PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

COMPUTER-AIDED MACHINING II
MET 2710

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 four-axis, wire-cut electrical discharge machining.

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:
JAPAX LU3B Training Manual: McWilliams Machinery.
References:
EZ-CAM VI, EZ-EDM Reference Manual: Bridgeport Machines, January 1992.
EZ-CAM VI, Utilities Reference Manual: Bridgeport Machines, March 1992.
JAPAX LU3B Instruction Manual: JAPAX Inc..
CNC Technology and Programming: Krar and Gill, McGraw- Hill, Inc., 1990.

I. Week/Unit/Topic Basis:

Week	**Topic**
1-2	MDI Part Programming
3-6	Machine Operation & Set-Up; Spark Erosion
7-15	Computer-Assisted Programming
16	Final Exam Period

II. Course Objectives*:

A. Demonstrate their understanding of the basic principles of wire-cut EDM. 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 by computer-assisted methods. II,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 wire cutting. A

2. Apply and associate the principles of spark erosion. A

3. Thread wire and position at "start point". B

4. Calibrate and adjust resistivity of dielectric. B

5. Evaluate machining process during cutting operation and adjust initial variable settings to achieve maximum results. B

6. Differentiate absolute and incremental programming. C

7. Construct part and information drawings. C, D

8. Apply the concepts of cutter compensation and taper cutting in a part program. C, D

9. Edit and "dry run" a program. C, D

10. Create geometry, define tool paths, input part program information, and verify cutting operation by computer-assisted methods. D

11. Modify post-processor and generate a machine readable program. D

12. Set-up and initiate a transfer of program. D

13. Measure part features using both standard gauging and CMM techniques. E

14. Accept/reject/rework parts based on standard and geometric tolerancing. E

15. Relate inspection results to machining variables. A, B, E

16. Locate and extract needed information from operational/programming manuals. F

17. Document technical information in a neat, orderly format. F

18. Comprehend and follow 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.
Quizzes--10 points
Approximately 4-5 quizzes will be administered during the course. They will include discussion questions, short answer questions, true/false questions, programming, and problem solving.

B. Laboratory Expectations:

Project 1: MDI Programming--25 Points
Project 2: Computer-Assisted Programming--25 Points
Project 3: Die Project--30 Points
Guidelines and requirements for each project will be provided by the instructor.

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.