

INTRODUCTION TO MANUFACTURING (TECHNICAL & INDUSTRIAL DIVISION)

AMFTI-111 INTRODUCTION TO MANUFACTURING (3 cr.) This course is designed to impart technical knowledge and skills for the use of manufacturing equipment and procedures. The knowledge and skills mastered in this class are an introduction to design and production in the manufacturing process. Material covered will include: Principles of manufacturing, manufacturing materials, an introduction to Computer Integrated Manufacturing (CIM), along with Federal and state OSHA requirements. Production and general properties of common engineering materials such as iron, steel, zinc, copper, aluminum, and plastics; the fundamentals of material processing such as powder metallurgy, hot and cold forming and shearing; and the basic surface protection processes such as cleaning, painting, and plating.

AMFTI-121 INTRODUCTION TO CAD (3 cr.) An introduction to the engineering graphic principles and the use of drafting tools to include; line work, lettering, applied geometry, dimensioning and orthographic projections. The student will, upon completion of this course, be able to create, using Computer Aided Drafting (CAD), 2-D construction, using advanced commands, sketching and orthographic views. Pre-requisite/Co-requisite: MTHPT 103/123.

AMFTI-123 ENGINEERING GRAPHICS USING AUTOCAD (3 cr.) Applying engineering graphic principles using CAD for sectional views, auxiliary views, dimensioning, tolerancing, geometric tolerances, threads and fasteners, working drawings, and gears, bearings and cams. This course in CAD will emphasize visualization and spatial relations. Construction principles, input schemes, command structures and data management will be studied and combined into a design project at course conclusion. Pre-requisite: MTHPT 103/123.

AMFTI-125 ENGINEERING GRAPHICS APPLICATIONS (3 cr.) An advanced course using engineering graphic principles with AutoCAD to include: fundamentals of 3D drawing, surface modeling, solid modeling, and descriptive geometry. Upon completion of this course, the student, using CAD will be able to create the fundamental concepts to produce 3D drawings and create 3D objects using surface modeling and solid modeling. The student will be able to apply precision dimensioning and development to working drawings and technical illustrations. Pre-requisite/Co-requisite: MTHPT 103/123.

AMFTI-141 INTRODUCTION TO MACHINE PROCESSES (3 cr.) This course provides practical hands-on application of manual machine processes: drilling, tapping, milling, grinding, with applications of brazing and welding, and the study of material and process manufacturing. The second section provides the students with the knowledge for lab operation of machining special attachments, bench work, layout, heat-treating, hardness testing, layout inspection, jig and fixture setup, and tool design. Pre-requisite: MTHPT 103/123.

AMFTI-143 MACHINE PROCESSES (3 cr.) This course provides the students with the knowledge for lab operation of machining, special attachments, bench work, layout, heat-treating, hardness testing, layout inspection, jig and fixture setup, tool design. The final section of this course is designed to provide the students with the development of manufacturing plans for the efficient manufacturing of moderately complex products. Individualized laboratory practice will integrate the textbook, reference manuals and technical tools placing emphasis on the production of moderately complex products using production machines, setups, and fixtures. Pre-requisite: AMFTI 141.

AMFTI-145 INTRODUCTION TO NC AND CNC (3 cr.) This course will cover the introduction to numerical controls for x, y, and z-axis application, tool controls for hole and milling operations, blueprint reading for NC and CNC programming, and Geometric Dimensioning and Tolerancing for NC programming. Programming will include hole operation, linear profiles, circular profiles, cutter diameter compensation, and programming with subprograms. Pre-requisite: AMFTI 143.

AMFTI-241 INTRODUCTORY CAD AND CAM (3-4 cr.) This course will teach the elementary principles of Computer Aided Machining (CAM) and Computer Numerical Controlled (CNC) machining. The course introduces the manufacturing or engineering student to the world of turning a virtual object into an actual object, (going from Art to Part). Students taking the course for 4 credits will be required to complete a 2-D project and written report. Pre-requisite: AMFTI 145.

AMFTI-243 ADVANCED CAD AND CAM (3-4 cr.) A continuation in the study of G and M codes from AMFTI 241. The emphasis will be in transforming 3-D models (including wire frame, surface, and solid models) into 3-D tool path definitions. Students taking the course for 4 credits will be required to complete a 3-D project and written report. Pre-requisite: AMFTI 241.

AMFTI-245 CNC MACHINING PROCESSES (3 cr.) This course will cover techniques and fixed cycles for CNC lathe programming, modern computer-aided parts programming, elements of the computer-controlled factory, and verifying part programs. Pre-requisite: AMFTI 241.

AMFTI-261 APPLIED STATISTICS FOR MANUFACTURING (3 cr.) This class explores methods of ensuring quality in manufacturing through application of codes and standards, sampling techniques, control charts and implementation of documented quality assurance programs. Pre-requisite: MTHPT 103/123 or Instructor's permission.

AMFTI-263 PROJECT PLANNING (3 cr.) Analysis and planning of manufacturing procedures in the development of a project plan, schedule and control of the project. This will include material and process for manufacturing utilizing ISO 9000 guidelines for documentation of the part(s) developed for the project. Pre-requisite/Co-requisite: AMFTI 261.

AMFTI-265 MANUFACTURING PROJECT (6 cr.) A project emphasizing the initiative of the student. Decisions by the student/manufacturing entity are made after evaluation of all factors related to the project. The role of the instructor is that of a consultant after each proposed project is approved. Pre-requisite/Co-requisite: AMFTI 261.

AMFTI-290 DS: AUTOMATED MANUFACTURING TECHNOLOGY (1-10 cr.) This course offers the opportunity to learn advanced skills in an area mutually agreed upon and related to the manufacturing field by the student and instructor. The student and instructor will develop a set of objectives and time guidelines to complete a specialized project or course of study and a plan to achieve these objectives.

AMFTI-292 DIRECTED SPECIAL PROJECTS (1-10 cr.) Opportunity to learn additional skills in specific area of study for the manufacturing technology program. Student and instructor develop a set of objectives and time guidelines to complete advanced skills in the course registered for and a plan to achieve these objectives. Pre-requisite: Instructor permission.

AMFTI-296 COOPERATIVE EDUCATION IN AUTOMATED MANUFACTURING TECHNOLOGY (1-10 cr.) Work experience in business related to student career goal. Student is a paid part-time employee working under supervision of employer and program coordinator. Registration only with instructor approval. Pre-requisite: Instructor permission.

AMFTI-396 COOPERATIVE EDUCATION IN AUTOMATED MANUFACTURING TECHNOLOGY (1-12 cr.) Work experience in business related to student career goal. Student is a paid part-time employee working under supervision of employer and program coordinator. Registration only with instructor approval. Pre-requisite: Instructor permission.

AMFTI-492 DIRECTED SPECIAL PROJECTS (1-10 cr.) Opportunity to learn additional skills in specific area of study for the manufacturing technology program. Student and instructor develop a set of objectives and time guidelines to complete advanced skills in the course registered for and a plan to achieve these objectives. Pre-requisite: Instructor permission.