MACHINE MANUFACTURING TECH (MFG)

MFG 104: Principles of Lean Mfg (1)
This course provides foundations and practices related to lean manufacturing and is targeted to employees of business, government, and agencies in this community that are interested in lean. Lean manufacturing processes address societies' needs to maximize the use of resources in order to compete effectively in the global economy. Lean is a regeneration of Total Quality Management with new principles that use data for decision-making for system improvement. Instructor approval required. 1 lecture hrs/wk

MFG 108: Starrett PMI (2)
This course covers, safety, equipment, and essential variables of operation for the Starrett Precision Measurement Instruments Certification. This course will involve the use of tape measures, scales, and rules, slide calipers, gauge measurement, angle measurement, micrometer measurement, dial indicator and bore measurement. This course includes, but is not limited to: classroom discussions, multimedia presentations, and lab demonstrations covering technical skills. 4 lecture/lab hrs/wk

MFG 111: Machine Shop I (3)
This is a basic machine shop course introducing the student to basic machine shop concepts and general shop practices involving the use of an engine lathe, milling machine, drill press, grinders, and other machine shop tools. Instruction will be provided in general machining techniques with safety and economy of operation being emphasized. Students will work at their own pace through specific projects. 6 lecture/lab hrs/wk
Registration-Enforced Prerequisite: MFG 108 and MTH 052 or MTH 060.

MFG 112: Machine Shop II (3)
This course builds upon the skills learned in MFG111 with a continuing emphasis on the fundamentals and mechanics, machine shop concepts, and general shop practices involving the use of an engine lathe, milling machine, drill press, grinders, and other machine shop tools. Instruction will be provided in general machining techniques with safety and economy of operation being emphasized. Students will work at their own pace through specific projects. 6 lecture/lab hrs/wk
Registration-Enforced Prerequisite: MFG 111.

MFG 113: Machine Shop III (3)
The student learns the operation of horizontal and vertical milling machines, their setup, basic operation and use of accessories such as digital readouts, rotary table, dividing head, gear and cam milling and the use of indicators, wigglers and edge finders. 6 lecture/lab hrs/wk
Registration-Enforced Prerequisite: MFG 112.

MFG 121: Hydraulics I (3)
An introductory course covering the basic principles of hydraulics for the future industrial hydraulics technician. Included in the course are pressure, force and area relationships, HP, GPM, and velocity relationships, fundamentals of reservoir design, fluids and fluid flows, and fundamentals of hydraulic pumps. Common industrial circuits are developed and studied with the use of lab trainers. Students will disassemble, inspect, and reassemble both components and circuits in structured lab sessions. 3 lecture hrs/wk
Registration-Enforced Prerequisite: MTH 052 or MTH 060.

MFG 122: Hydraulics II (3)
This is the second in a five-course series for the industrial apprentice and is a continuation of Hydraulics I. The focus is on pressure relief valves, hydraulic actuators and flow controls. Each component is studied in structured classroom sessions, while lab activities are directed at disassembly, inspection and circuitry involving the specific component. Students will be using lab trainers to examine the operation of circuits using these components. 3 lecture hrs/wk
Registration-Enforced Prerequisite: MFG 121.

MFG 123: Hydraulics III (3)
This is the third in a five-course series for the industrial apprentice and is a continuation of Hydraulics II. Each student will study contamination control, hydraulic actuators, flow controls, and hydraulic accessories. Circuits using those components are fabricated, discussed, and studied during structured lab sessions. 3 lecture hrs/wk
Registration-Enforced Prerequisite: MFG 122.

MFG 124: Hydraulics IV (3)
This is a continuation of Hydraulics I, II, and III with an emphasis on the symbols, hydraulic schematics, and troubleshooting of hydraulic circuits. The class will be divided into two different sessions. The first session will be devoted to studying symbols and schematics, while the second session will work with circuits on lab trainers. Specific class sessions will be devoted to developing the skills and knowledge necessary to successfully pass the National Fluid Power Certification Exam. 3 lecture hrs/wk
Registration-Enforced Prerequisite: MFG 123.

MFG 125: Hydraulics V (3)
This is the fifth course in a series for practicing industrial maintenance millwrights desiring instruction in industrial hydraulics. This course is an introduction to proportional and servo valves used in modern hydraulics systems. Students will work with simulators, lab trainers, program cards and related hydraulic and electronic components. Because an understanding of electricity and basic electronics is needed in this course, two sessions will be devoted to the study of these concepts using electrical training simulators. Some diagnostic and troubleshooting skills relative to the adjustment and programming of both proportional and servo systems will be presented. 3 lecture hrs/wk
Registration-Enforced Prerequisite: MFG 124.