

Master Syllabus

CAM 2204 - Computer Numerical Control Lathe Programming

Division: Science, Mathematics and Engineering

Department: Computer Aided Manufacturing

Credit Hour Total: 3.0

Lecture Hrs: 2.0 **Lab Hrs:** 2.0

Prerequisite(s): CAM 1109OR CAM 1161AND MET 1131OR OPT 1198AND CAM 1116

Date Revised: January 2015

Course Description:

Development of Computer Numerical Control (CNC) programs for two axis CNC lathes including linear and circular interpolation, turning, grooving and threading cycles; drilling and tapping; G & M codes. Review setup and operation of CNC lathe; adjusting tool offsets to hold part tolerance. Two classroom, two lab hours per week.

General Education Outcomes:

- ▣ Critical Thinking/Problem Solving Competency
- ▣ Computer Literacy Competency
- ▣ Oral Communication Competency
- ▣ Values/Citizenship/Community Competency

Course Outcomes:

Part Programming

Following an operations process plan, write and debug a CNC program for the CNC lathe.

Assessment Method: Locally developed exams

Performance Criteria:

70% of students score at least 70%

Assessment Method: Performance appraisals

Performance Criteria:

At least 70% of all CNC programs must be without errors that would cause incorrect cutting of part feature, damage to tool or machine.

Assessment Method: Portfolios

Performance Criteria:

100% of original(draft) and final program printouts will become part of the course portfolio

Process Planning

Analyze part and develop an appropriate manufacturing operations process plan utilizing tooling for CNC lathe.

Assessment Method: Performance appraisals

Performance Criteria:

At least 70% of all part features must be linked to correct process at first submission

Assessment Method: Portfolios

Performance Criteria:

100% of process plans will become part of the course portfolio

Setup and Operation

Utilizing the process plan and CNC program, setup the CNC lathe with all tools, program and manufacture the part.

Assessment Method: Behavioral observations

Performance Criteria:

Using instructional materials, the students (in teams) must correctly identify and set all tool offsets, work offset and program at 100%.

Assessment Method: Performance appraisals

Performance Criteria:

Work offset must be within .005" of actual location. Tool offsets must be within .005". All (100%) of part features must be within tolerance of part.

Outline:

Safety procedures in the CNC shop

Speeds and feeds

Rough and finish turning cycles

Grooving and threading cycles

Drilling and tapping cycles
Machine setup and operation
Tool setup and offsets