ADVANCED MANUFACTURING (ADVM)

ADVM 0062. Introduction to Computer Aided Design and Manufacturing (CAD/CAM)
Units: 2.5
Hours: 81 (27 lecture, 54 laboratory)
Introduction to CAD/CAM using Fusion 360. Covers practical on-the-job skills needed for precision machining. Students will learn skills needed to read and understand detailed drawings, create a process plan for machining parts, create 3D CAD files from 2D drawings, create 2D drawings from 3D models, plan and create CNC toolpaths and export G-code for manufacturing. (not transferable)

ADVM 0063. Design and 2-D Manufacturing of 3-D Objects
Units: 2
Hours: 72 (18 lecture, 54 laboratory)
Students will learn the basic working principles of water jet cutting, laser cutting, laser engraving, plasma cutting, CNC and manual press brake machinery. Class projects will be modeled using computer software and then cut, engraved, or formed using the appropriate manufacturing process for the job. (not transferable)

ADVM 0064. Computer-Aided 2D Design
Units: 3
Formerly known as WELD 64
Hours: 90 (36 lecture, 54 laboratory)
Study of Computer Numerically Controlled (CNC) cutting systems in the 2D world using industry standard hardware and development software. Topics include design principles, copyright, selection of materials, billing of materials and job estimating, basic G and M code commands, use of consumables, cut quality evaluation, and trouble-shooting techniques. (not transferable)

ADVM 0066. CNC Machining Level 1
Units: 3
Formerly known as WELD 66
Advisory: Completion of ADVM 62 with grade of "C" or better
Hours: 90 (36 lecture, 54 laboratory)
Intermediate course making billet aluminum parts from start to finish using HAAS CNC milling machines. Fusion 360 will be used to model and program class assignments which are then posted to HAAS machines where students will learn how to set up and operate HAAS CNC vertical machining centers. After the parts have been machined, students will use common industry measuring and inspection techniques to insure their parts are in tolerance. (not transferable)

ADVM 0067. CNC Machining Level 2
Units: 3
Formerly known as WELD 67
Prerequisite: Completion of ADVM 66 with grade of "C" or better
Hours: 90 (36 lecture, 54 laboratory)
Applications using multi-axis CNC machining. Developing complicated part geometry with Computer Aided Design (CAD), importing files, planning machine operations, and developing machine codes by Computer-Aided Machining (CAM) with multi-axis focus. Includes simulation modeling used to proof the assigned laboratory exercises and set-up for 3+2 and 4th and 5th axis operation of CNC machining centers. (not transferable)

ADVM 0068. Advanced Mill 4th and 5th Axis
Units: 3
Prerequisite: Completion of ADVM 67 with grade of "C" or better
Hours: 90 (36 lecture, 54 laboratory)
Advanced CNC machining 4th and 5th axis Mill work. Developing complicated part geometry with Computer Aided Design (CAD), Post process CAM tool path development, planning machine operations, and developing machine codes and techniques for cost effectiveness. CNC Lathe operations. (CSU)