

Computer Integrated Manufacturing

Course Syllabus

Course: TECH 4317	Instructor: Dr. Mark R. Miller
Title: CIM	Office: COB 225.04
Section: .001	Office Hours: M-F 11am-noon, 2-3pm
Semester: SPRING 2026	Other Availability: By appointment
Class Time: M 6-8:45	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/ COSC 1307 or advisor consent.**

Course Objectives:

1. Understand the importance and use of solid modeling software.
2. Comprehend the various types of automation and its role in manufacturing.
3. Program CNC machines to make parts.
4. Examine 3D printing.

Student Learning Outcomes:

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

1. Make a detailed drawing of an object using solid modeling 3D CAD software (Autodesk Inventor).
2. Create a 3D print of an object drawn as a solid model.
3. Identify the various types of 3D printers available for certain applications.
4. Write a CNC program that will successfully run on a CNC milling machine.
5. Write a CNC program that will successfully run on a CNC turning center.
6. Design and draw objects using 2D software that can be successfully plasma or waterjet cut.
7. Develop an understanding of CAM and automation by successfully passing quizzes and exams with a 70% or better score.

Core 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. Personal Accountability for Achievement – the student will complete the projects at the time designated by the instructor and will enter into class discussion.
6. 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:

Daily Quizzes	200
Assignments	100
Projects	200
Midterm exam	200
Class Participation/Attendance	100
Final Exam	200

TOTAL POINTS = 1000

NOTE: Points may change depending upon content covered.

Grade Scale Breakdown:

A=90 - 100%

B=80 - 89%

C=70 - 79%

D=60 - 69%

F=BELOW 60%

Note: 89.99999999999999 is still a B.

Date of Final Exam: Monday, April 27 online

Date to Withdraw without Penalty: March 30

Course Content & Tentative Calendar/Schedule:

January

Administrative concerns, about the course, assignments
Introduction to computer integrated manufacturing
Manufacturing systems
Product design
Product engineering
Lab activities

February

Chapter 5 – Improving Productivity
Introduction to production planning
Operations planning
MRP, MRP II, ERP
Lab activities

March

Midterm Exam

Lean production
Chapter 6 – Automated Manufacturing Systems
Lab activities

April

Production machines and processes
Robotics
Machine and system control
Lab activities

April

Chapter 7 – Sensors & Wireless Communication for Automation
 Quality and human resources
 Review for final
Final Exam will be Monday, April 27th online

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:

J. Barry Duvall and David R. Hillis (2012). **Manufacturing Processes: Materials, Productivity, and Lean Strategies (3rd ed.)**. Tinley Park, IL: Goodheart-Willcox. ISBN: 978-1-60525-569-9

A copy of the **lecture notes** is required and is available online from the course listed in each Modules section. **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: <https://www.utt Tyler.edu/academics/colleges-schools/business/departments/technology/tech/>

Commencement: Saturday, May 2nd at 1:00 pm – **Be there by noon at the very latest!**

Holidays:

Spring Break for Students and Faculty March 9-13

Student Resources:

Faculty can update student resources to provide additional supports appropriate for each course.

Resources to assist you in the course

- [UT Tyler Student Accessibility and Resource \(SAR\) Office](#) (provides needed accommodations to students with document needs related to access and learning)
- [UT Tyler Writing Center](#)
- [The Mathematics Learning Center](#)
- [UT Tyler PASS Tutoring Center](#)

- [UT Tyler Supplemental Instruction](#)
- [Upswing \(24/7 online tutoring\)](#) - covers nearly all undergraduate course areas
- [Knack Tutoring](#) – in-person and virtual options
- [Robert Muntz Library](#) and [Staff/Library Liaisons](#)
- [Canvas 101](#) (learn to use Canvas, proctoring, and other software)
- Digital Support Toolkit (for supported courses only. Students are automatically enrolled in the toolkit for supported courses)
- [The Career Success Center](#)
- [UT Tyler Testing Center](#)
- [Office of Research & Scholarship Design and Data Analysis Lab](#)

Resources available to UT Tyler Students

- [UT Tyler Counseling Center](#) (available to all students)
- [TimelyCare](#) (24/7 access to Student Support Program counseling through phone or chat and online wellness resources available in a variety of languages)
- [Military and Veterans Affairs](#) (supports for our military-affiliated students)
- [UT Tyler Patriot Food Pantry](#)
- [UT Tyler Financial Aid and Scholarships](#)
- [UT Tyler Student Business Services](#) (pay or set up payment plans, etc.)
- [UT Tyler Registrar's Office](#) (academic information, forms library, policies, etc.)
- [Office of International Programs](#)
- [Title IX Reporting](#)
- [Patriots Engage](#) (available to all students. Get engaged at UT Tyler.)

University Policies and Information

Withdrawing from Class

Students may [withdraw](#) (drop) from this course using the [Withdrawal Portal](#). Withdrawing (dropping) this course can impact your Financial Aid, Scholarships, Veteran Benefits, Exemptions, Waivers, International Student Status, housing, and degree progress. Please speak with your instructors, consider your options, speak with your advisor, and visit the One-Stop Service Center (STE 230) or email enroll@uttyler.edu to get a complete review of your student account and the possible impacts to withdrawing. We want you to make an informed decision. UT Tyler faculty and staff are here for you and often can provide additional support options or assistance. Make sure to carefully [read the implications for withdrawing from a course and the instructions](#) on using the [Withdrawal portal](#)..

Texas law prohibits students from dropping more than six courses during their entire undergraduate career*. The six courses dropped includes those from other 2-year or 4-year Texas public colleges and universities. Consider the impact withdrawing from this class has on your academic progress and other areas, such as financial implications. We encourage you to consult your advisor(s) and Enrollment Services for additional guidance. **CAUTION #1:** Withdrawing before census day does not mean you get a full refund. Please see the [Tuition and Fee Refund Schedule](#). **CAUTION #2:** All international students must check with the [Office of International Programs](#) before withdrawing. All international students are required to enroll full-time for fall and spring terms. **CAUTION #3:** All UT Tyler Athletes must check with the Athletic Academic Coordinator before withdrawing from a course. **CAUTION #4:** All veterans or military-affiliated students should consult with [Military and Veterans Affairs](#).

* Students who began college for the first time before 2007 are exempt from this law.

Artificial Intelligence Statement

UT Tyler is committed to exploring and using artificial intelligence (AI) tools as appropriate for the discipline and task undertaken. We encourage discussing AI tools' ethical, societal, philosophical, and disciplinary implications. All uses of AI should be acknowledged as this aligns with our commitment to honor and integrity, as noted in UT Tyler's Honor Code. Faculty and students must not use protected information, data, or copyrighted materials when using any AI tool. Additionally, users should be aware that AI tools rely on predictive models to generate content that may appear correct but is sometimes shown to be incomplete, inaccurate, taken without attribution from other sources, and/or biased. Consequently, an AI tool should not be considered a substitute for traditional approaches to research. You are ultimately responsible for the quality and content of the information you submit. Misusing AI tools that violate the guidelines specified for this course is considered a breach of academic integrity. The student will be subject to disciplinary actions as outlined in UT Tyler's Academic Integrity Policy. Refer to the About This Course section of the UT Tyler Syllabus Module for specific information on appropriate use of AI in your course(s).

Final Exam Policy

Final examinations are administered as scheduled. If unusual circumstances require that special arrangements be made for an individual student or class, the Dean of the appropriate college, after consultation with the faculty member involved, may authorize an exception to the schedule. Faculty members must maintain student final examination papers for a minimum of three months following the examination date.

Incomplete Grade Policy

If a student, because of extenuating circumstances, is unable to complete all of the requirements for a course by the end of the semester, then the instructor may recommend an Incomplete (I) for the course. The "I" may be assigned in place of a grade *only when **all** of the following conditions are met:* (a) the student has been making satisfactory progress in the course; (b) the student is unable to complete all coursework or final exam due to unusual circumstances that are beyond personal control and are acceptable to the instructor, and (c) the student presents these reasons before the time that the final grade roster is due. The semester credit hours for an Incomplete will not be used to calculate the grade point average. The student and the instructor must submit an Incomplete Form detailing the work required and the time by which the work must be completed to their respective department chair or college dean for approval. The time limit established must not exceed one year. Should the student fail to meet all of the work for the course within the time limit, then the instructor may assign zeros to the unfinished work, compute the course average for the student, and assign the appropriate grade. If a grade has yet to be assigned within one year, then the Incomplete will be changed to an F, or NC. If the course was initially taken under the CR/NC grading basis, this may adversely affect the student's academic standing.

Grade Appeal Policy

Disputes regarding grades must be initiated within sixty (60) days from the date of receiving the final course grade by filing a Grade Appeal Form with the instructor who assigned the grade. A grade appeal should be used when the student thinks the final course grade awarded does not reflect the grades earned on assessments or follow the grading scale as documented in the syllabus. The student should provide the rationale for the grade appeal and attach supporting document about the grades earned. The form should be sent via email to the faculty member who assigned the grade. The faculty member reviews the rationale and supporting documentation and completes the instruction section of the form. The instructor should return the form to the student, even if a grade change is made at this level. If the student is not satisfied with the decision, the student may appeal in writing to the Chairperson of the department from which the grade was issued. In situations where there is an allegation of capricious grading, discrimination, or unlawful actions, appeals may go beyond the Chairperson to the Dean or the Dean's designee of the college from which the grade was issued, with that decision being final. The Grade Appeal form is found in the [Registrar's Form Library](#).

NOTE: The Grade Appeal Form is different from the Application for Appeal form submitted to the Student Appeals Committee, which does not rule on grade disputes as described in this policy.

Disability/Accessibility Services

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA), the University of Texas at Tyler offers accommodations to students with learning, physical, and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler/> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with the Assistant Director Student Accessibility and Resources/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <https://www.uttyler.edu/disability-services>, the SAR office located in the Robert Muntz Library, LIB 460, email saroffice@uttyler.edu, or call 903.566.7079."

Military and Veterans

UT Tyler honors the service and sacrifices of our military-affiliated and veterans students. If you are a student who is a veteran, on active duty, in the reserves or National Guard, or a military spouse or dependent, please stay in contact with your faculty member if any aspect of your present or prior service or family situation makes it difficult for you to fulfill the requirements of a course or creates disruption in your academic progress. It is important to make your faculty member aware of any complications as far in advance as possible. Your faculty member is willing to work with you and, if needed, put you in contact with university staff who are trained to assist you. The [Military and Veterans Affairs](#) has campus resources for military-affiliated students. The MVSC can be reached at MVSC@uttyler.edu or via phone at 903.565.5972.

Students on an F-1 Visa

To remain in compliance with Federal Regulations requirements you must do the following:

- Traditional face-to-face classes: Attend classes on the regular meeting days/times.
- Hybrid Classes: Attend all face-to-face classes convened by the instructor according to the schedule set for your specific course.
- Online course: Only one online course can count toward your full-time enrollment. Students are expected to be fully engaged and meet all requirements for the online course.

Academic Honesty and Academic Misconduct

The UT Tyler community comes together to pledge that "Honor and integrity will not allow me to lie, cheat, or steal, nor to accept the actions of those who do." Therefore, we enforce the [Student Conduct and Discipline policy](#) in the Student Manual Of Operating Procedures (Section 8).

FERPA

UT Tyler follows the Family Educational Rights and Privacy Act (FERPA) as noted in [UT Tyler's Policy 7.01: Family Educational Rights and Privacy Act](#). The course instructor will follow all requirements to protect your confidential information.

Absence for Official University Events or Activities

This course follows the practices related to [Excused Absences for University Events or Activities](#) as noted in the Catalog.

Absence for Religious Holidays

This course follows the practices related to UT Tyler's [Excused Absence for Religious Holy Days](#) as noted in the Catalog.

Absence for Pregnant Students

This course follows the requirements of Texas Laws SB 412, SB 459, SB 597/HB 1361 to meet the needs of pregnant and parenting students. Part of the supports afforded pregnant students includes excused absences. Faculty who are informed by a student of needing this support should make a referral to the Parenting Student Liaison. NOTE: Students must work with the Parenting Student Liaison in order to receive these supports. Students should reach out to the Parenting Student Liaison at parents@uttyler.edu and also complete the [Pregnant and Parenting Self-Reporting Form](#).

Campus Carry

We respect the right and privacy of students who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>.

UT Tyler a Tobacco-Free University

All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors.

Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products.

There are several cessation programs available to students looking to quit smoking, including counseling, quit lines, and group support.

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.

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 or textbook assignment must contain the following:

1. Title page with assignment title bolded and list the chapter number if applicable
2. Prepared by: Your name here
3. Your Section Number: .001 or .002
4. Course Name and Number: TECH 4317 Computer Integrated Manufacturing
5. Date: April 15, 2035
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, Tablets, and Laptops:

Cell phones, etc. 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.**

Laptops, tablets, etc. will **NOT** be tolerated as well. Buy a paper version of the textbook, not the downloadable. Students have totally abused the laptop option so that is why they are not allowed.

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 available in each module
4. Pen and pencil
5. Hearing protection
6. Textbook (hardcopy, NOT an online copy)

Important Dates:

Semester Begins	January 12
Martin L King, Jr. Holiday	January 19
Census Date (12th Class Day)	January 26
Registration for all summer sessions	January 20
Spring Break for Students and Faculty	Mar 9-13
Final Filing Deadline for Spring Graduation	March 2
Last day to withdraw from a 15-week course	March 30
Registration for grad students and seniors	March 16
Registration for juniors	March 17
Registration for sophomores	March 18
Registration for freshmen	March 19
Final Exams for Spring Term	April 27-30
Spring Commencement	May 2 at 1 pm (Saturday) Be there by <u>noon</u> pm at the latest!