

PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

COMPUTER-AIDED MACHINING III
MET 2720

Class Hours: 2.0

Credit Hours: 4.0

Laboratory Hours: 6.0

Date Revised: Fall 00

Catalog Course Description:

A state-of-the-art machining course in two-axis CNC turning.

Entry Level Standards:

Students entering this course should have basic math and writing skills, a working knowledge of WordPerfect or MS Word and AutoCAD, and programming principles introduced in CAM I.

Prerequisite:

MET 2700

Textbook(s) and Other Reference Materials Basic to the Course:

Textbook:

Haas HL Series *Operations Manual*: June 1998.

References:

Haas Lathe-Series Training Manual. *FeatureCAM User's Guide: Version 7*, Engineering Geometry Systems, 2000.

I. Week/Unit/Topic Basis:

Week	Topic
1-3	Machine Set-Up; Manual Operation
4-8	MDI Programming
9-15	Computer-Assisted Programming
16	Final Exam Period

II. Course Objectives*:

- A. Demonstrate an understanding of the basic principles of CNC turning. I,II
- B. Set-up, maintain, and functionally operate machine. III
- C. Create and input program using MDI methods. II,III
- D. Create, post-process, and transfer program using computer-assisted methods. I, III
- E. Inspect a part and analyze results. II, III, V

F. Communicate technical information. IV

*Roman numerals after course objectives reference goals of the MET program.

III. Instructional Processes*:

Students will:

1. Actively listen to class lectures and participate in class activities that develop and reinforce an understanding of the theories, concepts, principles, and applications of CNC Wire-Cut EDM machining. *Communication Outcome, Problem Solving & Decision Making Outcome, Technological Literacy Outcome, Numerical Literacy Outcome, Information Literacy Outcome, Active Learning Strategies*
2. Work individually and in teams to complete lab projects and assignments related to the theories, concepts, principles, and applications covered in the lecture or demonstration portion of the course. *Problem Solving & Decision Making Outcome, Technological Literacy Outcome, Numerical Literacy Outcome, Information Literacy Outcome, Active Learning Strategies*
3. Collect, analyze, and tabulate data in an orderly format to prepare a college level technical report using software packages such as AutoCAD, WordPerfect/Word, Uni-Touch Plus, and EZ-EDM. *Communication Outcome, Problem Solving & Decision Making Outcome, Technological Literacy Outcome, Numerical Literacy Outcome, Information Literacy Outcome, Active Learning Strategies*
4. Observe class demonstrations on CNC equipment, practice, and then demonstrate to instructor basic manipulative skills required to set-up, operate, and program equipment. *Problem Solving & Decision Making Outcome, Technological Literacy Outcome, Numerical Literacy Outcome*
5. Observe class demonstrations on CAM software, practice, and then integrate manipulative and cognitive skills with assimilated knowledge to successfully complete lab projects. *Problem Solving & Decision Making Outcome, Technological Literacy Outcome, Numerical Literacy Outcome*
6. Participate in technical meetings, plant tours, and seminars sponsored by local technical societies to increase student knowledge of machining and manufacturing processes and enhance awareness of required job skills and opportunities in industry. *Personal Development Outcome, Transitional Strategies*

*Strategies and outcomes listed after instructional processes reference Pellissippi State's goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*:

Upon successful completion of this course, the student should be able to:

1. Define, explain, and associate the terminology used in CNC turning. A
2. Apply and associate the principles of CNC turning. A
3. Identify all safety hazards associated with CNC turning operations. B
4. Set zero tool, tool length offsets, and part program zero. B

5. Evaluate machining process during cutting operation and adjust settings to achieve maximum results. B
6. Construct part and information drawings. C, D
7. Create tool data base. C, D
8. Create geometry, define tool paths, input part program information, and verify cutting operation. C, D
9. Post-process and create a machine readable program. C, D
10. Set-up and initiate a transfer of program. C, D
11. Edit an existing program. C, D
12. Measure part features using standard gauging or CMM techniques. E
13. Accept/reject/rework parts based on standard or geometric tolerancing. E
14. Relate inspection results to machining process. A, B, E
15. Locate and extract needed information from operational and programming manuals. F
16. Document technical information in a neat and orderly format. F
17. Complete assignments based on oral instructions. F

*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

A. Testing Procedures:

Evaluation of both classroom and laboratory work is required in this course.

B. Laboratory Expectations:

Project 1: MDI Programming--30 Points
 Project 2: Computer-Assisted Programming--30 Points
 Project 3: Drilling & Boring--30 Points

C. Field Work:

N/A

D. Other Evaluation Methods:

Participation--10 Points
 Based on instructor observation during the course, each student will be evaluated on participation activities. Evaluation parameters to include active participation in class discussions, being prepared, efficient use of lab time, striving to achieve more than minimum requirements, and regular attendance.

E. Grading Scale:

A 92-100

B+	88-91
B	83-87
C+	79-82
C	74-78
D	65-73
F	Below 65

VI. Policies:

A. Attendance Policy:

Pellissippi State Technical Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic and Student Affairs, may have requirements that are more stringent.

B. Academic Dishonesty:

Cheating on a quiz or assigned project will not be tolerated. First offense will result in immediate dismissal and automatic failure of the course. Assistance from other students is encouraged during the learning stages of the course, but each student is responsible for completing their own course assignments.

C. Other Policies:

Make-Up Quizzes: As a general rule, no make-up quizzes will be administered during the course.

Safety and Equipment Abuse: Repeated safety violations will result in a reduction of final grade, at the instructor's discretion. Flagrant violations which result in equipment damage or personal injury will result in automatic failure of the course.

Counseling: Counseling is available during posted office hours or by appointment.