

MACHINE TOOL TECHNOLOGY

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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. Prerequisite:

MTT 101 Introduction to Machine Shop 3 Credits

Introduces safety procedures, use of bench tools, layout tools, power saws, drill presses, precision measurement tools, rotary tables and indexing devices, lathe and mill cutting tools and tool holding, work holding and machining applications as well as the various hand tools related to the machine shop. Prerequisite:

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. Prerequisite: Must be enrolled in MTT 106.

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. Prerequisite: Must be enrolled in MTT 105

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. Prerequisite: Must have completed MTT 105 and MTT 106 and be enrolled in MTT 111.

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. Prerequisite: Must have completed MTT 105 and MTT 106 and be enrolled in MTT 110.

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. Prerequisite: Must have completed MTT 230 and CADD 245.

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. Prerequisite: Must have completed MTT 230 and MTT 232 and MTT 292 and CADD 245.

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. Prerequisite: Must be enrolled in MTT 232 or 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. Prerequisite: Must have completed MTT 230 and CADD 245.

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. Prerequisite: Must have completed MTT 292.

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. Prerequisite: Must be enrolled in MTT 293 or MTT 234.