Computer Integrated Manufacturing

Course Syllabus

Course: TECH 4317
Title: CIM
Section: 001
Semester: SPRING 2014
Class Time: Monday Evenings 6-8:40 pm

Instructor: Dr. Mark R. Miller
Office: HPR 244
Office Hours: Tues & Thursdays 8-9:30 am
Other Availability: By appointment
Phone #: 903-566-7186
Email: mmiller@uttyler.edu

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. Prerequisite: TECH 2323 or advisor consent.

Course Learning Objectives:
At the end of this course, participants will be able to:
1. Make a detailed drawing of an object using solid modeling 3D CAD software (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.
Grading Policy and Criteria to Determine Final Course Grade:

<table>
<thead>
<tr>
<th>Category</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily Quizzes</td>
<td>200</td>
</tr>
<tr>
<td>Assignments</td>
<td>100</td>
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<tr>
<td>Projects</td>
<td>200</td>
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<tr>
<td>Midterm exam</td>
<td>200</td>
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<tr>
<td>Class Participation/Attendance</td>
<td>100</td>
</tr>
<tr>
<td>Final Exam</td>
<td>200</td>
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</tbody>
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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.

Date of Final Exam: Thursday, May 9

Date to Withdraw without Penalty: March 26th

Course Content & Tentative Calendar/Schedule:

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

**February**
- Product design
- Product engineering
- Lab activities
- **Midterm Exam**
- Chapter 5 – Improving Productivity

**March**
- Introduction to production planning
- Operations planning
- MRP, MRP II, ERP
- Lean production
- Lab activities
- Chapter 6 – Automated Manufacturing Systems

**April**
- Production machines and processes
- Robotics
- Machine and system control
- Lab activities
- Chapter 7 – Sensors & Wireless Communication for Automation

**May**
- Quality and human resources
- Review for final

**Final Exam** will be Monday, May 5th
Attendance and Make-Up Policy:
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 unless accompanied with a valid excuse.

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.

Required Textbooks, Materials, and Supplies:

A copy of the lecture notes is required and is available online from the course listed on Blackboard. Print it out before coming to class.

Required Activities Scheduled Outside of Regularly-Scheduled Class time (fees, tickets, procedures and/or forms required):
Review lecture notes, read textbook, prepare presentations/assignments.

Department Website: http://www.utttyler.edu/cbt/hrd/tech/

Commencement: Saturday, May 10 at 10:00 am – Be there by 9:30 am at the very latest!

Holidays:
Spring Break for Students and Faculty Mar 10-16

Students Rights and Responsibilities
To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: http://www.utttyler.edu/wellness/rightsresponsibilities.php

Grade Replacement/Forgiveness and Census Date Policies
Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at http://www.utttyler.edu/registrar. Each semester’s Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar. Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions that students need to be aware of. These include:
Submit Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.

- Receiving 100% refunds for partial withdrawals. (There is no refund after the Census Date)
- Schedule adjustments (section changes, dropping a new class, dropping without a “W” grade)
- Completing the process for tuition exemptions or waivers through Financial Aid

**State-Mandated Course Drop Policy**

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date). Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

**Disability Services**

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAAA) the University offers accommodations to students with learning, physical and/or psychiatric disabilities. If you have a disability, including non-visible disabilities such as chronic diseases, learning disabilities, head injury, PTSD or ADHD, or you have a history of modifications or accommodations in a previous educational environment you are encouraged to contact the Student Accessibility and Resources office and schedule an interview with the Accessibility Case Manager/ADA Coordinator, Cynthia Lowery Staples. If you are unsure if the above criteria applies to you, but have questions or concerns please contact the SAR office. For more information or to set up an appointment please visit the SAR office located in the University Center, Room 3150 or call 903.566.7079. You may also send an email to cstaples@uttyler.edu

**Student Absence due to Religious Observance**

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

**Student Absence for University-Sponsored Events and Activities**

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

**Social Security and FERPA Statement:**

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

**Emergency Exits and Evacuation:**

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor’s directions regarding the appropriate exit.

**EXPECTED CLASSROOM ETIQUETTE**

The University of Texas at Tyler is committed to promoting a level of classroom etiquette that is conducive to maximum teaching and learning. Therefore, the following etiquette is expected of students:

1. Attend class each time the class meets.
2. Be on time for class and remain for the entire period. Students are inconsiderate of their classmates when they arrive late and leave early.
3. Refrain from talking while the teacher or another student is lecturing. Idle chattering and giggling are disruptive to the class and disrespectful to the teacher and classmates.
4. Without prior approval from the instructor, students are not allowed to use cell-phones, devices with earphones or any other electronic device (including laptops) in class.
5. Be attentive and participate in class.
6. Refrain from eating and drinking in the classroom.

Academic Dishonesty: The University of Texas at Tyler has a “zero tolerance policy” on plagiarism. Any student who commits an act of scholastic dishonesty is subject to discipline. Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give an unfair advantage to a student or the attempt to commit such acts. For purposes of this class, scholastic dishonesty occurs if you:
   • Quote or paraphrase a source without properly citing it.
   • Misquote or misrepresent an outside source.
   • Pass off any portion of an outside source as your own.
   • Turn in for credit any paper that has been purchased through the internet, copied from the internet, or cut and paste a source from the internet.
   • Turn in a paper written by someone else.
   The penalties for academic dishonesty vary, ranging from an F on an assignment, an F in the course, or expulsion from the university, depending on the severity of the incident. The Office of Student Affairs keeps records of any suspected case of scholastic dishonesty, and instructors are required to alert them if we believe a student has plagiarized or cheated in any way.

Writing Assistance: Each student is entitled to free writing assistance in the Writing Center. Students who take advantage of this service will receive five extra points on essay grades if they take their drafts to the Writing Center. The student must provide documentation that he or she received assistance in the Center. An appointment is strongly advised.

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 (do not place each page in a clear cover where the paper cannot be written on). The cover must contain the following:
1. Assignment Title
2. Prepared by: Your name here
3. Your I.D Number
4. Course Name and Number
5. The Date
6. Instructor’s name (i.e., Submitted to Dr. Mark R. Miller)
Your grade will reflect the quality of the presentation. All of the report must be typed and stapled together.
**Cell Phones:**
Cell phones are not to be seen nor 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. Absolutely no texting or looking at your cell phone during class.**

**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.**

**Lecture/Laboratory Materials:**
Students will be required to provide the following:
1. ASTM or OSHA approved safety glasses
2. Notebook and paper to take notes
3. Lecture notes packet is available at the course site on Blackboard
4. Pen and pencil
5. Hearing protection
6. 3 - Scantrons (Exam type) #882-ES
7. Textbook
**Important Dates:**

- Spring Term, Classes Begin: January 13
- Martin L King, Jr. Holiday: January 20
- Census Date (12th Class Day): January 27
- Registration for all summer sessions: February 3
- Last Day to Drop/Withdraw from Classes: March 26
- Spring Break for Students and Faculty: Mar 10-16
- Final Filing Deadline for Spring Graduation: April 1
- Registration for grad students and seniors: April 1
- Registration for juniors: April 2
- Registration for sophomores: April 3
- Registration for freshmen: April 4
- Study Day: May 5
- Final Exams for Classes Meeting Monday only: May 5 @ 6 pm
- Final Exams for Spring Term: May 5-9
- Spring Commencement: May 10 at 10 am (Saturday) Be there by 9:30 am at the latest!