

Texas A&M University–Corpus Christi
College of Science and Technology
Engineering Technology

ENTC 3323 Manufacturing Automation
Spring 2007

COURSE INFORMATION

Prerequisite: ENTC 3415 and COSC 1435

Meeting Times: TR (Lecture), TR (Laboratory)

Meeting Place: ST 116

PROFESSOR INFORMATION

Dr. Ruby Mehrubeoglu (Dr. M.)

Office Address: ST 222B,

Office Phone: (361) 825-3378, FAX Number: (361) 825-5848

Office Hours: TR 2:00 – 5:00 pm, and by appointment

E-mail Address: ruby.mehrubeoglu@tamucc.edu

TEXTBOOK AND OTHER CLASS MATERIAL

1. *Introduction to Robotics in CIM Systems*, James A. Rehg, Prentice Hall, 2003.
2. AMATROL Manuals (available for in-class use only)
3. Supplemental handouts and reading
4. Lab Kits and Manual (available for in-class use only)

COURSE DESCRIPTION

Automation in a manufacturing and assembly setting, material handling systems, remote guided vehicles, automated storage and retrieval systems, computer numerical machine tools, robotics. Prerequisite: ENTC 3415 and COSC 1435. Spring.

STUDENT LEARNING OUTCOMES

At successful completion of this course the student will be able to:

- Understand the characteristics, operation and integration of Robots and Robotics technology
- Understand the interrelationship of material handling to the manufacturing process
- Understand the characteristics of other automated equipment
- Use a logical approach to solve problems
- Perform detailed analysis of manufacturing cells
- Critique design and recommend improvements
- Develop and implement applications for a manufacturing automation system
- Analyze and use a machine vision system
- Understand, program and use PLCs as part of a manufacturing automation system
- Demonstrate skills in practical applications of robotic systems
- Demonstrate effective communication skills

INSTRUCTIONAL METHODS

Methods and activities for instruction include the following: lectures, group discussions, homework assignments, exams, projects, lab assignments, reports and presentations.

ASSESSMENT

Assessment is based on pop quizzes, two exams, homework, a comprehensive final exam, labs, project reports and presentations. The final exam is comprehensive. You may examine the final exam within four weeks after the final grades are assigned. The final grade is computed as follows.

	<i>Percentage</i>		<i>Total grade</i>	<i>Tentative Grade</i>
Homework and Pop Quizzes	10		$90 \leq \text{total}$	A
Exam 1	15		$80 \leq \text{total} < 90$	B
Exam 2	15		$70 \leq \text{total} < 80$	C
Project Proposal (Written + Oral Presentation)	5		$60 \leq \text{total} < 70$	D
Project Progress Report and Presentation	5		$\text{total} < 60$	F
Final Project Report and Presentation	10			
Lab Assignments	16			
Lab and Project Notebook	4			
Final Exam	20			
Total	100			

MAKEUP EXAMINATIONS

No makeup examinations will be given except in the case of a documented extreme emergency. Makeup exams will be different from the regular exams and hence more difficult.

SUPPORT SERVICES FOR STUDENTS WITH DISABILITY

Refer to the University Catalog.

ATTENDANCE POLICY

You are advised to attend all lectures and laboratory periods. If you miss a class period, you are responsible for whatever is covered or announced during your absence.

ACADEMIC HONESTY

Plagiarism and other academic dishonesty are not tolerated. Your attention is called to the University policy in the Student Handbook.

ASSIGNMENTS

Late assignments are will not be accepted. The student will receive a zero on assignments that are turned in after the due date unless a written or electronic (e-mail) permission is secured from the instructor prior to the due date. Permission will be granted only in extreme situations.

SAFETY: The safety of students, faculty, staff and visitors to the ET laboratories is of paramount importance to the ET programs. You must follow safety procedures and use personal protective equipment as required in each laboratory. Any student that attempts to use equipment without authorization or that violates any safety policy or regulation will be immediately removed from the laboratory.

FOOD AND DRINK: Eating or drinking is NOT permitted in the classrooms or laboratories. Students with food or drink will be asked to discard them, or leave the room.

TENTATIVE WEEKLY SCHEDULE*

WEEK	DATE Week of	Textbook and other reading*	Topics	Laboratory Tentative Schedule**
1	01/08	Ch 1	Introduction to manufacturing automation and industrial robotics	Safety in the Lab
2	01/15	Ch 2, A manual 1	Robot classifications	Lab Assignment 1
3	01/22	Ch 3, A manual 5	Automated work cells and CIM systems	
4	01/29	Ch 4, B Manual 1	End-of arm tooling, PLCs	Lab Assignment 2
5	02/05	Ch 5	Automation sensors; machine vision	
6	02/12	Ch 6	Work-Cell support systems	Project Proposal and Presentation
7	02/19	Ch 7,	Robot and system integration,	Exam 1
8	02/26	Ch 8, A manuals 2 & 3, B manual 2	Work Cell Programming	Lab Assignment 3
9	03/05	Ch 9	Justification and application of Work cells	
10	03/12	S P R I N G B R E A K		
11	03/19	Ch 10	Safety	Lab Assignment 4
12	03/26	Ch 11, B Manual 4	Human interface: operator training, acceptance, and problems; I/O interfacing	
13	04/02	Ch 12	Work-cell design case study	Exam 2
14	04/09	B Manual 2,	PLCs and programming, Project	Project Progress Report and Presentation
15	04/16		Project	Lab Assignment 5
16	04/23		Project	
17	04/30	Review	Review	Final Project Presentations
Final Exam: Wednesday, 9 May 2007, Time: 2:00-4:30 p.m.				
* The instructor will be providing supplemental handouts				
** Dates are subject to change at the discretion of the instructor				

A Manuals: Automated Material Handling;

B Manuals: Mastering Programmable Controllers