

MATH 126 Precalculus I 3 Credits

A third course in algebra that stresses polynomial, quadratic, rational, exponential, and logarithmic functions, including their graphs and applications; complex numbers; systems of equations; and basic operations with matrices and determinants, including Cramer's rule. It is recommended that students have completed prerequisites within two years of enrolling in this course.

MATH 126E Precalculus I Expanded 3 Credits

Precalculus I Expanded with Co-requisite support: Includes equations, relations, functions, graphing; polynomial, rational, exponential, logarithmic, and circular functions with applications; coordinate geometry of lines and conics; analytic trigonometry; matrices and determinants; and binomial theorem. It is recommended that students have completed prerequisites within two years of enrolling in this course.

Human Relations (one course required)

BUS 110 Human Relations Employmnt 1-3 Credits

Introduces students to the principles and skills of effective communication in business and professional settings. It provides information on how to communicate with superiors, co-workers, subordinates, clients, and customers. Three-credit course includes a computation component. Repeatable up to a total of three credits.

HMS 200 Ethics in Human Services 3 Credits

Real life applications for personal and professional boundaries, beliefs, ethics, values, morals, and codes of conduct in human relationships using ethical decision-making, problem-solving, and critical-thinking activities are emphasized. This course may be repeated up to three times for continuing education credit. (Check with individual licensing boards prior to registering).

MGT 283 Intro Human Resource Mgt 3 Credits

Duties and responsibilities of personnel management. Areas covered include employee needs, human relationships, orienting and training employees, benefit programs, and economics of supervision.

PSY 208 Psy of Human Relations 3 Credits

Explores the relationships between human beings and assists in the development of interpersonal communication skills which can be used personally and professionally.

Program Requirements

CADD 245 Solid Model/Parametric Design 3 Credits

Provides training and instruction in using parametric solid modeling software to create solid model parts, assemblies and working drawings. Students will have the opportunity to acquire the CSWA certificate for Solidworks.

MTT 100 Measurement for Machinists 3 Credits

Measurement for Machinists will teach the skills necessary to accurately measure parts and fixtures for the manufacturing industry. Skills will focus on micrometers, calipers, CMM, optical comparators and various other measurement tools.

MTT 105 Machine Shop I 3 Credits

This course introduces basic machine shop skills which include lathe operation, mill operation, metal removal speeds and feeds, precision measuring techniques, layout methods, band saw and drill press operations, and exposure to the science of heat-treating of metals. Shop safety and etiquette will be stressed.

MTT 106 Machine Shop Practice I 2 Credits

Expands the student's manual skills by putting into practice the theories, and user skills introduced in MTT 105. The emphasis will be geared to a more practical, hands-on experience through the use of lathes, layout techniques, vertical and horizontal band saws, measuring instruments and vertical mill work. Shop safety and cleanup are always stressed.

MTT 110 Machine Shop II 3 Credits

Expands skills introduced in MTT 105 to an intermediate level and introduces further skills which include advanced manual milling, advanced manual turning, drill sharpening, speed feeds, grinding and some production methods.

MTT 111 Machine Shop Practice II 2 Credits

Further develops student's manual skills by putting into practice the theories and user skills introduced in MTT 110. The emphasis will be a more practical, hands-on experience through the use of advanced manual mill work, layout techniques, vertical and horizontal band saws, grinding, measuring instruments and advanced manual turning. Shop safety and cleanup are always stressed.

MTT 230 Computer Numerical Control I 1-4 Credits

Covers computer numerical control (CNC) lathe operations, program format, and machine setup, G & M codes, control functions, the letter address system, and math issues related to CNC operation.

MTT 232 Computer Numerical Control II 1-4 Credits

Offers the student additional practical experience for development of skills with additional information and exposure to more complex applications of programming, mirror imaging, polar coordinates, tool compensation, threading and computer integrated manufacturing.

MTT 234 Computer Numerical Control III 1-4 Credits

This course covers the advanced programming concepts related to CNC Mill/Turning centers and synchronized 4 and 5 axis mills. Mill/Turn and 4 and 5 axis topics include program format, machine set-up, related G & M codes, live tooling, and indexing devices. Students will program, set-up, and produce a variety of precision machined projects.

MTT 291 CNC Practice 1-6 Credits

This course allows for the further development of computer aided manufacturing and/or CNC skills with hands-on instruction related to the design and production of machined parts using CAD/CAM software, CNC milling machines, and CNC turning centers. Students will plan, program, set-up, and produce a variety of precision machined projects. This course is to be considered lab time for MTT 232, and MTT 292.

MTT 292 Computer Aided Manufacturing I 1-4 Credits

This course provides the student with the essential concepts and techniques that are required for successful creation of two-dimensional part geometry, generation and verification of 3 axis toolpath models, as well as post processing of 3 axis NC codes within a computer-aided manufacturing (CAM) system.

MTT 293 Computer Aid Manufacturing II 1-4 Credits

This course is a continuation of MTT 292 with the addition of simultaneous 4 and 5 axis motion control and provides the student with the essential concepts and techniques that are required for successful creation of 4 and 5 axis toolpath models, as well as, post processing of 4 and 5 axis NC codes within a computer-aided manufacturing (CAM) system.

MTT 296 CNC Practice II 1-4 Credits

This course allows for the further development of CNC skills with hands-on instruction related to the design and production of machined parts using CAD/CAM software, CNC milling machines, and CNC turning centers. Students will plan, program, set-up, and produce a variety of precision machined projects. This course is to be considered lab time for MTT 293 and/or MTT 234.

Suggested Course Sequence

1st Semester - Fall

Course Credits English/Communications* 3-5 Mathematics* 3 MTT 100 3 MTT 105 3 MTT 106 2 TOTAL 14-16 *Choose with advisor

2nd Semester - Spring

Course Credits CADD 245 3 Human Relations* 1 MTT 110 3 MTT 111 2 MTT 230 3 MTT 291 4 TOTAL 16 *Choose with advisor

3rd Semester - Fall

Course Credits MTT 232 3 MTT 296 2 MTT 292 3 TOTAL 8

4th Semester - Spring

Course Credits MTT 234 3 MTT 293 3 MTT 296 2 TOTAL 8