CNC - COMPUTER NUMERIC CONTROL

CNC 201 Advanced CNC Wire EDM and Mill Programming (0-3-1)
Offered Fall, Spring and Summer Semesters
Prerequisite: MTT 252 or prior learning assessment
This course is a continuation of the study of manual CNC programming and operations and will provide experience on 3-axis CNC machining centers and Wire EDM Machines. Hands-on training will cover 3-axis mill programming to include multi-level features. Training will also include Wire EDM programming for taper and multi-shape cutting in a single program.

CNC 202 Advanced CNC 4-Axis Mill Programming (0-3-1)
Offered Fall, Spring and Summer Semesters
Prerequisite: MTT 252 or prior learning assessment
This course covers advanced manual programming and operations on 3- and 4-axis CNC Machining Centers. Hands-on training will cover mirror image and coordinate rotation subprograms and parts with multilevel features. In addition, rotary 4th axis operations will be covered.

CNC 203 Advanced CNC Lathe Programming (0-3-1)
Offered Fall, Spring and Summer Semesters
Prerequisite: MTT 252 or prior learning assessment
This course covers advanced manual CNC programming and operations experience on CNC C-axis lathes. Topics covered will include external and internal operations using lathe cycles and C-axis milling and drilling operations.

CNC 205 Introduction to Additive Manufacturing (1-1-1)
Offered Spring Semester
Prerequisites: MAT 100 or MAT 032 and RDG 100
This course is an introduction to additive manufacturing processes with a focus on the different technologies available, current applications, history and other technologies directly associated with the advancement of additive manufacturing.

CNC 206 Additive Manufacturing for Non-Metals (1-1-1)
Offered Spring Semester
Prerequisite: CNC 205 or permission of instructor
This course is an introduction to the photopolymerization, extrusion and jetting systems in additive manufacturing. The student will set-up and operate a variety of additive machines.

CNC 207 Additive Manufacturing for Metals (1-1-1)
Offered Spring Semester
Prerequisite: CNC 205 or permission of instructor
This course is an introduction to the Powder Bed Fusion (PBF) and Direct Energy Deposition (DED) systems in additive manufacturing. The student will set-up and operate a variety of PBF and DED machines.

CNC 251 Intermediate CAD/CAM Design (0-3-1)
Offered Fall, Spring and Summer Semesters
Prerequisite: MTT 254 or prior learning assessment
This course is an intermediate course in CAD/CAM design. Topics include part model creation, importing existing CAD models and manipulating and preparing the models for CNC tool paths. Training will entail utilizing CAD/CAM software using intermediate-level drawing techniques.

CNC 252 Intermediate CAD/CAM Mill Programming (0-3-1)
Offered Fall, Spring and Summer Semesters
Prerequisite: CNC 251 or prior learning assessment
This course is an intermediate course in CAD/CAM tool path creation. Topics include creating and simulating milling tool paths and output of programs for the CNC milling machine.

CNC 253 Intermediate CAD/CAM Lathe Programming (0-3-1)
Offered Fall, Spring and Summer Semesters
Prerequisite: CNC 251 or prior learning assessment
This course is an intermediate course in CAD/CAM lathe tool path creation. Topics include creating and simulating lathe tool paths, incorporating C-Axis tool paths and output of programs for the CNC Turning Centers.

CNC 256 CAD/CAM C Axis CNC Lathe I (0-3-1)
Offered Fall, Spring and Summer Semesters
Prerequisites: MTT 253 or CNC 201, CNC 202 CNC 203 and MTT 255 or CNC 251 CNC 252 CNC 253
This course is a study of intermediate CAD/CAM programming and editing of CNC C-axis lathe programs. The course also covers the setup and operation of the machines, setting of tools, machine limits and safety.

CNC 257 CAD/CAM C Axis CNC Lathe II (0-3-1)
Offered Fall, Spring and Summer Semesters
Prerequisite: CNC 261
This course is a continued study of intermediate CAD/CAM programming and editing of complex parts on the CNC C-axis lathe machines. The course also covers the setup and operation of the machines, setting of tools, machine limits and safety.

CNC 264 CAD/CAM 4 Axis CNC Mill II (0-3-1)
Offered Fall, Spring and Summer Semesters
Prerequisite: CNC 262
This course is a continued study of intermediate CAD/CAM programming of complex 4-axis milling programs. This course also covers the setup and operation of the machines, setting of tools, machine limits and safety.

CNC 271 CAM 4-Axis Wire EDM (0-3-1)
Offered Fall, Spring and Summer Semesters
Prerequisite: CNC 201
This course is a continuation of the study of advanced CAD/CAM programming and operations of multi-axis wire EDM and will provide experience on 4-axis CNC wire EDM machines. Hands-on training will cover 4-axis CAD/CAM Wire EDM programming to include multi-level taper features and multi-shape cutting In a single program in XY and UV planes.
CNC 272 CAM 5-Axis Mill Programming & Operations I (0-3-1)
Offered Fall, Spring and Summer Semesters
Prerequisite: CNC 264
This course is the study of advanced CAD/CAM programming and operations of multi-axis machining centers and will provide experience on 5-axis CNC machining centers. Hands-on training will cover 5-axis CAD/CAM machining center programming to include advanced CNC multi-axis machine programming, advanced contouring and simultaneous multi-axis machining of 3D parts.

CNC 273 CAM C&Y-Axis Lathe Programming & Operations (0-3-1)
Offered Fall, Spring and Summer Semesters
Prerequisite: CNC 263
This course is a study of advanced CAD/CAM programming and editing of CNC C&Y-axis lathe programs. The course also covers the set-up and operation of the machines, setting of tools, machine limits and safety. Hands-on training will cover 4-axis CAD/CAM turning center programming to include advanced CNC C&Y multi-axis turning/milling programming, advanced contouring and simultaneous multi-axis machining of 3D parts.

CNC 274 CAM 5-Axis Mill Programming & Operations II (0-3-1)
Offered Fall, Spring and Summer Semesters
Prerequisite: CNC 272
This course is a continuation of the study of advanced CAD/CAM programming and operations of multi-axis machining centers and will provide additional experience on 5-axis CNC machining centers. Hands-on training will cover advanced 5-axis CAD/CAM machining center programming to include CNC simultaneous multi-axis machine programming, multi-axis advanced contouring and simultaneous multi-axis machining of complex 3D parts.