960 Respiratory Care Field Experience III
02 Semester Credits

Capstone course in Respiratory Care. Field experience in clinical setting on respiratory therapy equipment, policies, and procedures. Emphasis on adult invasive and non-invasive mechanical ventilation, weaning from mechanical ventilation, pediatric patient care, and respiratory care in the long-term acute care facility environment.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 360 hours (24 hours per week).

Prerequisite(s): RESP-2920 Respiratory Care Directed Practice II.

RUSSIAN - RUSS

RUSS-1010 Beginning Russian I
04 Semester Credits

Introduction to modern Russian language. Emphasis on speaking, understanding spoken Russian, reading and writing through multiple approaches including audio, video and computer components. Supporting study of basic principles of grammar.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): None.

RUSS-1020 Beginning Russian II
04 Semester Credits

Continued study of grammar and vocabulary. Oral and written exercises. Reading of texts of medium difficulty. Developing aural comprehension skills and ability for oral expression through patterns learned from audio-visual materials used in classroom.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): RUSS-1010 Beginning Russian I, or departmental approval.

RUSS-2010 Intermediate Russian I
03 Semester Credits

Introduction to more advanced vocabulary and speech patterns and continuation of in-depth study of grammar. Practical application of skills of understanding, speaking, reading and writing Russian. Cultural exposure through reading texts and using multi-media approaches. Attendance at various cultural events may be required.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): RUSS-1020 Beginning Russian II, or departmental approval.

RUSS-2020 Intermediate Russian II
03 Semester Credits

In-depth study of advanced vocabulary and speech patterns, complex sentence structures and grammar. Advanced skills in understanding, speaking, reading and writing. Continued cultural exposure through text

reading, film viewing, audio, video and computer materials and discussions.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): RUSS-2010 Intermediate Russian I, or departmental approval.

RUSS-2410 Russian Conversation and Composition
03 Semester Credits

Conversation and composition revolve around topics of general interest taken from everyday life. In conversing, students develop pronunciation, intonation, fluency and comprehension skills. Writing fosters practice of familiar terminology mixed with new vocabulary and idioms.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): RUSS-2020 Intermediate Russian II, or departmental approval.

RUSS-2420 Russian Literature and Culture
03 Semester Credits

Survey of Russian literature, emphasizing 19th and 20th centuries, highlighting prose and verse of representative writers and their works in perspective of traditional and contemporary Russian culture.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): RUSS-2020 Intermediate Russian II, or departmental approval.

SOCIOLOGY - SOC

SOC-1010 Introductory Sociology
03 Semester Credits

An overview of the principles, sociological perspectives, theories, concepts, and research methods used in the field with more intensive study in the following areas: culture, socialization, formal organizations, social structure, and social stratification. Additional emphasis is placed on the application of sociology to current events.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OSS021

SOC-101H Honors Introductory Sociology
03 Semester Credits

In-depth analysis of sociological perspectives, theories, concepts, and research methods. Emphasizes thorough comprehension of concepts such as culture, socialization, and social stratification through application of concepts to real-world situations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG 101H Honors College Composition I.

OAN Approved: OSS021

SOC-1020 Social Institutions**03 Semester Credits**

A sociological examination of major social institutions: the family, religion, education, politics, economy, and health care. Analysis of social dynamics and change. Use of theory and research to develop an understanding of institutional development and evolution.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SOC-1010 Introductory Sociology, or SOC-101H Honors Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology.

SOC-179H Honors Contract in Sociology**01 Semester Credit**

Honors Contract complements and exceeds the requirements and objectives for an existing SOC 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Must be taken concurrently with a 1000-level course in Sociology, whose instructor approves the Honors Contract.

SOC-2010 Social Problems**03 Semester Credits**

Analysis of contemporary American social problems such as race, poverty, drugs, sex, violence, crime and delinquency. Sociological approach used to understand underlying factors and history of problems and to evaluate individual and societal solutions.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SOC-1010 Introductory Sociology, or SOC-101H Honors Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology.

OAN Approved: OSS025

SOC-201H Honors Social Problems**03 Semester Credits**

In-depth sociological analysis of contemporary social problems in the United States, cross-cultural solutions and their implications for individuals, social institutions and society. Emphasis on application of sociological imagination, sociological theories and multiple research methods to understand social forces that promote social inequalities and their consequences, based on race/ethnicity, gender, social class and other factors. Course culminates in student's clarification and appraisal of personal values, and formulation of personal strategy to influence social policy and affect change regarding a

specific social problem examined in the course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SOC-1010 Introductory Sociology or SOC-101H Honors Introductory Sociology, and eligibility for ENG-101H Honors College Composition I.

OAN Approved: OSS025

SOC-2020 Sociology of the Family**03 Semester Credits**

Historical, comparative, and contemporary analysis of marriages and families and their relationship to other social institutions. Sociological perspectives used to understand social, psychological and economic aspects of intimate interpersonal relations across the lifecourse and among a variety of lifestyles and cultures.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SOC-1010 Introductory Sociology, or SOC-101H Honors Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology.

OAN Approved: OSS023

SOC-2040 Introduction to Social Work**03 Semester Credits**

Introduces students to ideas, venues, and susceptible populations associated with the social work profession. Stresses knowledge, ethics, principles, values, and skills that exemplify the foundation of a professional social worker. Presents a survey of theoretical and practical knowledge used in social work practice at the entry level.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SOC-1010 Introductory Sociology, or SOC-101H Honors Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology; and ENG-1010 College Composition I, or ENG-101H Honors College Composition I.

SOC-2051 Introduction to Social Welfare**03 Semester Credits**

Surveys history, functioning, and social issues of social welfare system relating them to broader American socio-economic and political systems. Special focus on problems of economically and socially disadvantaged groups.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SOC-1010 Introductory Sociology, or SOC-101H Honors Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

SOC-2060 Human Behavior and the Social Environment**03 Semester Credits**

Social work perspective on human development across the life cycle. Human diversity approach consistent with the needs of social work students preparing for practice.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SOC-1010 Introductory Sociology, or SOC-101H Honors Introductory Sociology; and PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

SOC-2070 Poverty in the United States**03 Semester Credits**

Survey of social and personal dimensions of life in the inner city and other areas of poverty in United States. For person wishing to develop an in-depth understanding and/or intending to work in such areas.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SOC-2050 Introduction to Social Welfare.

SOC-2100 Aging and Society**03 Semester Credits**

Cross-cultural examination of social, biological and psychological process of aging. Societies studied with regards to social characteristics of older citizens, their social roles and relations with various social institutions, friends and voluntary associations. Impact of social class, race, ethnicity, and religion on aging and ageism considered.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SOC-1010 Introductory Sociology or SOC-101H Honors Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology.

SOC-2110 Death and Dying**03 Semester Credits**

Examination of death and dying through a multi-disciplinary approach to understand the connection of death and dying in various contexts: sociological, ethical, medical, legal, psychological, and religious.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SOC-1010 Introductory Sociology or SOC-101H Honors Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology.

SOC-2150 Deviance**03 Semester Credits**

Sociological examination deviant attitudes, behaviors, and conditions. Exploration of how actions come to be defined as deviant, theories of deviance, and methods of social control and social reaction. Different types of deviant behavior examined, including sexual deviance, crime, drugs, medical deviance, and other forms of deviant behavior.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I; and SOC-1010 Introductory Sociology, or SOC-101H Honors Introductory Sociology, or ANTH-1010 Cultural Anthropology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

SOC-2160 Introduction to Criminology**03 Semester Credits**

To develop a sociological framework for examining crime. Review and apply major theories of criminal behavior. Critically examine how specific behaviors and social conditions become defined as crime. Use of sociological

principles to assess the criminal justice system's ability to deter, punish, and rehabilitate offenders.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ANTH-1010 Cultural Anthropology, or PSY-1010 General Psychology or PSY-101H Honors General Psychology, or SOC-1010 Introductory Sociology or SOC-101H Honors Introductory Sociology, or CJ-1000 Introduction to Criminal Justice.

SOC-2210 Dating and Intimate Relationships**03 Semester Credits**

Intimate relationships studied on life course continuum from pre-teen to late adulthood, taking into consideration the profound effects exerted by ethnicity, race, gender, human sexuality, socioeconomic status, age, and place of residency. Analysis of the state, quality and issues related to various types of intimate relationships over time with emphasis on friendship, dating, cohabitation, marriage, dissolution and resolution. Students use C. Wright Mill's concepts of the sociological imagination, public issues and personal troubles to link events in society to the state of intimate relationships in America today.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SOC-1010 Introductory Sociology or SOC-101H Honors Introductory Sociology, or ANTH-1010 Cultural Anthropology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology.

SOC-2310 Contemporary American Black-White Relations**03 Semester Credits**

Sociological and psychological analysis of contemporary American black-white relations. Study of minority-majority behavior patterns as related to social-historical structure, stratification, and power. Consideration of programs, movements and alternative solutions to present conditions.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SOC-1010 Introductory Sociology or SOC-101H Honors Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology.

SOC-2410 Sociology of Gender**03 Semester Credits**

Analysis of the social construction of gender, gender roles, and gender stratification in American society. Compare gender assumptions within social and cross-cultural contexts. Examine socialization and social psychological influences on gender identity, the impact of gender in relationships, the importance of sex and gender in institutions and organizations, and the impact of recent social movements and social policies.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ANTH-1010 Cultural Anthropology, or SOC-1010 Introductory Sociology, or SOC-101H Honors Introductory Sociology, or any 2000 level course in Sociology.

SOC-2510 Urban Sociology**03 Semester Credits**

Analysis of historical development of contemporary metropolis with its challenges to diversity, equality, inclusion, and change. Sociological concepts, theories and research methods used to characterize urban life and examine interrelatedness of social institutions typical of postmodern society. Cross-national comparisons drawn. *Lecture 03 hours. Laboratory 00 hours.*

Prerequisite(s): SOC-1010 Introductory Sociology or SOC-101H Honors Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or ANTH-1010 Cultural Anthropology.

SOC-2550 Race and Ethnic Relations**03 Semester Credits**

Analysis of sources, processes, and consequences of current intergroup relations in the United States; identification of various segments of population, their history and patterns of adaptation to prejudice and discrimination; and exploration of attempts to equalize power differences and structured social inequality. Includes cross-cultural comparisons.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SOC-1010 Introductory Sociology or SOC-101H Honors Introductory Sociology, or PSY-1010 General Psychology, or PSY-101H Honors General Psychology, or HIST-2160 African American History 1877-present, or ANTH-1010 Cultural Anthropology.

OAN Approved: OSS024

SOC-2830 Cooperative Field Experience**01-03 Semester Credits**

Limited to students in Cooperative Education program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): Formal application into the Cooperative Education program.

SPANISH - SPAN**SPAN-1011 Beginning Spanish Language and Cultures I****04 Semester Credits**

Introduction to Spanish language and cultures through multiple approaches with emphasis on spoken and written communication, listening and reading comprehension, and cultural awareness. Practice of basic functional Spanish in basic oral (listening-speaking) and written

(reading-writing) communication situations and cultural contexts.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): None.

OAN Approved: OFL019

SPAN-1021 Beginning Spanish Language and Cultures II**04 Semester Credits**

Second beginning course continues introducing Spanish language and cultures through multiple approaches with emphasis on development of spoken and written communication, listening and reading comprehension, and cultural awareness. Practice of functional Spanish in oral (listening-speaking) and written (reading-writing) communication situations and cultural contexts.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): SPAN-1011 Beginning Spanish I, or one year of high school Spanish, or departmental approval.

SPAN-1030 Spanish for Law Enforcement**04 Semester Credits**

Includes cross cultural issues relevant to interactions between non-Hispanic law enforcement officers and the Hispanic community members; involves introduction too and practice with basic Spanish vocabulary specific to real life situations in the law enforcement profession.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): None.

SPAN-2010 Intermediate Spanish I**03 Semester Credits**

The first in a series of two intermediate Spanish courses reviews and expands upon introductory level vocabulary, grammar and culture through multiple approaches. Emphasis on further development of spoken and written communication, listening and reading comprehension, and cultural awareness in functional contexts is designed to build upon established proficiencies at the beginning level.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SPAN-1021 Beginning Spanish Language and Cultures II, or two years of high school Spanish, or departmental approval.

SPAN-2020 Intermediate Spanish Language and Cultures II**03 Semester Credits**

Second intermediate course further develops spoken and written communication, listening and reading comprehension, and cultural awareness and competency in functional contexts through multiple approaches geared towards greater fluency.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SPAN-2011 Intermediate Spanish Language and Culture I, or three years of high school Spanish, or departmental approval.

SPAN-2411 Spanish Conversation and Composition
03 Semester Credits

Discussion on topics of everyday life, colloquialisms, vocabulary augmentation, and improvement of speech patterns. Practice in writing compositions.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SPAN-2020 Intermediate Spanish II, or concurrent enrollment with departmental approval: three years of high school Spanish.

SPAN-2420 Introduction to Spanish Culture, Civilization, and Literature
03 Semester Credits

Introduction to Spanish civilization and literature from early beginning to present day. Special emphasis on interrelationship between history and geography, and literature of Spain and its culture.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SPAN-2020 Intermediate Spanish II, or concurrent enrollment with departmental approval: three years of high school Spanish.

SPAN-2430 Civilization, Culture, and Literature of Latin America
03 Semester Credits

Instruction in Spanish. Civilization and literature of Latin America from pre-Columbian period to present.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SPAN-2020 Intermediate Spanish II, or concurrent enrollment with departmental approval: three years of high school Spanish.

SPEECH COMMUNICATION - SPCH

SPCH-0910 Basic Communication Skills
03 Semester Credits

Demonstrate ways communication can be processed, distorted, or shared. Special emphasis on personal communication growth, processing information, message analysis and verbal expression as basic communication skills necessary for college achievement.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

SPCH-1000 Fundamentals of Interpersonal Communication
03 Semester Credits

Purpose and process of verbal and non-verbal communication to strengthen daily communication skills. Special emphasis given to perception, self concept, expressing feelings, empathy and listening as learned interpersonal skills. Combines theoretical concepts with experiential learning through lecture, discussion, and simulations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OCM002

SPCH-1010 Fundamentals of Speech Communication
03 Semester Credits

Effective speech communication. Application of principles of speech content and delivery to a variety of practical speaking and listening situations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

OAN Approved: OCM004

SPCH-101H Honors Fundamentals of Speech Communication
03 Semester Credits

In-depth study and application of effective speech communication. Includes principles of speech content and delivery in a variety of speaking and listening situations. Research in the origins and history of speech including classic Greek, Roman, and contemporary models. Emphasis on speaking and speech evaluation.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Eligibility for ENG-1010 College Composition I.

OAN Approved: OCM004

SPCH-1050 Voice and Articulation
03 Semester Credits

Practical course in application of both theory and technique to conscious vocal control and development of articulation and pronunciation standards. Individual and group practice. Performance through exercises and readings.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

SPCH-1210 Group Discussion
03 Semester Credits

Basic elements of communications and small group theory as employed in typical small group situation. Emphasis placed on individual's responsibility in discussion setting, focusing on development of leadership abilities within each group. Analysis of group interaction in problem-solving process for task-oriented groups.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

OAN Approved: OCM003

SPCH-2000 Introduction to Communication Theory
03 Semester Credits

Introduction to theories of human communication. Analyzing the communication process by examining the process of building communication theory, as well as addressing theories in a variety of communication contexts such as interpersonal, group, public, organizational, influence, mass media, and cultural. Attention to the application of communication theory in achieving a better understanding the process of human communication.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SPCH-1000 Fundamentals of Interpersonal Communication or SPCH-1010 Fundamentals of Speech Communication or SPCH-101H Honors Fundamentals of Speech Communication; and eligibility for ENG-1010 College Composition I.

OAN Approved: OCM001

SPCH-2010 Advanced Public Speaking
03 Semester Credits

Organizing and presenting informative speeches, persuasive speeches and speeches for special occasions. Emphasis on using evidence and reasoning to support ideas, adapting to the audience, developing effective oral style, and improving physical and vocal attributes of delivery.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SPCH-1010 Fundamentals of Speech Communication, or departmental approval: comparable knowledge or skills.

SPCH-2020 Interviewing
03 Semester Credits

Theory and practice of interviewing, including interview structures, questioning techniques and formats, and a range of interview types. Specific practice in selection and workplace interviewing. Modular courses SPCH-202A, SPCH-202B, and SPCH-202C together will also meet requirements for this course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

SPCH-202A Interviewing Overview
01 Semester Credit

Theory and practice of interviewing, including interview structures, questioning techniques and formats, interviewing etiquette, listening skills, and nonverbal communication issues in interviewing. This course required before taking other interviewing modules on specific interview types. Verify transferability of this modular course with your receiving institution.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): None.

SPCH-202B Selection Interviewing
01 Semester Credit

Theory and practice of selection interviewing, from the point of view of both the applicant and the employer.

Verify transferability of this modular course with your receiving institution.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): SPCH-202A Interviewing Overview.

SPCH-202C Workplace Interviewing
01 Semester Credit

Theory and practice of interviewing in the workplace, specifically including performance appraisal, exit, and disciplinary interviews, as well as workplace coaching. Verify transferability of this modular course with your receiving institution.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): SPCH-202A Interviewing Overview.

SPCH-2050 Oral Interpretation
03 Semester Credits

Introduction to the oral communication of various forms of fiction and nonfiction for live performance. Involves the analysis of literary works in preparation for performance with an emphasis on the development of delivery skills for interpretive reading.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SPCH-1010 Fundamentals of Speech Communication, and ENG-1010 College Composition I.

SPCH-2060 Interviewing for Information
01 Semester Credit

Theory and practice of interviewing for information, specifically journalistic and information gathering interviewing, health related interviewing, and survey interviewing. Verify transferability of this course with your receiving institution.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): SPCH-2020 Interviewing, or SPCH-202A Interviewing Overview.

SPCH-2070 Relational Interviewing
01 Semester Credit

Theory and practice of interviewing conducted to affect relationships, specifically problem-solving interviews, persuasive interviews, and counseling interviews. Verify transferability of this course with your receiving institution.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): SPCH-2020 Interviewing or SPCH-202A Interviewing Overview.

SPCH-2110 Argumentation and Debate
03 Semester Credits

Discovering, selecting and evaluating evidence and arrangement into orderly persuasive oral and written argument. Special emphasis on causes and effects of prejudice, remedies and influence of language on human behavior.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SPCH-1010 Fundamentals of Speech Communication, or departmental approval: comparable knowledge or skills.

SPCH-2120 Forensics Activity

01 Semester Credit

Participation in variety of forensic activities by assignment including intercollegiate debate, choral reading, reader's theatre, and individual events. (May be repeated for a maximum of three credit hours.)

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): SPCH-2110 Argumentation and Debate, or SPCH-2050 Oral Interpretation, or departmental approval: comparable knowledge or skills.

SPCH-2130 Business and Professional Communication

03 Semester Credits

Examines the fundamental models, concepts, and theories of business communication by exploring the contexts in which it exists. Includes an exploration of leadership and management styles, cultural diversity and communication, conflict management and negotiation approaches, as well as skills and strategies for interviewing success.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SPCH-1000 Fundamentals of Interpersonal Communication, or SPCH-1010 Fundamentals of Speech Communication, or SPCH-1210 Group Discussion, or departmental approval: comparable knowledge or skills.

SPCH-2150 Introduction to Speech Pathology

03 Semester Credits

Survey of profession of speech pathology and introduction to various organic and functional speech disorders including deviant articulation, delayed speech development, and stuttering. Techniques for diagnosis and treatment explored.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SPCH-1050 Voice and Articulation, and departmental approval: sophomore standing or consent of instructor.

SPCH-2160 Intercultural Communication

03 Semester Credits

Theory and application of communication concepts operating between people of different cultures.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

SPCH-2180 Principles of Phonetics

03 Semester Credits

Study of the theory, principles and practices that are employed to describe the sounds of spoken English. Introduction to the International Phonetic Alphabet (IPA) and its application in transcribing the sounds of normal, deviant and accented speech. Course content is relevant to the disciplines of speech and hearing science, education, linguistics and theatre.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SPCH-1050 Voice and Articulation, or departmental approval.

SPORT AND EXERCISE STUDIES - SES

SES-1001 Introduction to Sport and Exercise Studies

02 Semester Credits

An overview of the field of exercise science and the Sport and Exercise Studies program at Cuyahoga Community College. Objectives include describing various aspects of careers, identifying professional resources and organizations, and determining opportunities for advanced study in sport and exercise studies. Requires observation and assignments outside of the classroom.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): None.

SES-1040 Teaching Exercise Training Techniques

03 Semester Credits

Instruction on how to teach basic principles, concepts, and techniques of exercise. Students will learn to instruct cardiovascular, resistance, functional and flexibility exercises and activities. Includes proper instructional exercise techniques, guidelines, safety, injury prevention, and basic exercise programming. Students will assist in teaching exercise techniques to PE and/or recreation classes. Outside class assignments may be required.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

SES-1100 Fundamentals of Fitness and Sport Management

03 Semester Credits

An in-depth look at fitness and sport management in the health/recreation/fitness club industry. Topics include management, budget, finances, membership, sales, marketing, risk management, liability and operation of a health/recreation/fitness club business.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

SES-1201 Fitness and Wellness Coaching

03 Semester Credits

Concepts of fitness and wellness coaching including health behavior change theories, client assessment, goal setting, evaluation processes, coaching dialogue, and coaching ethics. Students will learn how to develop a coaching approach. Coaching sessions required in class and/or out of class.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

SES-2000 Essentials of Sports Injury Care**03 Semester Credits**

Designed to provide entry level knowledge in the field of sport and fitness related injuries. This course includes basic anatomy of common injuries, evaluation techniques, preventive measures to reduce the incidences of injuries and knowledge of basic treatment procedures. Legal and ethical issues will also be discussed.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): HLTH-1310 Cardiopulmonary Resuscitation, or EMT-1310 Cardiopulmonary Resuscitation or concurrent enrollment, HLTH-1230 Standard First Aid and Personal Safety or concurrent enrollment, or departmental approval.

SES-2010 Exercise and Movement Anatomy**03 Semester Credits**

Designed for movement and fitness professionals. Examines the anatomical structures, joint actions, and the neuromyofascial and musculoskeletal system of human movement related to exercise, sport, recreation and dance.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): SES-1040 Teaching Exercise Training Techniques; or departmental approval.

SES-2100 Sport and Exercise Physiology**03 Semester Credits**

Designed to increase student's knowledge and understanding about human physiology and the adaptations that occur during exercise. Topics include energy metabolism, cardiovascular, respiratory, endocrine, neuromuscular, nutrition, environmental factors, and applied exercise physiology. The laboratory is designed to complement the lecture area.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): SES-2310 Advanced Training Concepts and Techniques, or departmental approval.

SES-2130 Kinesiology: Fundamentals of Human Movement**03 Semester Credits**

Analysis of functional human movement based on the anatomical, neuro-myofascial, biomechanical and Anatomy Trains principles. Emphasis is given to the application of these principles to the understanding of movement in exercise, recreation, sport and dance.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): BIO-2331 Anatomy and Physiology I or SES-2010 Exercise and Movement Anatomy; or departmental approval.

SES-2210 Exercise Testing, Measurement, and Evaluation**03 Semester Credits**

Study of the techniques for conducting health screenings and fitness assessments and interpreting the results. Assessments include risk stratification, cardiorespiratory fitness, muscular strength and endurance, range of motion, posture, balance, movement patterns and body composition. Emphasis on safety guidelines and

precautions. Measurement and evaluation concepts will be introduced.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): SES-2310 Advanced Training Concepts and Techniques or departmental approval.

SES-2220 Exercise Prescription and Program Design**03 Semester Credits**

Design, implement and evaluate appropriate exercise prescriptions and programs for a variety of healthy and "at risk" populations. Behavior change, motivational concepts, and other specific programming issues will also be addressed.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): SES-2210 Exercise Testing, Measurement, and Evaluation, or departmental approval.

SES-2300 Personal Training Certification Preparation**03 Semester Credits**

Preparation for nationally accredited personal training certification. Covers exercise physiology, anatomy, kinesiology, biomechanics, exercise techniques, exercise testing, exercise prescription and program design, behavior modification, injury prevention, first aid, legal issues, business issues, and professional ethics.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): SES-2310 Advanced Training Concepts and Techniques or departmental approval.

SES-2310 Advanced Training Concepts and Techniques**03 Semester Credits**

Provides students with an opportunity to develop an in-depth understanding of the advanced principles and concepts of functional, resistance, sports performance, cardiorespiratory and flexibility exercises and training/conditioning programs. Students will learn safe and proper instructional techniques and teaching methodologies using a variety of equipment. Outside class assignments may be required.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): SES-1040 Teaching Exercise Training Techniques or departmental approval.

SES-2320 Group Fitness Instructor**03 Semester Credits**

Preparation for career as Group Fitness/ Exercise Instructor. Focus is on developing instructional techniques such as cueing, choreography, and how to safely modify classes to meet the needs of both healthy individuals and special populations for all formats of group exercise classes.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): SES-2310 Advanced Training Concepts and Techniques or departmental approval.

SES-2330 Motor Learning and Development

03 Semester Credits

Provide students with an understanding of the changes that occur in motor learning and development over the entire lifespan. Participants will have opportunities to observe and analyze fundamental motor patterns as they are performed in various settings.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SES-2310 Advanced Training Concepts and Techniques or departmental approval.

SES-2340 Analysis of Motor Skills

03 Semester Credits

Introduction to the fundamentals of biomechanics related to human movement and the science of motor skill diagnosis.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): SES-2310 Advanced Training Concepts and Techniques or departmental approval

SES-2350 Exercise for Special Populations

03 Semester Credits

An overview of procedures, concepts, and modifications related to fitness testing and exercise programming for various life stages and chronic diseases. Benefits of exercise and public health implications for each condition will be addressed.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SES-2310 Advanced Training Concepts and Techniques or departmental approval.

SES-2400 Sports Coaching: Principles and Concepts

03 Semester Credits

Theories and principles for coaching sports and sport skills. Emphasis on the development of a coaching philosophy, coaching ethics and the impact of contemporary trends and issues on coaching, and skills common to all coaching activities.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): SES-2310 Advanced Training Concepts and Techniques or departmental approval.

SES-2840 Practicum: Sport and Exercise Studies

02 Semester Credits

Capstone Course: Apply practical skills by working in the field of health, wellness, and fitness through practicum experience on-campus or off site experiences. Health, wellness and fitness assessment, program design, program evaluation, and daily operation of a fitness facility.

Includes topics relevant to case studies, exercise programming, legal and safety concerns, continuing education and certification opportunities, job search, and

resume building. Completion and submission of resume and Professional Program Portfolio.

Lecture 00 hours. Laboratory 00 hours.

*Other Required Hours: Practicum: 8 hours a week for 15 weeks
Seminar 1 hour a week.*

Prerequisite(s): SES-2130 Kinesiology: Fundamentals of Human Movement, or concurrent enrollment; and SES-2220 Exercise Prescription and Program Design, or concurrent enrollment or departmental approval.

SURGICAL TECHNOLOGY - SURT

SURT-1000 Survey of Surgical Technology

01 Semester Credit

Designed to familiarize students seeking a career in health-care within the profession of surgical technology. Course provides an overview of history, professional organization, philosophy and practice of surgical technology. Discussion of roles and responsibilities of operating room personnel will also be provided as well as study of asepsis, instrumentation, positioning and draping.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): MA-1020 Medical Terminology I, and departmental approval.

SURT-1300 Introduction to Surgery

05 Semester Credits

Presentation and discussion of development of modern day surgery, organization of operating room department, roles of operating room personnel, health care reform practices, and care of surgical patient. Infection control applicable to operative setting discussed including sterilization of surgical supplies, sterile techniques, and application of sterile techniques in operating room. Discussion of special items used in operating room, general and regional anesthesia, wound healing, sutures, and staplers. Legal and ethical aspects of operating room practice introduced.

Lecture 05 hours. Laboratory 00 hours.

Prerequisite(s): Concurrent enrollment in SURT-130L Surgery Lab and departmental approval: Admission to program.

SURT-130L Surgery Lab**02 Semester Credits**

Practice of assistant circulating skills and scrub skills of surgical technologist. Patient transportation and transfer skills, operation of the surgical bed, patient positioning, operation of the electrosurgical unit and suction system, sterile techniques utilized when opening and dispensing sterile supplies, hair removal, skin preparation, urinary catheterization, surgical scrub, gowning and gloving. Employability and problem solving skills introduced.

Lecture 00 hours. Laboratory 06 hours.

Prerequisite(s): Concurrent enrollment in SURT-1300

Introduction to Surgery and departmental approval: Admission to program.

SURT-1330 General Surgery**05 Semester Credits**

Includes steps of an operative procedure, features of general surgery, hemostasis, operative drains, surgical specimens, layers of abdominal wall, abdominal incisions and laparotomy. Discussion on operative procedures may include hernia procedures of the abdominal region, liver and biliary procedures, pancreas and spleen procedures, gastric and related esophageal procedures, lower gastrointestinal procedures, breast surgery, gynecological and obstetrical procedures, and plastics/reconstructive surgery.

Lecture 05 hours. Laboratory 00 hours.

Prerequisite(s): SURT-1300 Introduction to Surgery and SURT-130L Surgery Lab and concurrent enrollment in SURT-1911 Clinical Experience I.

SURT-1700 Sterile Processing Tech I**04 Semester Credits**

Presentation and discussion of development and history of a modern Sterile Processing Department. Roles and responsibilities of Sterile Processing Technicians. Review of the anatomy and physiology of the human body in relation to processing of medical devices and patient care equipment. Discussion of basic microbiology and identification of common microbes and diseases found in today's health care environment. Presentation and discussion of infection control techniques in relation to disease transmission. Demonstration of appropriate decontamination techniques and protocol of medical devices and patient care equipment to eliminate the occurrence of a health care acquired infection. Discussion of federal and private organizations affecting daily functions of field of study. Legal and ethical aspects of Sterile Processing practice introduced.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I or concurrent enrollment, and MA-1020 Medical Terminology I, or concurrent enrollment, and MATH-0955 Beginning Algebra, and concurrent enrollment in SURT-1720 Introduction to Hospital Administration, and departmental approval: admission to Sterile Processing Distribution program.

SURT-1710 Sterile Processing Tech II**04 Semester Credits**

Presentation and discussion of techniques and protocol of processing patient care equipment. Review and demonstration of the various packaging methods currently in use in today's health care environment for sterile processing of critical medical devices. Discussion and identification of surgical instruments including techniques for recognizing damage and/or poor working condition to allow technicians to remove for preventive maintenance. Discussion and identification of the various methods of sterilization currently used in health care. Demonstration of appropriate monitoring techniques to achieve required degree of sterile assurance level. Identification of sterile storage procedures and concepts. Review and demonstration of appropriate distribution methods and effect each has on the cost of med/surgical supplies.

Lecture 04 hours. Laboratory 00 hours.

Prerequisite(s): SURT-1700 Sterile Processing Tech I, and SURT-1720 Introduction to Hospital Administration, and concurrent enrollment in SURT-1861, or departmental approval.

SURT-1720 Introduction to Hospital Administration**01 Semester Credit**

Presentation and discussion of history, development and current trends in the daily operations of modern hospitals. Hospital governance, administration and management. Review of functions of clinical patient care areas of inpatient care, outpatient care, surgery, emergency services, ancillary diagnostic and rehabilitation services. Review of patient, facility and administrative support services. Discussion of critical interrelated functions of all departments of hospital to insure quality patient care is delivered. Introduction to hospital budgeting, marketing, financing, billing, quality improvement and accreditation. Presentation of case studies to emphasize actual ethical concerns that may be experienced in performance of duties.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Concurrent enrollment in SURT-1700 Sterile Processing Tech I, and admission to the Sterile Processing and Distribution program.

SURT-1861 Clinical Experience: Sterile Processing 02 Semester Credits

Supervised clinical experience in central service/materials management department of health care facility covering principles and practices of cleaning, decontamination, and sterilization of medical instruments and apparatus.

Fundamentals of wrapping, sterile set-ups, safety rules and regulations, inventory control, recordkeeping and quality assurance.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Directed Practice: 240 hours per semester.

Prerequisite(s): SURT-1700 Sterile Processing Tech I, and concurrent enrollment in SURT-1710 Sterile Processing Tech II.

SURT-1911 Clinical Experience I 03 Semester Credits

Beginning level scrubbing and instrumentation skills while caring for a surgical patient in operating room at assigned affiliated hospital or surgery center. Skills performed correlate with skills learned in surgery lab. Includes scrubbing, gowning and gloving, back table and mayo set-ups, surgical draping, instrumentation skills, basic procedural knowledge and employability skills. Students perform primarily in the second scrub role, gradually increasing to the first scrub role.

Lecture 00 hours. Laboratory 00 hours.

*Other Required Hours: Practicum: 16 hours per week in hospital setting.
Seminar: 1 hour per week.*

Prerequisite(s): SURT-1300 Introduction to Surgery and SURT-130L Surgery Lab and concurrent enrollment in SURT-1330 General Surgery.

SURT-1921 Clinical Experience II 02 Semester Credits

Practical application of previously learned surgical skills at assigned affiliated hospital. Students perform in both first and second scrub roles during operative procedures, increasing in proficiency. Weekly CST Exam review and post-clinical experience discussion.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 16 hours per week in hospital setting for 8 weeks.

Seminar: 1 hour per week for 8 weeks.

Prerequisite(s): SURT-1300 Introduction to Surgery and SURT-130L Surgery Lab and SURT-1330 General Surgery and SURT-1911 Clinical Experience I.

SURT-2300 Surgical Specialties 05 Semester Credits

Presentation and discussion of surgical specialty procedures; includes ophthalmic, otorhinolaryngology, oral/maxillofacial, genitourinary, orthopedic,

cardio/thoracic, peripheral vascular, neurosurgery, transplant, and trauma surgical procedures.

Lecture 05 hours. Laboratory 00 hours.

Prerequisite(s): SURT-1300 Introduction to Surgery and SURT-130L Surgery Lab and SURT-1330 General Surgery and SURT-1911 Clinical Experience I and SURT-1921 Clinical Experience II and concurrent enrollment in SURT-2851 Clinical Experience III.

SURT-2851 Clinical Experience III 03 Semester Credits

Practical application of previously learned surgical skills at assigned affiliated hospital. Basic competency of scrub skills relating to general, gynecological and specialty surgical procedures. Students perform primarily in the first scrub role during operative procedures, increasing in proficiency. Weekly CST Exam review and post-clinical experience discussion.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 16 hours per week in hospital setting.

Seminar: 1 hour per week.

Prerequisite(s): SURT-1300 Introduction to Surgery and SURT-130L Surgery Lab and SURT-1330 General Surgery and SURT-1911 Clinical Experience I and SURT-1921 Clinical Experience II and concurrent enrollment in SURT-2300 Surgical Specialties.

SURT-2862 Clinical Experience IV 04 Semester Credits

Capstone course in Surgical Technology, with a focus on specialty surgical procedures. Practical application of previously learned surgical skills at assigned affiliated hospital. Students perform primarily in the first scrub role. Weekly CST Exam review and post-clinical experience discussion. All students must register and sit for the Certified Surgical Technology (CST) Examination at the end of the course. Each student is responsible to pay all costs associated with the examination.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 24 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): SURT-1300 Introduction to Surgery and SURT-130L Surgery Lab and SURT-1330 General Surgery and SURT-1911 Clinical Experience I and SURT-1921 Clinical Experience II and SURT-2300 Surgical Specialties and SURT-2851 Clinical Experience III.

THEATRE ARTS - THEA

THEA-1010 Theatre Appreciation 03 Semester Credits

The examination of theatre as a performance art by the study of its origins through contemporary times, and how contemporary theatre practitioners approach their crafts. Performance not required.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0980 Language Fundamentals I or eligibility for ENG-0990 Language Fundamentals II.

THEA-1100 Survey and Appreciation of American Musical Theatre 03 Semester Credits

Survey and appreciation of dramatic, musical, and staging development of American musical theatre from 18th century through 20th century, including mega-musicals of the 1990s.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-0990 Language Fundamentals II, or eligibility for ENG-1010 College Composition I.

THEA-1300 Fundamentals of Theatrical Makeup 03 Semester Credits

Practical application of theory and techniques of makeup for performers.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

THEA-1320 Introduction to Stage Costumes 03 Semester Credits

An introduction to the theories, principles and basic skills of costume design. Includes design process, fabrication, construction techniques and methodology.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

THEA-1400 Stage Design I - Scenery 03 Semester Credits

Theory and practice of scenic design. Orientation to creating elements of stage scenery.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

THEA-1410 Stage Design II - Scenery and Lighting 03 Semester Credits

Examination of scenic design styles. Preparation of floor plan, elevations and colored renderings to use in creating a scale model. Study and practice of stage lighting design.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): THEA-1400 Stage Design I - Scenery, or departmental approval: prior stage design experience.

THEA-1430 Introduction to Scenery and Stagecrafts 03 Semester Credits

Workshop in technical theatre to include scenery, lighting, costumes, properties and sound by classroom study and

laboratory work. Interested students may be assigned to productions. Repeatable. No more than six credits may be applied to elective degree requirements.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

OAN Approved: OAH028

THEA-1440 Introduction to Stage Lighting 03 Semester Credits

An introduction to the historical and technical perspectives of the art of lighting design; emphasis on principals of design within the collaborative process.

Topics include properties of light and electricity, how these properties can be influenced, and the equipment used to affect theatrical lighting.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

THEA-1500 Acting I 03 Semester Credits

Exploration of theory and practice of basic tools of acting: body movement, vocal production, and imagination. Introduction to character analysis, scene study and improvisation.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

OAN Approved: OAH027

THEA-1510 Acting II 03 Semester Credits

In-depth exploration of theory and application of basic techniques of acting: actor's tools, improvisation, character analysis and scene analysis. Introduction to auditioning. Emphasis on refining imaginative, vocal and physical skills required for creating character.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): THEA-1500 Acting I, or departmental approval: prior acting experience.

THEA-1520 Improvisation and Performance I 03 Semester Credits

Synthesizes concept and technique through the directed practice of improvisational performance. Utilizes the communal/ensemble exercises provided in Spolin's 'Improvisation for the Theatre' to explore the seven aspects of spontaneity and create narrative improvisations. Also, explores concepts of character, behavior in environment, creating the who? what? and where? of dramatic scenes, creating from given circumstances, and will involve themselves with the special problems of improvisation in performance. Course is primarily active and participatory in nature and culminates with a public performance based on this exploration and discovery.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

THEA-1530 Stagecrafts

02 Semester Credits

Workshop in technical theatre: scenery, lighting, costumes, properties and sound by classroom study and/or by assignment in campus theatrical productions. Repeatable. No more than six credits may be applied to elective degree requirements.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): None.

THEA-1540 Rehearsal and Performance

02 Semester Credits

Practical experience for students accepted as cast members of a College theatre production. May be repeated twice - no more than 4 credits to be applied to elective degree requirements.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Concentrated practice: 14 hours per week.

Prerequisite(s): By audition, or Director/Producer approval.

OAN Approved: OAH025

THEA-1550 Practicum in Technical Theatre

02 Semester Credits

Practical experience in stage work in a department production or department approved special project. Emphasis on backstage assistant, carpentry, painting, design assistant, assistant stage manager, stage manager, or assistant technical director. Repeatable. No more than four credits may be applied to elective degree requirements.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Concentrated practice: 14 hours per week.

Prerequisite(s): THEA-1430 Introduction to Scenery and Stagecrafts, or concurrent enrollment.

OAN Approved: OAH026

THEA-1600 Acting for the Camera I

03 Semester Credits

Studio situation to learn basic studio and on-location techniques, video performance training, audio broadcast techniques and to acquire mass media experience for use in professional settings or for personal advancement.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

THEA-2010 Script Analysis

03 Semester Credits

Principles, theories, and techniques of play script analysis for actor, director, designer, dramaturg[e], or playwright. Additional time required outside of class to attend at least two theatre productions over the length of the course.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): THEA-1010 Theatre Appreciation.

OAN Approved: OAH024

THEA-2100 Arts Management

03 Semester Credits

Introduction to principles and methods of management of arts and cultural institutions. Detailed study of organizational structures, funding and revenue, facilities scheduling and production, marketing, community relations and legal issues.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

THEA-2210 History of Theatre and Drama I

03 Semester Credits

Emphasizes the historical and critical study of theatre and drama from its origins to the Renaissance. An overview of the development of the physical theatre, the evolution of dramatic presentations, and representative playwrights.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): THEA-1010 Theatre Appreciation, or ENG-0990 Language Fundamentals II or eligibility for ENG-1010 College Composition I.

THEA-2220 History of Theatre and Drama II

03 Semester Credits

Emphasizes the historical and critical study of theatre and drama from the Renaissance to present-day theatrical conventions. An overview of the development of the physical theatre, the evolution of dramatic presentations, and representative playwrights.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): THEA-2210 History of Theatre and Drama I, or departmental approval.

THEA-2400 Playwriting

03 Semester Credits

Preparation and analysis of short scripts for the stage.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, and THEA-1010 Theatre Appreciation; or departmental approval.

THEA-2440 Sound for Theatre

03 Semester Credits

Introduction to the essentials of theatrical sound. Topics covered include microphone use, microphone placement, amplifications, theatrical acoustics, Foley sound, recorded effects, and production methodology.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): THEA-1430 Introduction to Scenery and Stagecrafts, and RAT-1300 Introduction to Recording, and RAT-1310 Studio Operations.

THEA-2450 Drafting For Theatre

03 Semester Credits

Drafting techniques for theatre design and technology students. Topics include plans, elevations, sections, detailed drawings and light plots.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): THEA-1430 Introduction to Scenery and Stagecrafts, and THEA-1440 Introduction to Stage Lighting.

THEA-2500 Acting III**03 Semester Credits**

Advanced exploration and refinement of acting techniques as applied to various approaches to creating character. Refinement of audition technique. Focus on scene study and methods of characterization.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): THEA-1510 Acting II, or departmental approval: prior acting experience.

THEA-2510 Acting IV**03 Semester Credits**

Application of scene analysis skills and methods of characterization to advanced scene styles. Consideration of period demands. Identification of individual approach to acting.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): THEA-2500 Acting III, or departmental approval: prior acting experience.

THEA-2520 Improvisation and Performance II**03 Semester Credits**

Synthesize concept and technique through the directed practice of long-form improvisational performance. Apply the skills discovered in Improvisation and Performance to the creation of long-form narrative structures. Develop an advanced improvisational ensemble that performs regularly before a public audience. Apply Spolin's seven aspects of spontaneity to create narrative improvisations from minimal given circumstances. Explore advanced forms of improvisation including musical improvisation, script development from improvisation, subject and incident specific performances and "Harolds". Course is primarily active and participatory in nature and requires participation in numerous public performances based on this exploration.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): THEA-1520 Improvisation and Performance I.

THEA-2540 Advanced Rehearsal and Performance**02 Semester Credits**

Advanced practical experience for students involved in a college theatre production as cast members or stage managers. May be repeated twice - no more than 4 credits to be applied to elective degree requirements.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Concentrated practice: 14 hours per week.

Prerequisite(s): THEA-1540 Rehearsal and Performance.

THEA-2550 Advanced Practicum in Technical Theatre**02 Semester Credits**

Advanced practical experience in stage work in a department production or department approved special project. Emphasis in management of the following: offstage operation, carpentry, painting, or set and lighting design. Title positions can include Assistant Stage Manager or Assistant Technical Director. Repeatable. No

more than six credits may be applied to elective degree requirements.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Concentrated practice: 14 hours per week.

Prerequisite(s): THEA-1430 Introduction to Scenery and Stagecrafts.

THEA-2600 Acting for the Camera II**03 Semester Credits**

Video performance training leading to the preparation of sample tapes; audition procedures and conduct; financial aspects of local and national market; director for camera; interaction and shot composition.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): THEA-1600 Acting for the Camera I, or departmental approval: prior experience.

THEA-2740 Internship**03 Semester Credits**

Provides student with on-the-job application of skills learned in the liberal arts and specifically Theatre. Each internship based on individualized learning contract. Requirement for one credit is 180 hours of approved work per semester.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Internship: 180 clock hours of approved work per credit hour.

Prerequisite(s): Department approval: completion of 30 semester credits; completion of 15 semester credits at Cuyahoga Community College; 2.75 GPA; completion of 20 semester credits in liberal arts; completion of 9 semester credits in Theatre; two letters of recommendation from liberal arts faculty, one of which must be from area of placement.

THEA-2830 Cooperative Field Experience**01-03 Semester Credits**

(See current semester Credit Schedule for offerings.)

URBAN STUDIES - UST
UST-1010 Introduction to Urban Studies**03 Semester Credits**

Interdisciplinary examination of background of major urban issues and challenges facing U.S. urban areas. Emphasis on description and analysis of roots of contemporary urban America.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

UST-1020 Urban Geography

03 Semester Credits

Geographical study of cities and their demographics. Emphasizes patterns of urbanization, urban life and urban spaces including human behavior and impact of natural resources.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

UST-1120 History of Cleveland

03 Semester Credits

Development of Cleveland from New England village to metropolitan area. Role of economic and technical changes, immigration, reform, world war, demographics, labor unions, transportation and political leadership examined. Rise of suburban areas in post World War II, decline of central city and prospects for revival. Explains how each major era of the city shaped the present.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

UST-179H Honors Contract in Urban Studies

01 Semester Credit

Honors Contract complements and exceeds the requirements and objectives for an existing UST 1000-level honors course through the formulation of a contract with a faculty mentor. In conjunction with a faculty mentor, the student will formulate a contract, which upon completion will result in distinctive scholarship. In order to complete the contract, the student is required to meet on a regularly scheduled basis with the instructor offering the contract for mentor-student tutorial sessions.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Must be taken concurrently with a 1000-level course in Urban Studies, whose instructor approves the Honors Contract.

UST-2020 Urban Cultures

03 Semester Credits

Interdisciplinary examination of cultural diversity within urban populations. Special emphasis on interaction of groups, their social institutions, and value systems.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ANTH-1010 Cultural Anthropology, or SOC-1010 Introductory Sociology, or UST-1010 Introduction to Urban Studies.

UST-2070 Urban Politics

03 Semester Credits

Analysis of the political process and the impact of public policies on urban problems, structures, and political behavior in American cities. Focus on central cities, suburbs, and metropolitan areas. Emphasis on efforts to make cities function more efficiently and to improve quality of life for inhabitants.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): POL-1010 American National Government, or UST-1010 Introduction to Urban Studies.

UST-2640 American Urban History

03 Semester Credits

Comparative growth of American cities from towns to megalopolis. Emphasis on the spatial expansion to the development of urban economy, historical functioning of political system and population changes. Includes urban/suburban and majority/minority issues.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): UST-1010 Introduction to Urban Studies; or HIST-1520 United States History Since 1877; or HIST-2160 African American History 1877-present; or departmental approval.

VETERINARY TECHNOLOGY - VT

VT-1100 Veterinary Medical Terminology

01 Semester Credit

Terminology utilized by veterinary health care professionals and animal owners. Emphasis on identification and definition of word components.

Includes spelling, pronunciation, word analysis, common colloquialisms and abbreviations. Usage of medical terms related to all major body systems.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

VT-1200 Veterinary Law and Ethics

01 Semester Credit

Overview of history and status of animals in American law and effect on modern veterinary technician.

Discussion of ethical questions and dilemmas commonly encountered in veterinary medicine. Overview of regulatory agencies (state and federal) that affect and oversee veterinary technicians. Discussion of veterinary technician's role in malpractice situations.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval.

VT-1320 Veterinary Office Applications

03 Semester Credits

Overview of veterinary practice management including veterinary medical record keeping, marketing, facility design, staff responsibilities, interoffice communications, and public relation techniques. Automated veterinary office processing and recordkeeping. Computer hardware and software commonly found in small to mid-sized veterinary practices described along with office procedures and work flow.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): Departmental approval.

VT-1401 Veterinary Science I

04 Semester Credits

Recognition of physical and behavioral characteristics of commonly encountered dog and cat breeds. Introduction to basic companion animal and laboratory animal behavior, husbandry and nutrition. Laboratory focuses on non-invasive clinical management techniques including physical examination, grooming, and other in-office procedures.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): Departmental approval: admission to program.

VT-1451 Veterinary Diagnostic Imaging

02 Semester Credits

Introduction to radiography, ultrasonography, CT, MRI, and nuclear scintigraphy imaging modalities. Preparation, use and maintenance of radiography and ultrasonography equipment. Acquisition and processing of digital and analog diagnostic images.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): VT-1100 Veterinary Medical Terminology; and VT-1401 Veterinary Science I; and BIO-1420 Anatomy and Physiology of Domestic Animals II or concurrent enrollment.

VT-1500 Veterinary Science II

04 Semester Credits

Recognition of physical and behavioral characteristics of commonly encountered breeds of horses, cattle, sheep and pigs. Basic food animal and equine behavior, husbandry and nutrition. Laboratory focuses on restraint, handling and performance of common veterinary procedures used as part of large animal management and/or treatment of common clinical conditions. Field trips included in laboratory portion of course.

Lecture 03 hours. Laboratory 02 hours.

Prerequisite(s): VT-1401 Veterinary Science I, VT-1100 Veterinary Medical Terminology and VT-1200 Veterinary Law and Ethics, and BIO-1420 Anatomy and Physiology of Domestic Animals II, or concurrent enrollment.

VT-1520 Veterinary Parasitology

02 Semester Credits

Study of identification techniques, nomenclature, life cycles, epidemiology and control of internal and external parasites of small animals, horses and cattle.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): VT-1100 Veterinary Medical Terminology; VT-1200 Veterinary Law and Ethics; BIO-1420 Anatomy and Physiology of Domestic Animals II or concurrent enrollment, and departmental approval: admission to program.

VT-1600 Veterinary Surgical Nursing and Assisting

03 Semester Credits

Fundamentals of routine veterinary surgery including instrumentation, patient preparation, aseptic technique, fluid therapy, wound healing, specialized procedures and general nursing care. Fundamentals of electrocardiography including operation of

electrocardiograph, origin of the ECG tracing and recognition of common cardiac arrhythmias.

Lecture 01 hour. Laboratory 06 hours.

Prerequisite(s): VT-1401 Veterinary Science I, and BIO-1420 Anatomy and Physiology of Domestic Animals II or concurrent enrollment.

VT-2300 Pharmacology for Veterinary Technicians

02 Semester Credits

Introduction to veterinary pharmacology including common drug terminology, classifications and usages of drugs, dosage calculations, methods of drug administration, side effects and contraindications.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): VT-1200 Veterinary Law, and VT-1401 Veterinary Science I, and BIO-1420 Anatomy and Physiology of Domestic Animals II.

VT-2401 Veterinary Pathology I

02 Semester Credits

Veterinary hematology and chemistry laboratory procedures including complete blood counts and clinical chemistries performed commonly in veterinary practices.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): BIO-1420 Anatomy and Physiology of Domestic Animals II, and BIO-2500 Microbiology or concurrent enrollment; and VT-1520 Veterinary Parasitology.

VT-2411 Veterinary Pathology II

02 Semester Credits

Veterinary medical laboratory procedures performed commonly in veterinary practices including urinalysis, veterinary microbiologic techniques, vaginal cytology, ear cytology, cytology of tissues and fluids, bone marrow evaluation, serology, coagulation tests and necropsy.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): VT-2401 Veterinary Pathology I.

VT-2500 Small Animal Health and Disease

02 Semester Credits

Physiological systems approach to the most frequently encountered diseases and metabolic problems of dogs and cats including disease names, definition and history, animals at risk, causes and signs, diagnosis, treatment and prevention.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): VT-2300 Pharmacology for Veterinary Technicians.

VT-2510 Large Animal Health and Disease

02 Semester Credits

Study of the most frequently encountered diseases and clinical problems of horses, cows, sheep and swine including disease names, definition and history, animals at risk, causes and signs, treatment and prevention.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): VT-2300 Pharmacology for Veterinary Technicians.

VT-2600 Anesthesiology, Emergency Techniques and Dentistry

03 Semester Credits

Fundamentals of veterinary anesthesia, analgesia, emergency medicine and dentistry. Students learn how to induce, maintain, and monitor anesthesia, administer and assess response to analgesics, assist with cardiopulmonary resuscitation, and perform routine veterinary dental cleaning procedures.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VT-1600 Veterinary Surgical Nursing and Assisting, VT-2300 Pharmacology for Veterinary Technicians, and VT-1500 Veterinary Science II.

VT-2700 Avian and Exotic Animal Medicine

02 Semester Credits

Introduction to avian and exotic animal husbandry, physical examination, clinical procedures, and common clinical conditions. Field trips may be included.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): VT-1520 Veterinary Parasitology, and BIO-2500 Microbiology and VT-2600 Anesthesiology, Emergency Techniques and Dentistry.

VT-2851 Veterinary Practicum and Seminar I

01 Semester Credit

Includes practicum and on-campus seminar. In practicum, students observe and assist with common procedures in clinical settings. Clinical settings include small animal practice, animal population control facility, laboratory animal facility, equine practice, food animal practice/facility, and exotic animal practice/facility. In seminar, students discuss individual clinical situations occurring during practicum experience and study technician's role in euthanasia of an animal including methodology, mental preparation, and understanding of the grieving owner.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 3.5 hours per week.

Seminar: .5 hours per week.

Prerequisite(s): VT-1500 Veterinary Science II.

VT-2860 Veterinary Practicum and Seminar II

02 Semester Credits

Includes practicum and on-campus seminar. In practicum, students observe and assist with common procedures in clinical settings. Clinical settings include small animal practice, animal population control facility, laboratory animal facility, equine practice, food animal practice/facility, and exotic animal practice/facility. In seminar, students discuss individual clinical situations occurring during the veterinary practicum experience, study the technician's role in pediatrics and first aid, and prepare to search for employment.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 7 hours per week.

Seminar: 1 hour per week.

Prerequisite(s): VT-2851 Veterinary Practicum and Seminar I.

VT-2940 Veterinary Field Experience

02 Semester Credits

Capstone course in Veterinary Technology. Clinical experience involving the practice of techniques commonly used in veterinary medicine. Students assigned to two different types of veterinary facilities. Site options may include small animal practices, animal emergency clinics, referral practices, equine practices, mixed practices, food animal practices, laboratory animal facilities, and the Cleveland Metroparks Zoo.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 24 hours per week.

Prerequisite(s): VT-2860 Veterinary Practicum and Seminar II, and VT-2600 Anesthesiology, Emergency Techniques and Dentistry.

VISUAL COMMUNICATION AND DESIGN

- VC&D

VC&D-1000 Visual Communication Foundation

03 Semester Credits

Develop skills needed to communicate visually in any media. Learn how effective layouts, illustrations, photographs, videos, and websites convey ideas via the principles of visual communication and design.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

VC&D-1015 Digital Studio Basics

03 Semester Credits

Hands-on overview of industry standard design software for print and digital media. Best practices in studio workflow and file management are emphasized.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): None.

VC&D-1061 History of Graphic Design

03 Semester Credits

Survey of graphic design and the world events that have influenced visual communication from the invention of writing to the computer age and new media. Explores the cultural influences and technical innovations in graphic design movements, subsequent counter-movements, and their implications. The influence of world events and the emergence of trends in graphic design will be presented following an historical timeline. The impression of the past on subsequent graphic design trends will be noted.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

VC&D-1200 Typography and Layout**03 Semester Credits**

Development, terminology, letterform, classification, selection and specification of typefaces. Emphasis on aesthetic and communicative aspects of typography. Introduction to techniques used to design and effectively communicate with typography.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): VC&D-1000 Visual Communication Foundation, or concurrent enrollment; and VC&D-1015 Digital Studio Basics, or concurrent enrollment.

VC&D-1430 2D Design**03 Semester Credits**

Technical and aesthetic fundamentals in the creation of two-dimensional designs for print, interactive, broadcast and other media utilizing industry standard 2D graphics and design applications.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): VC&D-1015 Digital Studio Basics, or concurrent enrollment; or VC&D-1000 Visual Communication Foundation, or ART-1080 Visual Design I.

VC&D-1940 Field Experience I**01-03 Semester Credits**

Field experience is planned paid or unpaid work activity, which relates to an individual student's occupational objectives. With permission of a faculty advisor, field experience replaces elective courses in student's associate degree program. Experience coordinated by faculty member who assists student in planning experience, visits site of experience for conference with student and his/her supervisor at least once during semester, and assigns course grade to student after appropriate consultation with employer/supervisor.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 12-36 hours per week.

Prerequisite(s): Departmental approval.

VC&D-2301 Graphic Design and Illustration**03 Semester Credits**

Exploration of advanced tools and techniques used in illustrating content for integrated media. Projects may include advanced content creation for print, interactive, broadcast, and other media utilizing industry standard 2D graphics and design applications.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): VC&D-1430 2D Design or concurrent enrollment.

VC&D-2401 Designing for Production**03 Semester Credits**

Techniques and methods in assembling and finalizing production art and design for printing and digital media. Terminology, paper, ink, printing, production art and design. Tools, materials, and practical considerations in preparing design for production art.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): VCGD-2231 Publication Design.

VC&D-2530 Professional Practice in Visual Communication and Design**03 Semester Credits**

Exploration of business and marketing practices necessary for successful career in visual communication and design. Emphasis on financial, legal, organizational, promotional, interpersonal and ethical skills as practiced in this diverse industry.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): Departmental approval: sophomore level status or industry experience.

VC&D-2541 Individual Projects**03 Semester Credits**

Individual projects in visual communication and design in areas of student's choice. Progress and grading determined on individual basis according to criteria mutually agreed upon between student and instructor.

May be repeated for up to six credits.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): VC&D-1430 2D Design, or departmental approval.

VC&D-2701 Media Design**03 Semester Credits**

Designing for electronic media, from concept to completion. Explores the interaction of type, image, motion, sound, sequence and how they communicate, as well as technical challenges of designing for various digital media.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): VC&D-1430 2D Design; or VCIM-1570 Web Publishing I: HTML; or concurrent enrollment; or IT-1150 Intro to Web Programming or concurrent enrollment; or departmental approval.

VC&D-2830 Cooperative Field Experience**03 Semester Credits**

Open to students eligible for the Cooperative Education Program. Employment in an approved training facility under College supervision. Requirement for one credit is 180 hours of approved work. Students may earn up to three credits in one semester. May be repeated for an accrued maximum of nine credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: 180 clock hours of approved work per credit hour.

Prerequisite(s): Formal application into the Cooperative Education program.

VC&D-2940 Field Experience II

01-03 Semester Credits

Field experience is planned paid or unpaid work activity, which relates to individual student's occupational objectives. With permission of faculty advisor, field experiences replace elective courses in student's associate degree program. Experience coordinated by faculty member who assists student in planning experience, visits site of experience for conference with student and his/her supervisor at least once during semester, and assigns course grade to student after appropriate consultation with employer/supervisor. May be repeated for a maximum of six credits.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Field Experience: 12 to 36 hours per week.

Prerequisite(s): Departmental approval.

VC&D-2991 Portfolio Preparation

03 Semester Credits

Capstone course in Visual Communication and Design. Covers all aspects of creation and presentation of professional portfolio. Emphasize individual strengths and areas of specialization. Students edit and modify work where required. Add new pieces to final portfolio that meets industry standards. Analyze appropriate presentation materials, business forms and protocols, develop promotional pieces and presentation style and techniques.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): VC&D-2301 Graphic Design and Illustration, or concurrent enrollment; or VC&D-2701 Media Design, or concurrent enrollment; or VCDV-2280 Advanced Digital Video and Digital Filmmaking: Exploring Genre and Technique, or concurrent enrollment or VCIM-2200 Game Design III: Game Design Studio, or concurrent enrollment VCIM-2280 Web Publishing III: Media Rich Websites; or concurrent enrollment.

**VISUAL COMMUNICATION AND DESIGN
(Digital Video and Digital Filmmaking) -
VCDV**

All courses formerly listed under VCDV have been moved under Media Arts and Filmmaking (MARS). See page 402.

**VISUAL COMMUNICATION AND DESIGN
(Advertising Design) • (Graphic Design) -
VCAD/VCGD**

VCAD-2621 Advertising Studio I

03 Semester Credits

Hands-on directed individualized project-based course specialized for advertising design majors. Advertising design and marketing project proposals to be selected, approved, and arranged collaboratively between instructor and student. Design creativity, marketing, and visual communication skills stressed. Emphasis on further developing advertising and marketing skills and working one-on-one with instructor providing design direction to attain conceptual and technical skills to bring final designs to successful completion.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): VC&D-2301 Graphic Design and Illustration or VCGD-2231 Publication Design.

VCGD-1500 Advertising and Design

03 Semester Credits

Fundamentals of advertising and design for print and other media. Examines design process and appropriate use of research. Examines and evaluates layout and delivery mode, evolution of presentation from thumbnail to storyboard, and critical analysis of designer/client relations. Includes material usage, technical and hand skill development, and application of presentation techniques to real-world problem solving.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): VC&D-1200 Typography and Layout, and VC&D-1430 2D Design or concurrent enrollment.

VCGD-2131 Magazine Design

03 Semester Credits

Magazine design including masthead, cover, contents, editorial and feature page formats. Emphasis on using sophisticated design, typography, and images to communicate. Exploration of practical and production considerations involved in magazine design as a product itself.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): VCGD-1500 Advertising and Design.

VCGD-2231 Publication Design

03 Semester Credits

Publication design including masthead, column, editorial and feature story page formats. Emphasis on using typography and images on multiple page formats. Exploration of practical and production considerations involved in publication design.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): VCGD-1500 Advertising and Design, or departmental approval.

VCGD-2331 Brand Identity Design

03 Semester Credits

Comprehensive corporate graphics emphasizing design process in creating corporate and brand identity. Visual and non-visual aspects of corporate graphics and brand applications will be explored. Emphasis will be placed on logo design and brand application design in order to create a cohesive corporate brand identity.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): VC&D-2301 Graphic Design and Illustration; or concurrent enrollment.

VCGD-2431 Package Design

03 Semester Credits

Comprehensive package design course from initial concept to presentation of package mock-ups. Conceptual thinking and problem solving using typography, color and images on folded, soft packaging and rigid packaging. Methods, materials, practical and production considerations involved in packaging design as well as environmental issues in relation to green or sustainable package design.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): VC&D-2301 Graphic Design and Illustration or concurrent enrollment; or departmental approval.

VCGD-2631 Graphic Design Studio

03 Semester Credits

Advanced graphic design projects using industry software and standards. Course builds upon sequential graphic design courses to explore complex solutions to visual communication and design problems. Emphasis on individual and team projects applied to contemporary design media.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): VCGD-2231 Publication Design or concurrent enrollment.

VCGD-2730 Graphic Design Studio II

02 Semester Credits

Advanced projects for graphic design majors simulating real-world professional and practical experience as set in graphic design and production design studios. Emphasis on development and design of spreads, multi-page layouts and publications. Practical experience in teamwork collaboration, advanced featuring delivery techniques for print and/or other media, production processes, budget development, and meeting client's needs within set timelines.

Lecture 01 hour. Laboratory 02 hours.

Prerequisite(s): VC&D-2200 Multi-Page Layout and Design or concurrent enrollment, or VCGD-2631 Graphic Design Studio I or concurrent enrollment.

VISUAL COMMUNICATION AND DESIGN (Illustration) - VCIL

VCIL-1141 Rendering Techniques

03 Semester Credits

Analog and digital rendering for visual communication and design applications. Emphasis on formal qualities of two dimensional illustration techniques used to render images.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VC&D-1015 Digital Studio Basics; or concurrent enrollment.

VCIL-1640 3D Design

03 Semester Credits

Technical and aesthetic fundamentals of 3D design. Use of industry standard software to develop 3D graphics for screen and print applications. Projects may include 3D design and visualization for information graphics, product visualization, prototyping, logo design, and environmental visualization. Various design techniques, including 3D parametric modeling, polygonal modeling and NURBS/HyperNURBS based modeling solutions. Introduces basic modeling, staging, lighting, texture and shader strategies to realize 3D concepts.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): VC&D-1015 Digital Studio Basics or concurrent enrollment; or departmental approval.

VCIL-2040 3D Motion

03 Semester Credits

Technical and aesthetic fundamentals of 3D motion design and 3D animation. Use of industry standard software to develop 3D animation for broadcast and Internet audience. Projects may include 3D motion graphics and animation for information graphics, product visualization, instructional design, and environmental visualization. Various topics, including 3D modeling, key framing, timeline and camera animation. Introduces basic animation strategies to complete 3D motion graphics and visualization concepts.

Lecture 02 hours. Laboratory 02 hours.

Prerequisite(s): VCIL-1640 3D Design or concurrent enrollment; or departmental approval.

VCIL-2141 Illustration Techniques

03 Semester Credits

Use of industry standard tools to explore formal and aesthetic solutions for two-dimensional still images. Emphasis on experimentation with aesthetic and technical elements of digital illustration.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCIL-1141 Rendering Techniques or concurrent enrollment.

VCIL-2241 Advanced Illustration

03 Semester Credits

Various tools, materials and techniques used with advanced illustration. Emphasis placed on illustration for commentary, narrative, persuasion, visualization and instruction. Focus on creating illustration for audience and client requirements.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCIL-1141 Rendering Techniques or concurrent enrollment.

VCIL-2341 Illustration for Story, Sequence & Narrative

03 Semester Credits

Technical and aesthetic fundamentals of sequential illustration. Use of industry standard software to design, develop, publish and present illustration for narrative application. Introduces basic strategies of illustration for concept art, comics, books, graphic novels, games, storyboards and other work driven by narrative, story or sequential imagery.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCIL-1141 Rendering Techniques and VCIL-1640 3D Design.

VCIL-2440 3D Simulation

03 Semester Credits

Advanced technical and aesthetic issues concerning 3D modeling, 3D motion graphics, 3D animation and 3D simulation using industry standard software. Course emphasizes static and dynamic animation strategies utilizing joints, kinematics, dynamics, constraints, set driven keys, rigid body dynamics, effectors and node based animations to create product, instructional, character or environmental 3D simulations and animations. Applied projects for use in various visualization and game design disciplines.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCIL-2040 3D Motion or departmental approval.

VCIL-2540 3D Studio

03 Semester Credits

Advanced 3D modeling, 3D motion graphics and 3D animation using industry standard software. Course builds upon sequential 3D courses to provide advanced platform for custom 3D design, illustration, visualization, simulation or animation projects. Develop projects to satisfy audience/client, target market and production needs.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCIL-2040 3D Motion or departmental approval.

VCIL-2641 Illustration Studio

03 Semester Credits

Hands-on, directed, individualized, project-based course, specialized for illustration majors. Illustration proposals and projects to be selected, approved and arranged

collaboratively between instructor and student. Emphasis on illustration for various audiences including, design, advertising, visualization, publishing and entertainment industries.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): VCIL-2341 Illustration for Story, Sequence & Narrative or concurrent enrollment.

VCIL-2741 Illustration Studio II

03 Semester Credits

Advanced projects for illustration majors simulating real-world professional and practical projects.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): VCIL-2641 Illustration Studio or concurrent enrollment.

**VISUAL COMMUNICATION AND DESIGN
(Photography) - VCPH**

VCPH-1150 History of Photography

03 Semester Credits

Survey of history of world photography from 1839 to present. Technical and aesthetic evolution of photography and its changing role in society.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

VCPH-1261 Photography I

03 Semester Credits

Explore the fundamentals of digital photography, learning how to maximize the capabilities of your digital camera shooting in available light. Conceptual issues and stylistic characteristics of several photographic genres will be discussed. Visual assignments will be used to explore a variety of photographic traditions and increase your understanding of the potential of digital technology. You will use your critical thinking skills to greater understand the potential of the photographic narrative and concepts. Students must have their own DSLR camera with manual controls including Aperture, Shutter Speed, ISO settings and RAW file format capability. College specified digital printing paper and portfolio box and a Mac/PC external hard-drive are required. Paper, box, binder and a limited selection of cameras are available at the Tri-C bookstores.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): None

OAN Approved: OAH002

VCPH-1450 Digital Imaging I

03 Semester Credits

Introduction to technical and aesthetic fundamentals of digital image manipulation using the most current computer software and hardware systems for the input, modification and output of digital photographs.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): None.

VCPH-2050 Commercial Studio Techniques I
03 Semester Credits

Introduction to the use of strobe lighting and direct digital capture in commercial studio and location photography environments. Topics include an introduction to portraiture, product, food, fashion, and advertising photography. Efficient workflow in the creation and post-production of appropriately formatted digital files. Students must have their own digital camera with adjustable settings and the ability to capture in Camera RAW format. College-specified digital printing paper and portfolio box also required.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCPH-1450 Digital Imaging I, or concurrent enrollment; and VCPH-2260 Photography II, or concurrent enrollment; or departmental approval: submission of portfolio of photographs.

VCPH-2260 Photography II
03 Semester Credits

Students build on their skill base and create images that have a conceptual basis as opposed to being strictly documentary in nature. Advanced color and black & white file conversion and outputting. Critical thinking used in group work discussions. Students must have their own digital camera with adjustable settings and the ability to capture in Camera RAW format. College-specified digital printing paper and portfolio box also required.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCPH-1261 Photography I and VCPH-1450 Digital Imaging I, or concurrent enrollment.

VCPH-2450 Digital Imaging II
03 Semester Credits

Advanced visual problem solving in digital imaging. Refined techniques for compositing and digital illustration in commercial based environments. Photographic images and components supplied and created by the student form the foundation on which projects are built for print, multimedia, and Web applications.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCPH-1450 Digital Imaging I, or departmental approval: prior digital imaging experience.

VCPH-2541 Individual Projects - Photography
03 Semester Credits

Individual photography-based projects created in areas of student's design, based on submission and approval of a written proposal. Progress and grading determined on individual basis according to criteria mutually agreed upon between student and instructor. Includes examples of projects created by photographers from many photographic genres including fine art, documentary, advertising and editorial as well as work done by the instructor. Other media such as audio, video, and integrated web-based options such as websites and blogs

will be shown and discussed. May be repeated for up to six credits.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCPH-1450 Digital Imaging I, and VCPH-2260 Photography II or departmental approval with submission of a photographic print or high resolution digital portfolio.

VCPH-2550 Commercial Studio Techniques II
03 Semester Credits

Advanced lighting and camera techniques for commercial studio and location photography. Concept development for photo illustration. Students must have their own digital camera with adjustable settings and the ability to capture in Camera RAW format. College-specified digital printing paper and portfolio box also required.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCPH-2050 Commercial Studio Techniques I, and VCPH-1450 Digital Imaging I, or departmental approval: submission of portfolio of photographs.

VCPH-2660 Photography III
03 Semester Credits

Advanced studio and documentary photographic techniques. Advanced critical thinking and responsive writing. Students must have their own digital camera with adjustable settings and the ability to capture in Camera RAW format. College-specified digital printing paper and portfolio box also required.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCPH-1450 Digital Imaging I; and VCPH-2260 Photography II; or departmental approval: submission of portfolio of photographs.

VCPH-2760 Editorial Photography
03 Semester Credits

Introduction to the technical, aesthetic, business and ethical issues in a range of photographic practices including editorial, wedding, event, and photojournalistic settings. Students must have their own digital camera with adjustable settings and the ability to capture in Camera RAW format. College-specified digital printing paper and portfolio box also required.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCPH-1450 Digital Imaging I, and VCPH-2260 Photography II, or departmental approval: submission of portfolio of photographs.

OAN Approved: OCM011

VCPH-2990 Photographic Portfolio Preparation
02 Semester Credits

Capstone course for Visual Communication and Design - Photography. Covers all aspects of the creation and presentation of a professional photographic portfolio and web presence. Portfolios emphasize individual strengths and areas of specialization. Edit and modify existing work for the portfolio where required; complete the final portfolio to the standards of the photography industry. Analysis of appropriate presentation and business materials and protocols, development of self-promotional pieces, and discussion of presentation styles and techniques, both traditional and digital.

Lecture 01 hour. Laboratory 03 hours.

Prerequisite(s): VCPH-2550 Commercial Studio Techniques II, and VCPH-2450 Digital Imaging II or departmental approval: sufficient quantity of successfully completed work for portfolio inclusion. This is the capstone course for photography students.

VISUAL COMMUNICATION AND DESIGN
(Web and Interactive Media) - VCIM

VCIM-1200 Game Design I: Introduction to Game Design
03 Semester Credits

Foundation of game design with an emphasis on concept, planning and creation of game prototypes. Topics include history of games from tabletop to tablet, markets, mechanics, prototyping, play testing, and analysis. Students will explore theme, genre, rules, tools, goals, and peripheral concepts of game design.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VC&D-1015 Digital Studio Basics, or concurrent enrollment; and VCIL-1640 3D Design, or concurrent enrollment.

VCIM-1400 Game Design II: Game Engines
03 Semester Credits

Applied technical and aesthetic fundamentals of 2D and 3D game design using industry-standard game engines. Emphasis on design and interaction of 2D and 3D assets to be used in instructional, promotional, and entertainment games.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCIM-1200 Game Design I: Introduction to Game Design, or concurrent enrollment or departmental approval.

VCIM-1570 Web Publishing I: HTML
03 Semester Credits

Foundational web design, planning and construction with emphasis on web standards, usability and accessibility. Students construct web pages in (X)HTML and CSS using basic text-editing software. Topics include analysis of how and why a website succeeds or fails, aesthetics and visual

design for web, planning, creation, uploading and registration of sites, troubleshooting, search engine optimization and basic marketing strategies.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VC&D-1000 Visual Communication Foundation or concurrent enrollment, and VC&D-1015 Digital Studio Basics or concurrent enrollment.

VCIM-1770 Web Publishing II: Site Theory & Construction
03 Semester Credits

Expansion and continuation of topics introduced in Web Publishing I. Planning, designing, constructing and publishing a website using industry standard tools.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCIM-1570 Web Publishing I: HTML, or concurrent enrollment; or IT-1150 Introduction to Web Programming.

VCIM-1970 Midpoint Portfolio Review
01 Semester Credit

Sophomore level portfolio review. Individual strengths and areas of specialization are reviewed and evaluated. Students are encouraged to edit and modify existing work to prepare for advanced courses, projects, and final portfolio.

Lecture 01 hour. Laboratory 00 hours.

Prerequisite(s): Departmental approval: completion of 18 core credits at 1000 level, or completion of 9 core credits and concurrent enrollment of an additional 9.

VCIM-2071 Service-Learning Web and Interactive Studio
03 Semester Credits

A service-learning course. Web and Interactive Media students will work on "real-world", client based community projects for non-profit organizations. Design, technical, and professional practices such as contracts, client relations and team work will be put into action.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCIM-2280 Web Publishing III: Media Rich Websites, or concurrent enrollment VCIM-2380 Interactive Media II: App Design, or concurrent enrollment departmental approval.

VCIM-2200 Game Design III: Game Design Studio
03 Semester Credits

Create a variety of game projects for an intended audience, platform or device. Course emphasizes game design pipeline of planning, design, testing, refining, and publishing.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): VCIM-1400 Game Design II: Game Engines or departmental approval.

VCIM-2270 Animation for the Web and Media

03 Semester Credits

[This course is cross-listed as ART-2151. Credit can only be applied to degree requirements once for either course.]

Technical and aesthetic fundamentals of 2D animation as they pertain to the Internet. Use of current software to develop interactive, animated graphics and interfaces.

Various techniques including tweening, frame by frame, onion skinning, shape and color morphing as well as non-linear structure, interactivity, communication, scripting and troubleshooting. Acquisition or creation and integration of music, sound and video. May be repeated for up to 9 credits; only 3 credits may be applied to degree requirements.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): ART-1080 Visual Design I, or ART-1091 Color Theory and Application, or VC&D-1015 Digital Studio Basics or departmental approval: comparable skills.

VCIM-2280 Web Publishing III: Media Rich Websites

03 Semester Credits

Developing media rich websites with JavaScript, jQuery or Flash. Emphasis includes building SEO (Search Engine Optimization) and responsive, device-friendly websites that integrate social media, videos, photos and music.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCIM-1770 Web Publishing II: Site Theory & Construction, or IT-1150 Introduction to Web Programming.

VCIM-2290 Web Publishing IV: Data Driven Sites

03 Semester Credits

Learn to create data driven, dynamic websites. Combines an overview of programming terms and concepts with practical examples.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): IT-1150 Introduction to Web Programming or VCIM-1570 Web Publishing I: HTML.

VCIM-2371 Interactive Media I

03 Semester Credits

Create a variety of interactive projects. Tell stories incorporating photos, video, sound, music, narration, typography, illustration and animation. Structure, communication, scripting, sequencing and troubleshooting emphasized.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCIM-2270 Animation for the Web and Media, or VCIL-1640 3D Design; or departmental approval.

VCIM-2380 Interactive Media II: App Design

03 Semester Credits

Explores current and emerging interactive technologies such as Apps, touch screens and games. May be repeated twice for credit; only 3 credits can apply to meet degree requirements.

Lecture 02 hours. Laboratory 03 hours.

Prerequisite(s): VCIM-2280 Web Publishing III: Media Rich Websites or VCIM-2371 Interactive Media I.

VCIM-2400 Game Design Portfolio

03 Semester Credits

Develop and refine a body of work focusing on specific role(s) in the game design industry. Develop and promote assets, projects, portfolio, demo reel, blog and game presentation.

Lecture 01 hour. Laboratory 04 hours.

Prerequisite(s): VCIM-2200 Game Design III: Game Design Studio or concurrent enrollment.

VCIM-2401 Game Design IV: Game Publishing

03 Semester Credits

Develop and refine a body of work focusing on specific role(s) in the game design industry. Develop and promote assets, projects, portfolio, demo reel, blog and game presentation.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): VCIM-2200 Game Design III: Game Design Studio or concurrent enrollment.

VCIM-2470 Virtual Reality Imaging

02 Semester Credits

Technical and aesthetic concepts of virtual reality photography. Use of computer hardware and software for creating virtual reality images. Images used for interactive onscreen presentations or output as large scale panoramic photographic prints.

Lecture 02 hours. Laboratory 00 hours.

Prerequisite(s): VCPH-1450 Digital Imaging I, and VC&D-1010 Macintosh Basics; or departmental approval.

VCIM-2571 Interactive Media Studio

03 Semester Credits

Course offers broad possibilities for the conception and creation of advanced interactive projects. Students are encouraged to explore concepts and techniques beyond the parameters of previous course work. Individual students or teams work with the instructor to set the criteria, research, and ultimately complete the project. Repeatable: students may pursue different projects for up to six credits.

Lecture 01 hour. Laboratory 05 hours.

Prerequisite(s): VCIM-1970 Midpoint Portfolio Review, or VCIM-2200 Game Design III: Game Design Studio or concurrent enrollment, or departmental approval.

VCIM-2940 Field Experience

03 Semester Credits

Planned work activity, paid or unpaid, in the field of Web or Interactive Media. Coordinated by faculty member and employer. Experience should reinforce classroom/lab skills.

Lecture 00 hours. Laboratory 00 hours.

Field Experience: 36 hours per week, working in the field.

Prerequisite(s): VCIM-2380 Interactive Media II or concurrent enrollment, or VCIM-2290 Web Publishing IV: Data Driven Sites or concurrent enrollment.

WOMEN'S STUDIES - WST

WST-1510 Introduction to Women's Studies

03 Semester Credits

Introduction to field of women's studies, which transcends traditional disciplinary boundaries. Analysis of gender's role in shaping human societies of past and present: their history and experiences, their expression through arts and literature, philosophy of feminism, and comparative conditions of women in diverse cultures.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

WST-1520 Women's Films

03 Semester Credits

Introduction to genre of women's films through study of classic and contemporary depictions. Use of film analysis in theme, character, plot, dramatic conflict, photography, sound, light, editing, and acting.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): None.

WST-200H Honors Women and Reform

03 Semester Credits

Analysis of the reform roles of women in American history from colonial times to the present as individuals and as organized groups; special focus on social movements and institutionalized reforms.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I, or WST-1510 Introduction to Women's Studies.

WST-2010 Women in the World

03 Semester Credits

Study of the role of gender in shaping comparative cultural experiences in the world; analysis of theoretical basis of gender; and comparing status of women in work, politics, and other social institutions.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): WST-1510 Introduction to Women's Studies, or ENG-1010 College Composition I.

WST-2020 Women, Science and Technology

03 Semester Credits

[This course is cross-listed as HIST-2020. Credit can only be earned once for either course.] Study of gendered relationships in scientific theory, organization and dissemination of scientific expertise, and technological development, and the impact of these on health care, medicine, business, manufacturing, cultural norms and women's experience.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): WST-1510 Introduction to Women's Studies, or ENG-1010 College Composition I or concurrent enrollment, or ENG-101H Honors College Composition I or concurrent enrollment.

WST-2030 Women and Art

03 Semester Credits

Analysis of women's roles in art history, both as the creators and subjects of art; concentration on western survey prehistory to the 21st century with comparisons to non-western representations.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or WST-1510 Introduction to Women's Studies.

WST-2050 Introduction to Personal and Reflective Writing

03 Semester Credits

[This course is cross-listed as ENG-2050. Credit can only be earned once for either course.] The examination of personal, narrative, and self reflective writing from journals, memoirs, letters, essays, poetry, blogs, autobiographies, biographies, and other non-fiction works, through discussion, and various formal and informal writing assignments.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): ENG-1010 College Composition I, or ENG-101H Honors College Composition I.

WST-2120 Women and Politics

03 Semester Credits

[This course is cross-listed as POL-2120. Credit can only be earned once for either course.] This course examines women's political life in the United States. Women's involvement in all aspects of the political process will be addressed. Substantive areas include women and democracy, their political participation, and their role in governing institutions. The course also includes discussion on the struggle for equal rights and issues of public policy.

Lecture 03 hours. Laboratory 00 hours.

Prerequisite(s): POL-1010 American National Government, or HIST-1020 History of Civilization II, or HIST-1520 United States History Since 1877.

WST-2850 Practicum in Women's Studies

03 Semester Credits

Practicum includes weekly seminar plus placement in non-profit or profit organization supportive of women and family interests, mentorship relationship with a leader in business, government and social service, or employment in an approved facility. Note: Course may not transfer.

Lecture 00 hours. Laboratory 00 hours.

Other Required Hours: Practicum: 7 hours per week.

Seminar: 2 hours per week.

Prerequisite(s): WST-1510 Introduction to Women's Studies.

NOTES