AE 2810 Syllabus

Introduction to Manufacturing, Sections A01, B01, and C01 – 1 credit hour

Fall 2026

Instructor Information

Course Instructors:

- Kelly Griendling, kelly.griendling@gatech.edu
- Claudio V. Di Leo, cvdileo@gatech.edu

Lead Machining Instructor:

- Russell Taylor, russell.taylor@ae.gatech.edu

General Course Information

Description

This course introduces students to fundamental manufacturing processes and machining techniques, with a focus on subtractive manufacturing approaches. This course will cover the basic skills required to design, fabricate, and verify a part using milling, turning, and waterjet techniques. A combination of active lectures and machine shop laboratory experiments will be used to help students understand the fundamental theories and processes of manufacturing and develop basic competency on a milling machine, lathe, and waterjet.

Topics covered will include:

- Safety and Lab Rules
- Manufacturing Processes Overview
- Tolerancing
- Basics of Milling
- Engineering Drawings for Manufacturing
- Basics of Turning
- Quality Control Basics

- Project Introduction
- Design for Manufacturing
- Other Special Topics

Course Learning Outcomes

By the end of this course, students will be able to

- Articulate and apply machine shop safety procedures to ensure a safe working environment
- Distinguish between subtractive, additive, and formative manufacturing processes and describe various manufacturing systems used in each process
- Create and interpret engineering drawings for machining, including symbols and tolerancing standards used in manufacturing
- Explain the importance of tolerances in mechanical design and their impact on manufacturing cost, quality, and functionality.
- Operate a milling machine, lathe, and waterjet including setup, tool selection, and execution of simple operations to create a part.
- Perform basic checks to evaluate the quality of manufactured parts
- Understand and apply basic design for manufacturing principles to be able to assess and improve the manufacturability of parts
- Perform the complete manufacture, assembly, and verification of a simple tool

Required Course Materials

All required course materials will be available on Canvas.

Grading Policy:

Course grades will be determined as follows

- Active Lab Participation and Safety Compliance (40%)
    - Includes worksheets, participation, and safety compliance
- Lecture Attendance and In-class Activities (30%)
- Final Project (30%)

Your final grade will be assigned as a letter grade according to the following scale:

Letter Grade	Percentage
A	90-100%
B	80-89%

Letter Grade	Percentage
C	70-79%
D	60-69%
F	0-59%

Description of Graded Components

This course will include a 1-hour weekly lecture and a 2-hour weekly lab section. The lecture portion will cover key manufacturing concepts and provide an overview of manufacturing principles. The lab section will provide a hands-on component in which students are taught to operate three commonly used machines to create simple parts.

Lecture Assignments: Lecture assignments will be in-class hands on activities. All of these will be performed and delivered during class. **Lecture attendance is mandatory,** and you will not get credit for in-class activities if you have an unexcused absence.

Laboratory Projects:

- Training Project: The first half of the semester will involve a training manufacturing project.
- Independent Project: Students will complete an independent project during the second half of the semester.

Course Policies

Attendance and/or Participation

Because this course includes hands-on lab work with specialized equipment and safety procedures, attendance is mandatory. Active participation in activities is essential to developing the practical skills and safety awareness expected in a manufacturing environment.

Policy Details:

- **Required Attendance:** Students must attend all scheduled labs and lectures unless prior arrangements have been made with the instructor or there is a documented emergency.
- **Excused Absences:** Absences due to illness, family emergencies, or official university business may be excused with appropriate documentation. It is the

student's responsibility to notify the instructor as soon as possible and work with the instructor to make up missed content.

- **Unexcused Absences:** Unexcused absences from lab will result in a zero for that lab session and may negatively impact your overall course grade.
- **Tardiness:** Arriving more than 10 minutes late without prior notice will be recorded as a tardy. Two tardies will count as one unexcused absence.
- **Make-Up Labs:** Make-up labs are not guaranteed and will only be offered at the instructor's discretion and if safety and equipment availability permit.
- **Participation:** Simply being present is not sufficient. Students must be engaged and prepared for each session, including having completed any pre-lab assignments.

Failure to meet attendance expectations may result in a significant impact on your final grade and your ability to complete the final course project.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Inclement Weather and Digital Learning Days

If there is a situation in which Georgia Tech reverts to a digital learning day, please check your Canvas announcements for instructions.

Safety Policy

This course includes hands-on work in an active machine shop environment. As such, **safety is the top priority** at all times. Students are expected to strictly follow all safety rules, wear appropriate personal protective equipment (PPE), and use machinery only under the supervision of authorized personnel.

Failure to comply with safety protocols—whether related to equipment usage, PPE, behavior, or lab procedures—**will result in disciplinary action** that directly impacts course performance. The consequences for safety violations are as follows:

1. **First Violation:**
   A **formal warning** will be issued. The incident will be documented, and the student will be reminded of the expectations and risks involved.
2. **Second Violation:**
   A **30% deduction** will be applied to the student's grade for that day's lab activity.
3. **Third Violation:**
   The student will receive a **zero** for the lab activity during which the violation occurred.
4. **Subsequent Violations:**
   Any additional violations will result in **immediate removal from the course** and a final grade of **F**.

Note:

- Any violation deemed **reckless, willfully negligent, or dangerous to others** may result in **immediate escalation** to steps 3 or 4, at the instructor's discretion.
- Students are encouraged to speak up if they are uncertain about a procedure or notice unsafe behavior by others.

Your safety—and the safety of everyone around you—depends on your full attention, preparation, and responsibility in the lab. Noncompliance not only endangers yourself but also undermines the collaborative learning environment we are building together.

Campus Resources for Students

Undergraduate Student Academic Success Resources:

- Academic Support: Academic Success and Advising (a unit in the Office of Undergraduate Education & Student Success) provides free support for your courses. Students can attend scheduled supplemental review (PLUS) sessions, stop by Drop-In Tutoring, or schedule a one-on-one appointment through Knack. To explore what options work best for you, please visit us online at success.gatech.edu/tutoring, email us at tutoring@gatech.edu, or come see us at Clough Undergraduate Learning Commons, Suite 283.

Student Well-Being:

At Georgia Tech, we are concerned about your overall physical, social, and mental well-being. A comprehensive list of wellness related resources has been compiled and maintained by the Office of the Vice President for Student Engagement and Well-being (student-resource-guide (gatech.edu)