



College of Business and Technology
School of HRD & Technology
TECH 4317

COMPUTER INTEGRATED MANUFACTURING

Course Syllabus



Dr. Mark R. Miller
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Office: HPR 244
Time: TR 12:30-1:45 p.m.
Office Hours: TR 8-11:00 a.m. and by appointment
(60% lecture – 40% lab)

FALL 2008
(903)566-7186

Course Description

Study of the application of computer-aided-design, computer-aided-manufacturing, computer numerical control, robotics, programmable logic controllers, and computer communication networks to achieve automated manufacturing.

Textbook

J. Barry Duvall and David R. Hillis (2008). **Manufacturing Processes: Automation, Materials, and Packaging (2nd ed.)**. Tinley Park, IL: Goodheart-Willcox. ISBN: 1-59070-780-X

Student Learner Outcomes:

At the end of this course, participants will be able to:

1. Make a detailed drawing of an object using CAD (Autodesk Inventor).
2. Write a CNC program that will successfully run on a CNC milling machine.
3. Program and write a program for an industrial robot that will successfully pick and place an object.
4. Develop an understanding of CAM and automation by successfully passing quizzes and exams with a 70% or better score.

Course Competencies

1. Computer-Based Skills – the student will complete written assignments using the CAM software.
2. Communication Skills – the student will exhibit a mastery of both written and oral skills in completion and presentation of the assigned projects.
3. Interpersonal Skills – the student will interact in class laboratory activities.
4. Problem Solving (Critical Thinking) – the student will use conceptual thinking to analyze and make determinations regarding the use of industrial processing equipment.
5. Ethical Issues in Decision Making and Behavior- the student will gain an appreciation of the ethics of technology through examination of various computer controlled processing.
6. Personal Accountability for Achievement – the student will complete the projects at the time designated by the instructor and will enter into class discussion.
7. Competence in Technology Principles
 - a. Competence in major field and grounding in other major technology major core areas – the student will gain an appreciation of the benefits and problems of automation.
 - b. Exposure to and appreciation for industrial experiences such as industrial tours, work-study options and cooperative education, senior seminars – This competency is addressed through hands-on industrial activities during the lab portion of the course

Course Requirements

Daily Quizzes	200
Participation/Attendance	100
Midterm exam	200
Laboratory activities/assignments	300
Final Exam	200

TOTAL POINTS = 1000

Grade Scale Breakdown:

A=90 - 100%

B=80 - 89%

C=70 - 79%

D=60 - 69%

F=BELOW 60%

Note: 89.9999999999999999 is still a B.

Course Policies:

Content for examinations will be taken from lectures, demonstrations, reading assignments, laboratory exercises and any audio-visual materials used, i.e. films, tapes, slides, etc.

Make up examinations are the student's responsibility. No excuses will be accepted after the exam is given. The instructor must be notified **prior** to the scheduled exam. If not, the student forfeits his/her right to take the exam. Quizzes will not be made up unless a **prior** acceptable excuse for an absence has been received by the instructor.

Attendance:

Attendance is mandatory and will be taken at every scheduled class and laboratory period. No make-ups unless:

1. Organized university trip.
2. Illness or death in **immediate** family (mother, father, brother and/or sister).
3. Illness of student.

Each one of these will require either a **doctor's statement** or a **signed** statement from the individual in charge of the trip.

A student will lose a letter grade in the course each time s/he is absent or late 3 times. Any student entering the classroom 1 second after the scheduled starting time will be considered late.

Late Work:

All work not turned in on time will have an automatic reduction in value to 50% of its full value. **Work that is not turned in by the next class will NOT be accepted.** Exceptions to this will be as per University Policy concerning absences from class. If you know an assignment will be late for a valid reason, inform your instructor in advance to avoid unnecessary penalty.

Format for Reports:

Each laboratory report will be placed in a folder, arranged in such that the reader can easily examine the contents. Any materials that are hard to read or require special handling to get at will not be graded. The cover must contain the following:

1. Assignment Title
2. Your Name
3. Your I.D Number
4. Course Name and Number
5. The Date

Your grade will reflect the quality of the presentation.

Cell Phones:

Cell phones are to be seen and not heard. Make sure you turn off your cell phone during class or turn it to the vibrator mode. A ringing cell phone is a distraction and is inappropriate for the classroom. Allowing your cell phone to ring and then answering it is very rude. It is not fair to your fellow classmates who have paid for this course.

Please be considerate and make sure your cell phone is turned off during any of your classes. Students will be asked to leave for the day if this behavior continues.

Discrimination:

The policy of this department is to make your college experience as pleasant as possible. However, if at any time you feel that you are being discriminated against, belittled, or not treated appropriately, please notify the instructor either anonymously or in-person **immediately** after class. It is not the intention of any of the faculty in this department to make your college experience an unpleasant one. Remember, the first step in the process is to inform the instructor so s/he can be made aware of the problem and take corrective action. If the problem continues to persist, please inform the chair of the department. The dean can then be notified if the problem continues to exist after a few days. A grievance can then be filed in the Office of Student Services if there has still been no change in the instructor's behavior. **It should be noted that filing a grievance is a serious act and should NOT be done so just because you received a bad grade on an exam or in the course.**

Communication is an effective tool to solve problems and is rarely used enough. Most people are not deliberately trying to upset you, they are just not aware of your vantage point.

Talking:

While the instructor is talking, it is understood that no one should be talking. Students talking in class prevent other students from hearing the instructor and learning the material that is required to pass the course. If you are caught talking then you will **earn a zero on your daily quiz** grade. On the second offense, **you will be asked to leave**. This behavior is rude and disruptive and most students who talk in class typically earn lower grades. It should be noted, that students who have been granted permission to talk by the instructor should not be interrupted as well.

Offensive Language:

Any type of offensive language will not be tolerated in the classroom or laboratory. How you speak to your friends outside the classroom is your business, however, when you are in the classroom you must follow the University of Texas rules of conduct. **You will be asked to leave if your language or conduct is offensive.**

Disability Statement

"If you have a disability, including a learning disability, for which you request disability support services/accommodation(s), please contact Ida MacDonald in the Disability Support Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting disability support services/accommodation(s) must provide appropriate documentation of his/her disability to the Disability Support Services counselor. In order to assure approved services the first week of class, diagnostic, prognostic, and prescriptive information should be received 30 days prior to the beginning of the semester services are requested. For more information, call or visit the Student Services Center located in the University Center, Room 282. The telephone number is 566-7079 (TDD 565-5579)." Additional information may also be obtained at the following UT Tyler Web address: <http://www.uttyler.edu/disabilityservices>.

Academic Dishonesty Statement

"Academic dishonesty, such as unauthorized collusion, plagiarism and cheating, as outlined in the Handbook of Operating Procedures, University of Texas at Tyler, will not be tolerated. University regulations require the instructor to report all suspected cases of academic dishonesty to the Dean of Students for disciplinary action. In the event disciplinary measures are imposed on the student, it becomes part of the students' official school records. Also, please note that the handbook obligates you to report all observed cases of academic dishonesty to the instructor.

Lecture/Laboratory Materials:

Students will be required to provide the following:

1. ASTM or OSHA approved safety glasses
2. Textbook, notebook, and paper to take notes
3. Pen and pencil
4. 3 - Scantrons (Exam type) #882-ES
5. A \$10 materials fee is required to cover the cost of the project that you manufacture.

IMPORTANT DATES:

OCT 15	Deadline to file for Spring 2009 graduation
OCT 31	Last day to withdraw from a course with an automatic W – Friday
NOV 3	Registration for Spring 2009 semester begins with Campus Connect
NOV 26-29	Thanksgiving Holiday
DEC 20	Fall Commencement – Saturday
JAN 12	Spring 2009 Semester begins – Monday

Tentative Schedule

August

Administrative concerns, about the course, assignments
Introduction to computer integrated manufacturing
Manufacturing systems

September

Product design
Product engineering
Lab activities

Midterm Exam

October

Introduction to production planning
Operations planning
MRP, MRP II, ERP
Lean production
Lab activities

November

Production machines and processes
Robotics
Machine and system control
Lab activities

December

Quality and human resources
Review for final
Final Exam will be from 12:30-2:30 p.m. Thursday, December 18th.

Additional References

Rehg, J. A. & Kraebber, H. W. (2005). Computer-integrated manufacturing (3rd Edition). Upper Saddle River, NJ: Pearson/Prentice Hall.

Chase, R., Aquilano, N., & Jacobs, F. (2000) Operations Management for Competitive Advantage. (9th ed.). New York, NY: McGraw Hill College Div.

Goldratt, E., & Cox, J. (1992). The Goal: A Process of Ongoing Improvement. (2nd ed.). New York: NY: North River Press Publishing Corporation.

Proud, J. (1999). Master Scheduling: A Practical Guide to Competitive Manufacturing. (2nd ed.). New York, NY: John Wiley & Sons;