MT-2701Comprehensive 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-2870 Advanced Massage Practicum
02 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. Basic introduction to complementary modalities including hot stone massage, meridian massage, and ayurvedic massage.
Lecture 00 hours. Laboratory 00 hours.
Other Required Hours: Practicum 8 hours/week.
Seminar 1 hour/week.
Prerequisite(s): MT-2311 Advanced Massage Therapy, or concurrent enrollment; or departmental approval.

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-0850 Mastering Math 0950
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-0950 Beginning Algebra I.

MATH-0910 Basic Arithmetic and Pre-Algebra
03 Semester Credits
Review of basic arithmetic and introduction to algebraic concepts. Includes basic review of Real Numbers (whole numbers, integers, fractions and decimals) and their operations (addition, subtraction, multiplication and division) and the use of order of operations. Includes a basic review of ratio, proportion and percents. Includes applications and activities to build skills in estimation and problem solving.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): Sufficient score on assessment test, or departmental approval.

MATH-0950 Beginning Algebra I
04 Semester Credits
First of two semester sequence. Includes order of operations, properties of real numbers, basic algebraic operations, linear equations, rectangular coordinate system, graphs of linear equations and linear systems. Includes applications and activities to build skills in problem solving.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0910 Basic Arithmetic and Pre-Algebra or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-0960 Beginning Algebra II
04 Semester Credits
Second of two semester sequence. Includes simplification and operations on polynomials and exponents, extensive factoring and rational expressions in depth. Includes applications and activities to build skills in problem solving.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0950 Beginning Algebra I or departmental approval: equivalent coursework.

MATH-0980 Intensified Beginning Algebra
05 Semester Credits
Intensive review of basic algebra. Topics include real numbers, algebraic operations and simplification of polynomials, factoring, linear equations, rectangular coordinate system, solution of linear equations, rational expressions, and exponents. Includes applications and activities to build skills in problem solving.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): Sufficient score on 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-1060 Survey of Mathematics
03 Semester Credits
Mathematics in problem solving. Problem solving using the scientific method, algebra, geometry, descriptive statistics, probability and calculator/computer applications.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0950 Beginning Algebra I; or MATH-0980 Intensified Beginning Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-1141 Applied Algebra and Mathematical Reasoning
03 Semester Credits
Applications and activities to build problem solving and mathematical modeling skills. Includes metric system, formula manipulation, graphs and their interpretation, solving algebraic equations and systems, functions, algebraic expressions (rational, radical and exponential), introduction to geometry, descriptive statistics and probability distributions.
Lecture 03 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0960 Beginning Algebra II, or MATH-0980 Intensified Beginning Algebra, or sufficient score on assessment test; or departmental approval: equivalent coursework.

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-0950 Beginning Algebra I, or MATH-0980 Intensified Beginning Algebra, or MATH-0990 Math Literacy for College Students; or MATH-1270 Intermediate Algebra; or sufficient score on placement test; or departmental approval.

MATH-1250 Contemporary Mathematics
04 Semester Credits
Contemporary mathematics as it applies to today's world. Includes modeling and solving real life problems from behavioral, managerial, and social sciences. Topics include linear programming and management science, probability and statistics, biological and financial growth, and mathematics of social choice.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0960 Beginning Algebra II; or MATH-0980 Intensified Beginning Algebra, or sufficient score on assessment test; or departmental approval; equivalent coursework.

MATH-1270 Intermediate Algebra
04 Semester Credits
Builds on basic algebra concepts. Topics include linear and quadratic equations, radicals and rational exponents, rational equations, polynomial, rational, compound, and exponential and logarithmic functions and an introduction to functions and elementary transformations. This course is the prerequisite for Math 1370, 1410, and 1470 only.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0960 Beginning Algebra II; or MATH-0980 Intensified Beginning Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-1275 Select Topics of Advanced Intermediate Algebra
01 Semester Credits
Supplemental content from Math 1280 Advanced Intermediate Algebra which was not covered in Math 1270 Intermediate Algebra. Intended for students who completed MATH 1270 but now need Math 1280. Topics include division of polynomials, absolute value equations and inequalities, complex numbers, conic sections, and systems of non-linear equations and inequalities.
Lecture 01 hour. Laboratory 00 hours.
Prerequisite(s): MATH-1270 Intermediate Algebra.

MATH-1280 Advanced Intermediate Algebra
05 Semester Credits
Builds on basic algebra concepts. Expanded topics include linear and quadratic equations, systems of linear and non-linear equations, radicals and rational exponents, and rational equations. Other topics included are polynomial, rational, compound, and absolute value inequalities, exponential and logarithmic functions. Introduction to complex numbers, functions, elementary transformations, and conic sections. Appropriate for students pursuing Science, Engineering, or Math majors.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): MATH-0960 Beginning Algebra II or MATH-0980 Intensified Beginning Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-1370 Mathematics for Elementary and MiddleSchool 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-1270 Intermediate Algebra, or MATH-1280 Advanced Intermediate Algebra sufficient score on assessment 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-1250 Contemporary Mathematics, or MATH-1270 Intermediate Algebra, or MATH-1280 Advanced Intermediate Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.
OAN Approved: TMM010

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-1270 Intermediate Algebra, or MATH-1280 Advanced Intermediate Algebra; or sufficient score on assessment 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 departmental approval: equivalent coursework.
OAN Approved: OBU009 (1 0f 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-1510 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-1280 Advanced Intermediate Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.
OAN Approved: TMM003

MATH-151H 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-1280 Advanced Intermediate Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.

MATH-1521 College Algebra
04 Semester Credits
Includes polynomial, rational, exponential and logarithmic functions and graphs, conic sections, inequalities, matrices and determinants, theory of equations, series, sequences, the binomial theorem and mathematical induction. Study of applications and activities to build skills in problem solving.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1280 Advanced Intermediate Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.
OAN Approved: TMM001

MATH-152H Honors College Algebra
04 Semester Credits
Includes polynomial, rational, exponential and logarithmic functions and graphs, conic sections, inequalities, matrices and determinants, theory of equations, series, sequences, the binomial theorem and mathematical induction. Study of applications and activities to build skills in problem solving. Emphasis on more challenging algebraic concepts in real-world settings through projects and in-class presentations.
Lecture 04 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1280 Advanced Intermediate Algebra sufficient score on assessment test; or departmental approval: equivalent coursework.

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.
OAN Approved: OMT002

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-1580 Precalculus; or MATH-1510 Trigonometry and MATH-1521 College Algebra; or sufficient score on assessment test; or departmental approval: equivalent coursework.
OAN 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-1580 Precalculus; or MATH-1510 Trigonometry, and MATH-1521 College Algebra; or high school Precalculus; or departmental approval: equivalent coursework.
OAN Approved: TMM005

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; conics sections.
Lecture 05 hours. Laboratory 00 hours.
Prerequisite(s): MATH-1610 Calculus I, or departmental approval: equivalent coursework.
OAN 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.

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-1521 College Algebra; or MATH-1580 Precalculus; or sufficient score on assessment 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.

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: OMT019

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): Eligibility for MATH-1280 Intermediate Algebra or departmental approval.
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): Eligibility for MATH-1280 Advanced Intermediate Algebra; or departmental approval: work experience.

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-0950 beginning Algebra I or eligibility for MATH-1060 Survey of Mathematics.

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): Eligibility for MATH-1280 Intermediate Algebra, or departmental approval: work experience.
OAN Approved: OET010

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-0950 Beginning Algebra I or eligibility for MATH-1060 Survey of 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-0950 Beginning Algebra I or eligibility for MATH-1060 Survey of Mathematics..