

**Department of Engineering & Technology Education
College of Engineering, Utah State University**

Syllabus

Course Title: Computer-Integrated Manufacturing (CIM) Systems
Course Number: ETE 2020
Semester Credits: 3
Prerequisite: ETE 1030
Instructor: Dr. Gary Stewardson
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Address: ETE Department
6000 Old Main Hill
Utah State University
Logan, UT 84322-6000
Date: Spring 2009
Course Time: MWF 2:30 - 4:20 pm
Building/Room: Industrial Science (IS)/Rooms 117 (classroom) & 104 & 114 (labs)

Course Description

This course introduces students to the principles, operations, and applications of computer-controlled manufacturing systems, including CNC, CAD/CAM, robotics, and data acquisition and control devices. Emphasis will be placed on Project Lead the Way's (PLTW) CIM pre-engineering curriculum. Engineering and Technology Engineering (ETE) majors will have the option of obtaining PLTW CIM certification.

Course Goals/Objectives

1. Identify the attributes, uses, advantages, and disadvantages of the components used in manufacturing automation.
2. Develop power point presentations on major concepts and components used in manufacturing automation.
3. Work effectively in an engineering team.
4. Design and implement solutions to problems encountered in computer-integrated manufacturing systems.
5. Write programs to control CNC mills, servo robots, and automated control systems.
6. Utilize parametric modeling (CAD), CAD/CAM, and CNC post processor software packages to generate CNC machine code.
7. Hand-shake a servo robot controller to CNC milling machine controller to create a basic automated work cell.
8. Understand the ethics related to the use of automation in the manufacturing workplace.

Course Requirements

1. Attend class lectures and lab demonstrations.
2. Complete all assignments, both laboratory and homework.
3. Take all quizzes and exams.
4. Maintain a portfolio of all coursework.
5. Follow safety practices and participate in all clean-up activities.

Evaluation

The final course grade will be based on the following areas and are tentatively weighted as indicated:

Quizzes and Exams	1/2	(50%)
Lab Work and Home Work	1/3	(33.3%)
Portfolio	1/6	(16.7%)

Final letter grades will be based on a normal distribution or percentage whichever system earns the student the higher grade. Points in each category will be totaled and weighted appropriately. The standard deviation (SD) and percentages for the class will be calculated and grades assigned as follows:

+1/2 SD and above	or	90% and above	A
-1/2 SD to +1/2 SD	or	80% to 89%	B
-1 1/2 SD to -1/2 SD	or	70% to 79%	C
-2 1/2 SD to -1 1/2 SD	or	60% to 69%	D
-2 1/2 SD and below	or	59% and below	F

Note: Course grades are entered electronically and recorded on the student's transcript. Students wishing to see their course grade may view their transcript via the web.

Text

There is no text for this course. The PLTW curriculum will be utilized in place of a single text.

Additional Reference Material

Nanfara, F., Uccello, T., & Murphy, D. (1995). *The CNC workbook: An introduction to computer numerical control*. New York: Addison-Wesley.

Lab Fee

ETE 3030 has a \$20 lab fee paid when registering for the course. This fee is used for consumables including materials, tooling and damaged components.

Accommodation for Persons With Disabilities

In cooperation with the Disability Resource Center, reasonable accommodations will be provided for students with disabilities. Please meet with the instructor during the first week of class to make arrangements. Alternative format print materials, large print, audio, diskette or Braille, will be available through the Disability Resource Center.