MACHINE/TOOL TECHNOLOGY (MTT)

Courses

MTT 106 Safety (OSHA 10) (1)
Through a variety of classroom and/or lab learning and assessment activities, students in this course will explain job/site safety and precautions for job/site hazards; determine the uses of personal protective equipment (PPE); identify the safety equipment and procedures related to safe work practices and environment; identify fire prevention and protection techniques; explore Hazardous Communications (HazCom) including Material Safety Data Sheets (MSDS).

MTT 112 Print Reading (3)
Students will learn to identify basic lines, views and abbreviations used in blueprints, determine dimensions of features of simple parts, sketch simple parts with dimensional measurements, determine dimensions of multi-feather part, interpret GDT symbols, frame, and datums.

MTT 114 Machining I (3)
Student will learn to conduct job hazard analysis for conventional mills and lathes, develop math skill for machine tool operation, perform preventive maintenance and housekeeping on conventional mills and lathes, select work holding devices for mills, lathes and other machine tools, calculate feed and speeds, remove material using milling and turning processes, align milling head, use a vertical mill to center drill, drill and ream holes, change tools and tool holders on milling machines, and maintain saws and grinders.

MTT 116 Machine Tool Processes (1)
Students will learn to conduct a job hazard analysis for a machine tool group, analyze blueprints to layout parts and materials, select hand tools and common machine shop mechanical hardware for specific applications, prescribe cutting tools for assigned operations, calculate stock size to minimize drop, machine parts to specification outlined in machine handbooks, summarize preparations for machining operations, and apply precautions to minimize hazards for work with lathes, mills, drills, and grinders.

MTT 118 Lathe/Mill/Grind I (4)
Instruction will be given in the form of lectures, hand-outs, video tapes, shop demonstrations, shop assignment and text book assignments. Students will perform required set-ups and operations of lathes, milling machines, and grinders in a timely manner. Students are required to practice all shop safety rules. Calculate feed and speeds using the math formulas taught. Math will also be used to calculate hole pattern layouts, gear cutting, threading information, inspecting and quality control, and programming. Students will be required to perform machine operations to the satisfaction of the instructor. Students may be required to work in two or three person teams, but all students will be given the opportunity to demonstrate their competency level and ability by means of written test, verbal communications, and demonstrating hands-on.

MTT 123 Machining II (3)
Students learn to perform basic trigonometric functions and perform other procedures such as I.D. boring and facing operations, planning a sequence for machining operations, aligning work pieces, use work holding devices, jigs and fixtures, performing threading operation on lathes, machining key ways on a vertical mill, inspection and dressing grinding wheels, performing O.D. and I.D. threading operations, performing O.D. and I.D. tapering operations, machining parts using milling cutters and milling machines.

MTT 131 Quality Control & Inspection (1)
Students are introduced to the science of dimensional metrology and its applications to ensure form and function of machined parts and assemblies using semi-precision and precision measuring instruments.

MTT 151 Workplace Ethics (2)
Students study human relations and professional development that exists in today's rapidly changing world so that they become better prepared for living and working in a complex society. Topics include human relations, job acquisition, job retention, job advancement, and professional image skills.

MTT 210 Print Reading/Math III (1)
Student learn to perform basic trigonometric functions, and perform other procedures such as I.D. boring and facing operations, planning a sequence for machining operations, aligning work pieces, use work holding devices, jigs and fixtures, performing threading operations on lathes, machining keyways on a vertical mill, inspecting and dressing grinding wheels, performing O.D. & I.D. threading operations, performing O.D. & I.D. tapering operations, machining parts using milling cutters and milling machines, and tapping holes on a vertical mill.

MTT 218 Metallurgy (1)
Students learn the metallurgical terms and definitions in an effort to understand the behavior and service of metals in industry. Characteristics during heating, cooling, shaping, forming, and the stress related to their mechanical properties are covered, as well as the theory behind alloys, heat treatment processes and wear resistance.

MTT 219 Lathe/Mill/Grind III (6)
Instruction will be given in the form of lectures, hands-on video tapes, shop demonstrations, shop assignments, and text book assignments. Students will perform required set-ups and operations of lathes, milling machines, and grinders in a timely manner. Students are required to practice all shop safety rules. Calculate feed and speeds using the math formulas taught. Math will also be used to calculate hole pattern layouts, gear cutting, threading information, inspecting and quality control, and programming. Students will be required to perform machine operations to satisfaction of the instruction. Student may be required to work in two or three person teams, but all students will be given the opportunity to demonstrate their competency level and ability by means of written tests, verbal communications, and demonstrating hands-on abilities.

MTT 221 Bench Work (1)
Students will be provided the opportunity to learn and practice bench work skills such as filing, drilling, tapping, deburring and layout for projects. They will gain valuable practical experience in the use of various hand tools by producing basic bench work projects. Topics will include safety, print reading, job planning, and quality control.

MTT 232 Bench/Saw/Drill (3)
Students will learn to conduct job hazard analysis for conventional mills and lathes, develop math skills for machine tool operations, perform preventive maintenance and housekeeping on conventional mills and lathes, select work holding devices for mills, lathes and other machine tools, calculate feeds and speeds, remove material using milling and turning processes, align milling head, use a vertical mill to center drill, drill and ream holes, change tools and tool holders on milling machines, and maintain saws and grinders.

MTT 238 Print Reading/Math IV (2)
Students learn to perform basic trigonometric functions, and perform other procedures such as I.D. boring and facing operations, planning a sequence for machining operations, aligning work pieces, use work holding devices, jigs and fixtures, performing threading operations on lathes, machining keyways on a vertical mill, inspecting and dressing grinding wheels, performing O.D. & I.D. threading operations, performing O.D. & I.D. tapering operations, machining parts using milling cutters and milling machines, and tapping holes on a vertical mill.

MTT 241 CNC Operations (3)
Students will become acquainted with the history of Numerical Control (NC) and Computer Numerical Control (CNC) machines and will be introduced to a CNC machine used in the precision machining trades. They will gain practical experience in the application of "G" codes and "M" codes, writing CNC machine programs, and machine setup and operation.

MTT 244 Lathe/Mill/Grind IV (6)
Instruction will be given in the form of lectures, hands-on video tapes, shop demonstrations, shop assignments, and text book assignments. Students will perform required set-ups and operations of lathes, milling machines, and grinders in a timely manner. Students are required to practice all shop safety rules. Calculate feed and speeds using the math formulas taught. Math will also be used to calculate hole pattern layouts, gear cutting, threading information, inspecting and quality control, and programming. Students will be required to perform machine operations to satisfaction of the instruction. Student may be required to work in two or three person teams, but all students will be given the opportunity to demonstrate their competency level and ability by means of written tests, verbal communications, and demonstrating hands-on abilities.

MTT 250 Workplace Skills II (1)
This course is the final preparation for the exit assessment by using Key Train software for Applied Math, Reading for Information, and Locating Information. A student will be required to attend remaining seminars that were not attended in Workplace Skills I through the Career Resource Center.

MTT 251 CNC Lathe (3)
Introduces students to two axis computer numerical control lathes machining. The theory of operations is developed in the classroom and through interactive on line learning. Students then apply the knowledge in a cutting edge CNC laboratory. Topics include machine set up, coordinates terminology, cutter paths, angel cutting, and linear cutting.

MTT 252 Lathe/Mill/Grind II (3)
Students will perform required set-ups and operations of lathes, milling machines, and grinders in a timely manner. Students are required to practice all shop safety rules. Calculate feed and speeds using the math formulas taught. Math will also be used to calculate hole pattern layouts, gear cutting, threading information, inspecting and quality control, and programming. Students will be required to perform machine operations to satisfaction of the instruction. Prerequisite: MTT118 Lathe/Mill/Grind I

MTT 255 CAD/CAM I (3)
A basic introductory course to Computer-aided Drafting and Computer-aided Manufacturing. Instruction will cover basic graphic construction and basic parts program for the CNC machine.

MTT 256 CNC Milling I (3)
Students will gain practical experience in setting up and performing basic operations on CNC Milling machines.

MTT 261 Machining III (3)
Course is a continuation of Machining II. Students learn to perform basic trigonometric functions and perform other procedures such as I.D. boring and facing operations, planning a sequence for machining operations, aligning work pieces, use work holding devices, jigs and fixtures, performing threading operation on lathes, machining key ways on a vertical mill, inspection and dressing grinding wheels, performing O.D. and I.D. threading operations, performing O.D. and I.D. tapering operations, machining parts using milling cutters and milling machines.

MTT 263 Machining IV (3)
Students are required to practice all shop safety rules. Calculate feed and speeds using the math formulas taught. Math will also be used to calculate hole pattern layouts, gear cutting, threading information, inspecting and quality control, and programming. Students will be required to perform machine operations to satisfaction of the instruction. Student may be required to work in two or three person teams, but all students will be given the opportunity to demonstrate their competency level and ability by means of written tests, verbal communications, and demonstrating hands-on abilities. Prerequisites: Machining III

MTT 265 CAD/CAM II (3)
Students will gain practical experience in setting up and performing basic operations on CNC Milling machines. Prerequisites: CAD/CAM I

MTT 266 Print Reading II (3)
Students will learn to identify and implement lines, views and abbreviations used in blueprints, determine dimensions of features of simple parts, sketch advanced parts with dimensional measurements, determine dimensions of multi-feature parts, interpret common and advanced GDT symbols, frame, and datums and implement them in drawings and practice. Prerequisite: Print Reading I

MTT 267 Machine Tool Special Projects (3)
This course is designed to provide students with the opportunity to apply machining principles in various student projects.

MTT 270 Machine Tool Internship (3)
This internship course offers students opportunities to be employed or selected as an intern in their field with to expand their work experience related to their field of study.