MECHANICAL TECHNOLOGY (MTEC)

MTEC 101 Int Geometric Dimen/Tolerance (1 Credit Hour)
Type of credit: Occupational/Technical
Lecture hours: 1
Acquaints the students with the means of specifying engineering design and drawing requirements with respect to function and relationship of part features. Topics include symbology, datums, forms, run-outs, true position, and location tolerancing.

MTEC 151 Introduction to CNC Machining (0-3 Credit Hours)
Type of credit: Occupational/Technical
Lecture hours: 0-3
An introductory course that surveys the CNC turning and milling areas of metalworking processes. Designed to provide understanding of the fundamental principles of material removal using CNC equipment. Topics include: CNC terminology, CNC machining processes, speeds, feeds, depths of cut, tooling selection, tooling setup, machine controls, workholding, G and M codes, program origin, Cartesian coordinate system, basic program creation, and part program troubleshooting.

MTEC 164 Manufacturing Processes (3 Credit Hours)
Type of credit: Occupational/Technical
Lecture hours: 3
Develops a fundamental understanding of the processes used in manufacturing products, machines, and structures. The course covers such areas as heat treatment practices, casting and forming metallic materials, machining systems, welding and allied operations, and techniques related to manufacturing. The requirements of this course may be met by an approved supervised work experience.

MTEC 165 3D Printing (2 Credit Hours)
Type of credit: Occupational/Technical
Lecture hours: 1
Lab hours: 2
3D Printing is designed to provide entry level experience in the areas of additive manufacturing and rapid prototyping utilizing the 3D printer. Students will assemble a 3D printer while learning troubleshooting, repairs and settings. 3D models will be printed from a variety of sources including online downloads, scanned objects, and 3D CAD drawings.

MTEC 240 Building Systems (3 Credit Hours)
Type of credit: Occupational/Technical
Lecture hours: 3
Prerequisite: DRAF 111 or concurrent enrollment.
This course is a study of the basic construction materials and methods used in residential and light commercial projects. Students will examine building systems by studying the architectural, mechanical, and structural components.

MTEC 245 Construction Estimating I (3 Credit Hours)
Type of credit: Occupational/Technical
Lecture hours: 3
Prerequisite: DRAF 111 and DRAF 111 or MATH 111 or Academic placement measures.
Students learn the fundamental principles of construction estimating. This course stresses the organization of the estimate, the procedure of estimating costs in the different divisions of the project, and the method of determining the critical quantities of materials obtained from a set of prints.

MTEC 270 CNC Mill I (3 Credit Hours)
Type of credit: Occupational/Technical
Lecture hours: 2
Lab hours: 2
Prerequisite: MTEC 151 with minimum grade of C or concurrent enrollment.
Introduces the computer as an important tool in directing mill-cutting operations. Conversion of dimensioned drawings into X, Y, and Z coordinates will be stressed. From this, ISO standard format G and M code language will be used (via off-line editing) to create and edit programs. These programs will be used as a basis for machine set up, multiple tool offsets, dry run evaluations, and part production.

MTEC 280 CNC Lathe I (3 Credit Hours)
Type of credit: Occupational/Technical
Lecture hours: 2
Lab hours: 2
Prerequisite: MTEC 151 with minimum grade of C or concurrent enrollment.
Introduces the computer as an important tool in directing lathe-cutting operations. Conversion of dimensioned drawings into X and Z coordinates will be stressed. From this, ISO standard format G and M code language will be used (via off-line editing) to create and edit programs. These programs will be used as a basis for machine set up, multiple tool offsets, dry run evaluations, and part production.

MTEC 285 Advanced CNC Machining (3 Credit Hours)
Type of credit: Occupational/Technical
Lecture hours: 2
Lab hours: 2
Prerequisite: DRAF 151 or DRAF 260 and MTEC 270 and MTEC 280 with minimum grade of C.
This course is designed to further educate machinists in CNC setup, programming, and operation. Students will also use CAM to successfully complete many complex geometries. Students will be expected to identify necessary tooling to complete a process as well as perform the setup on either the CNC lathe or CNC mill. Students will also be required to create inspection sheets for the process or finished part as well as perform the necessary inspections. Students will also be expected to make the offsets and program alterations necessary to make CNC machines production ready.

MTEC 290 Automation Seminar (4 Credit Hours)
Type of credit: Occupational/Technical
Lecture hours: 2
Lab hours: 4
Repeatable: 2 times
Provides manufacturing students with the opportunity to apply their knowlege and skills in solving one or more manufacturing problems. Students will work as a team to develop and evaluate alternative solutions to given problems. Students will also design, construct, program, troubleshoot, and refine their solutions into working models that will reflect their ability to meet challenges in a manufacturing environment. A maximum of eight (8) credit hours may be earned in this course.

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