










	A	B	C	D	E	F	G	H	I
1	Class	Title	Description	Credit Hours	Contact Hours	Lecture Hours	Lab Hours	ESU	NOTE
2	AIT 1010	Construction Measurements and Calculations	Course 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.	4	70	4	0	4	 
3	AIT 1020	Comprehension and Communication for Construction	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.	2	32	2	0	2	
4	AIT 1030	Basic Construction Language	Study of construction drawings to determine specifications, lines and line weights, measurements related to laying out, dimensioning, estimating and planning.	2	32	2	0	2	
5	AIT 1040	Spatial and Mechanical Reasoning	Course 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.	1	16	1	0	1	
6	AIT 1050	Construction Industry Orientation	An introduction to the construction industry and to respective construction apprenticeship programs and respective entry requirements. Included are soft skills for industry success, green building intro and apprenticeship training center visits. Construction site exploration will be included whenever possible.	3	48	3	0	3	
7	AIT 1060	Construction Tools	A practical course covering the hand tools and materials of the respective building trades. Course 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.	3	60	1	2	2.7	
8	ATMT 1000	Mechanical and Spatial Relations	Relationship between two-view to three-view images, charts containing diagrams, mechanical sequences, mechanical series, tool usage, tool relationships to fasteners, object turning and problem solutions. Basics of visualizing three-dimensional object from two dimensional front, side, and top view. Patterns with three dimensional figures that can be made from hidden and object views of visual figures. Identifying tools, tool relationship and selection practices. 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; and cube counting.	4	48	4	0	4	

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9	ATMT 1100	Manufacturing Skills I	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.	3	64	3	0	3	 
10	ATMT 1110	Manufacturing Skills II	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.	2	32	2	0	2	
11	ATMT 1120	Machine Operations I	Introduction to machine shop practices to produce manufacturing parts. Includes operation 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.	6	128	1	15	13.75	
12	ATMT 1200	Machine Tool Theory	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.	4	64	4	0	4	
13	ATMT 2120	Machine Operations II	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.	6	240	1	15	13.75	
14	EET 1100	Introduction to Robotics	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).	2	48	1	2	2.7	
15	EET 1150	Basic Robotics with Math	Course provides an introduction to robotic principles using C programming with an emphasis on math.	2	48	1	2	2.7	
16	EET 1180	Surface Mount Soldering	Develop skills using surface mount soldering equipment and techniques to facilitate design, construction and rework of circuit boards.	1	25	0	2	1.7	

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17	EET 2812	Single Board Computers and Applications	An introductory course on Single Board Computers (SBC) with an emphasis on embedded applications. Topics include standard interface devices like keyboards, High-Definition Multimedia Interface (HDMI), Universal Serial Bus (USB), microprocessor architecture, flash and read/write memory, General Purpose Input and Output (GPIO) ports, conventional serial communications. Communicating with external sensors, like Global Positioning System (GPS), Infrared transmission and detection, accelerometers, etc., are discussed from the aspect of programming.	3	64	2	2	3.7	 
18	EET 2530	Unmanned Aerial Vehicles	This course 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.	3	64	2	2	3.7	
19	ISET 1100	Welding Blue Print Reading	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.	2	28	2	0	2	
20	ISET 1300	Mechanical/Electrical Print Reading	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, basic troubleshooting techniques. Extensive guided instruction and practice provided.	2	48	1	2	2.7	
21	ISET 2100	Gas Metal Arc Welding (MIG)	Develop skills in Gas Metal Arc Welding (MIG). Extensive guided instruction provided and prepares a student for the certified MIG certification test.	4	80	2	4	5.4	
22	ISET 2110	Gas Tungsten Arc Welding (TIG)	Develop skills in Gas Tungsten Arc Welding (GTAW-TIG). Extensive guided instruction provided and prepares a student for the certified TIG certification test.	4	80	2	4	5.4	
23	ISET 2120	Shielded Metal Arc Welding (STICK)	Develop skills in Shielded Metal Welding (STICK). Extensive guided instruction provided and prepares a student for the certified STIG certification test.	4	80	2	4	5.4	
24	ISET 2130	OxyFuel Gas Welding	Develop skills in OxyFuel Gas Welding. Extensive guided instruction provided and prepares a student for the certified OxyFuel Gas Welding certification test.	4	80	2	4	5.4	

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25	MET 1100	Technology Orientation	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.	2	48	1	2	2.7	Additive Manufacturing 
26	MET 1120	Computer Applications and Programming	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.	2	64	1	3	3.55	
27	MET 1200	Engineering Drawing	Utilize visualization skills in the application of principles and practices of orthographic projection and pictorial drawing. Applied geometry, use of scales, sections, and auxiliary views are studied. Dimensioning standards and conventions are applied to technical drawings as related to detail and assembly drawings. The relationships that technical drawings play to processes of production and manufacturing along with design process studied.	2	64	1	3	3.55	
28	MET 1220	AutoCAD 2D	Introduction to computer-assistant drafting (CAD). Operate CAD system as a tool of drafting. Develops drafting capabilities by combining drafting standards, skills and conventions with the intricacies of CAD software. Apply the basic and intermediate CAD commands to draw and edit engineering drawings. Includes a basic overview of computer terms and use of the Windows operating system. Students will become familiar with special terms and definitions used in computer-assisted drafting.	2	64	1	3	3.55	
29	MET 1240	Machine Tools and Manufacturing Processes	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.	3	80	2	3	4.55	Additive Manufacturing

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30	MET 1230	Drawing & AutoCAD	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.	3	80	2	3	4.55	Additive Manufacturing   
31	MET 2041	CAD II & GD&T	Advanced engineering drawing concepts used with computer-aided drafting software. Drawing applications include size tolerance, geometric dimensioning, thread and fastener specifications, detail and assembly drawings, weldments, external references, bill of materials and standardized drawing formats. Introduction to solid modeling.	3	62.5	2	3	4.55	
32	MET 2601	3D Solid Modeling	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.	3	80	2	3	4.55	