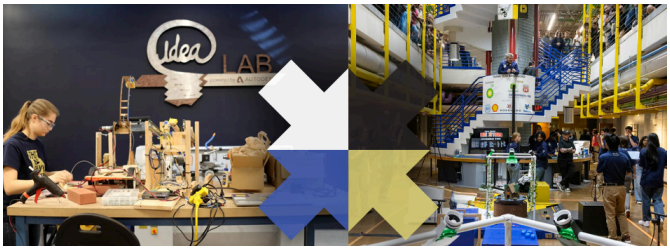
Syllabus



ME2110 - Creative Decisions & Design

ME2110: Creative Decisions and Design is a hands-on course focused on design, prototyping, and testing of solutions to complex problems. Students work in teams to build autonomous robots for a competitive design challenge, applying principles of design thinking, prototyping, sensing and controls. This course emphasizes iterative development, system integration, and root cause analysis, supported by CAD modeling, technical report writing, and rapid prototyping. Students learn to plan experiments, analyze data, and communicate the value of design decisions under multiple constraints. This course builds creativity supported by technical rigor and teamwork skills to prepare students for Capstone and engineering practice.

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Course Objectives:

- To learn the fundamental procedures used for solving engineering design problems.
- To analyze and synthesize design solutions with flexibility, adaptability, and creativity.
- To learn techniques that can enable one to tackle unsolved, open-ended problems.
- To learn by doing through team and individual projects and assignments.

Class Time & Location

Session	Time	Location
Lecture	Monday and Wednesday 8:25am - 9:25am	**Instructional Center 103**
Studio A01 Mrs. Mehaffey	Tuesday 8:00-10:45am	MRDC 2101 - **IDEA Lab**
Studio A02 Dr. Degertekin	Tuesday 12:30pm-3:15pm	MRDC 2101 - **IDEA Lab**
Studio A03 Dr. Degertekin	Tuesday 3:30pm-6:15pm	MRDC 2101 - **IDEA Lab**
Studio A04 Dr. Helms	Tuesday 6:30pm-9:15pm	MRDC 2101 - **IDEA Lab**
Studio A05 Mr. Andrews	Wednesday 3:30pm-6:15pm	MRDC 2101 - **IDEA Lab**
Studio A08 Mr. Rinehart	Wednesday 6:30pm-9:15pm	MRDC 2101 - **IDEA Lab**
Studio A10 Mr. Andrews	Thursday 8:00-10:45am	MRDC 2101 - **IDEA Lab**
Studio A06 Dr. Singhose	Thursday 12:30pm-3:15pm	MRDC 2101 - **IDEA Lab**
Studio A07 Dr. Singhose	Thursday 3:30pm-6:15pm	MRDC 2101 - **IDEA Lab**
Studio A09 Dr. Helms	Thursday 6:30pm-9:15pm	MRDC 2101 - **IDEA Lab**
Studio A11 Dr. Kim	Friday 8:00-10:45am	MRDC 2101 - **IDEA Lab**
Studio A12 Ms. Lena Moller	Friday 12:30pm-3:15pm	MRDC 2101 - **IDEA Lab**

Course Schedule and Due Dates:

- See the overall course schedule here: **Schedule (https://gatech.instructure.com/courses/495760/pages/schedule)**
- See individual due dates on your Studio Instructor's Canvas page.

Textbook (Optional):

- W. Singhose, J. Donnell, **Introductory Mechanical Design Tools (https://www.lulu.com/shop/william-singhose-and-jeff-donnell/introductory-mechanical-design-tools/paperback/product-20598588.html)**
- Reference copies are provided in MRDC 2101 for use during studio.

Grading

This class CANNOT be dropped.

Item	Responsibility	Weight
Class Participation	Individual	10%
Studio Preparedness	Individual	10%
Lab Stewardship	Individual	5%
Homework	Individual	10%
Introductory Project		
Introductory Project Design Report	Team	8.5%
Introductory Project Presentation	Team	1.5%
Major Project		
Team Charter	Team	n/a
Design Concept Presentation	Individual	2.5%
Design Report - First Submission	Team	10%
Design Report - Second Submission	Team	10%
Sprint 1 Machine Performance	Team	1%
Sprint 2 Machine Performance	Team	2%
Sprint 3 Machine Performance	Team	2%

Individual Subsystem Documentation	Individual	2.5%
Final Machine Performance	Team	5%
Design Review	Team	5%
Final Report & Presentation	Team	15%
Completion Requirements		
Safety Training and IDEA Lab User Agreement	Individual	P/F*
Give at Least 1 Oral Presentation	Individual	P/F*
Mechatronics Task Completion	Team	P/F*
Fabrication Task Completion	Individual	P/F*
Participate in Design Review / Final Competition	Individual	P/F*
TOTAL	**Individual**	**40%**
TOTAL	**Team**	**60%**

*Pass/Fail items not Passed will result in 1 full letter grade reduction in final course grade.

Exams

There are no exams in this course. No project is due during the final exam period.
In lieu of a final exam, a final design review and competition are held on April 17th, and a final presentation and paper are due during the week of April 20th.

Course Delivery

- Lectures will meet synchronously in person at the above time, unless otherwise specified.
- The course will utilize Canvas for posting of lecture material, assignment descriptions, and other details regarding the course.
- Studio sections will meet synchronously in person at the IDEA Lab (MRDC 2101). All assignments will be turned in to your studio section's Canvas site.
- With the exception of Lecture Make-Up assignments, all assignments must be submitted to your Studio Instructor's Canvas page.
- Q&A will be held asynchronously using **Ed Discussions** (https://gatech.instructure.com/courses/495760/external_tools/12121?display=borderless) .

Attendance Policy

- You are required to attend **all lectures and all studio sessions.**
- **Studio Policy**
  - Missing studios will result in a final grade penalty where 1 missed studio equates to 1 letter grade reduction.
  - If you arrive late to studio, you will be noted as tardy. Two tardy marks equate to one absence.
  - If you are more than 15 minutes late for studio, then you are considered absent.
- **Lecture Policy**
  - Lecture attendance will be recorded using the PointSolutions App on a phone (for attendance). **Download Android link** (https://play.google.com/store/apps/details?id=com.turningTech.Responseware&hl=en_US&pli=1) / **Apple link** (https://apps.apple.com/us/app/pointsolutions/id300028504)
  - Attendance will be recorded through the quiz/poll questions
    - Answers are not graded for correctness
    - Complete Attendance: Submitting an answer for every question
    - Tardy Attendance: Submitting an answer to at least 1 question, but not every question
    - Missed Attendance: Not submitting any answers
  - 2 tardy marks equate to 1 missed lecture.
  - More than 2 missed lectures equate to 1 letter grade reduction.
  - 2 additional lecture absences may be made up by reviewing the recorded lecture and completing **Lecture Make-Up 1** (https://gatech.instructure.com/courses/495760/assignments/2307026) and **Lecture Make-Up 2** (https://gatech.instructure.com/courses/495760/assignments/2307028) review assignments within 48 hours of the missed lecture period.
    (https://apps.apple.com/us/app/pointsolutions/id300028504)
- All students are required to attend and participate in the Design Review and Final Competition, which will be held from 5:00pm-10:00pm on April 17th.
- In the case of a personal emergency or Institute-approved absence, please consult the information on the Division of Student Life website (**https://studentlife.gatech.edu/dean-students/class-attendance** (https://studentlife.gatech.edu/dean-students/class-attendance)). The Dean of Students Office will make a decision and contact your professors stating what (if any) accommodations will be provided.
- Please notify your studio instructor and TA immediately for coordination purposes if you will not be able to attend lecture or studio due to any illness.

Class Participation, Peer Evaluations, and Studio Preparedness

- Class participation grades (10% of overall grade) will be based on instructor and TA evaluations of your participation in studio.
- Peer evaluation grades will be assessed based on your relative performance on your teams as measured using 3 to 4 structured peer evaluations over the course of the semester.
- Studio preparedness (10% of overall grade) will be evaluated as determined by section instructor.
  - This typically involves but is not limited to having proper PPE (safety kits, closed toe shoes, etc.), bringing your mechatronics kits, and demonstrating readiness to complete whatever was assigned by the section instructor.

Lab Stewardship

- Safe lab practices and respect for the open studio space is of critical importance to maintaining a safe working environment for all students and employees.
- Violations of safe lab practices as explained during IDEA lab training including, but not limited to, tool misuse, lack of shop cleanliness, and failure to follow laboratory guidelines, will be recorded.
- Students also must follow the GT Student Code of Conduct (**https://policylibrary.gatech.edu/student-life/student-code-conduct** (https://policylibrary.gatech.edu/student-life/student-code-conduct)). Each violation will nominally count as a 1% demerit on the final grade; however, this may be modified based on severity of the offense.
- Students may earn back credit lost for IDEA lab violations by participating in positive lab stewardship activities (shop cleaning tasks, shop improvement activities).
- Students can consult the lead TAs or TA on duty for assignment of these positive lab stewardship activities and removal of demerits at any point before competition.

Technology Requirements

- You must install the following software:
  - **PointSolutions** (https://gatech.instructure.com/courses/495760/external_tools/1087?display=borderless) App on a phone with location services enabled (for attendance). **Download Android link** (https://play.google.com/store/apps/details?id=com.turningTech.Responseware&hl=en_US&pli=1) / **Apple link** (https://apps.apple.com/us/app/pointsolutions/id300028504)
  - SolidWorks 2025 (or access to it via GT's VLab) See this link for information: **Accessing SolidWorks** (https://gatech.instructure.com/courses/495760/pages/accessing-solidworks)
  - **Inkscape** (https://inkscape.org/)
  - **OrcaSlicer** (https://github.com/OrcaSlicer/OrcaSlicer/releases) or **BambuSlicer** (https://bambuslicer.com/)
  - **Arduino IDE** (https://www.arduino.cc/en/software/) or **Arduino Cloud IDE** (https://cloud.arduino.cc/)
- For 3d printing and Arduino programming, you must have a laptop with an available USB-A port OR a **USB-C to USB-A adapter** (https://www.amazon.com/Amazon-Basics-Converter-High-Speed-Certified/dp/B01GGKYYT0/ref=sr_1_10?dib=eyJ2IjoiMSJ9.18-wN63BghvzjHbK3H3rY27SHZGxdeg2W3rbJxvPB1LxzSZnAvEWZV9hOcmnPE2vCFqum991KkEM2Tv8_YE7aUHHHAA-UbafRztr3YVAhplGIH_IjZss_iEGuGK33clCv1FfsrxISLOeQIVzsMgKW-ywUyiG7YFI1X-CZUK0aMtEljHKKtoCUgIA-s6QjtoTdzgMJz1f0LTTjZORqAydma3mA2krADLKitV-0zfgNUQ.74axKaaugBox4ml18pQboIUNx6xzB0WAGx0v2x9tA4k&dib_tag=se&keywords=USB-C+to+USB-A+adapter&qid=1765837570&sr=8-10) .
- For SolidWorks, you must have a mouse with a clickable scroll wheel such as **this one for $15** (https://www.amazon.com/Logitech-Wireless-Mouse-M190-Ambidextrous/dp/B087Z6P16M/ref=sr_1_10?crid=3ERMKGJ0GQXT7&keywords=logitech+mouse&qid=1652376602&sprefix=logitech+mouse%2Caps%2C106&sr=8-10) or **this one for $25** (https://www.amazon.com/Logitech-Wireless-Computer-Unifying-Receiver/dp/B087Z5WDJ2/ref=sr_1_5?crid=3ERMKGJ0GQXT7&keywords=logitech+mouse&qid=1652376602&sprefix=logitech+mouse%2Caps%2C106&sr=8-5)
- Windows laptops are preferable due to the need to run SolidWorks. Any Windows laptop with 16+GB of RAM, an SSD, and a dedicated nVidia RTX GPU will run SolidWorks adequately. (https://www.amazon.com/Logitech-Wireless-Computer-Unifying-Receiver/dp/B087Z5WDJ2/ref=sr_1_5?crid=3ERMKGJ0GQXT7&keywords=logitech+mouse&qid=1652376602&sprefix=logitech+mouse%2Caps%2C106&sr=8-5)

Design Review and Final Competition

- The design review will occur at 5:00pm on Friday, April 17th in the J. Erskine Love Building.
- The Final Competition will occur from 6:00pm-10:00pm on Friday, April 17th in the Callaway Manufacturing Building.
- The Design Review and Final Competition are required to pass this course.
- In extenuating circumstances such as illness or family emergency which may prevent you from participating, coordinate with your Studio Instructor at the earliest possible opportunity.

Reports, Presentations, and Homework Assignments

- Late work is not accepted unless your Studio Instructor has granted an exception in advance of the assignment due date.
- All assignments must adhere to the formatting requirements listed on the assignment submission page in order to be accepted.
- Each team member receives the same grade for team assignments. However, students who do not contribute meaningfully to a team assignment may not receive credit for that assignment, with no make-up possible.

Intellectual Integrity & Honor Code

- Collaboration is permitted and encouraged. However, the work you turn in for individual assignments must be the results of your own effort and reflect your understanding of the material.
- Students are expected to maintain the highest standards of academic integrity.
- All work submitted must be original and properly cited.
- Plagiarism, cheating, or any form of academic dishonesty will result in immediate consequences as outlined in the university's academic integrity policy.
- When doing work on team assignments, all team members are equally responsible for the quality **and intellectual originality** of the entire assignment. This includes completely and correctly citing sources (including text generated by AI models/LLM's).
- In the event of an Honor Code violation involving a team assignment, all team members will be referred to the Office of Student Integrity for resolution.

Policy on Use of Generative Artificial Intelligence:

- ME2110 students should use AI tools responsibly and with transparency, documenting where and how they were used.
- You are responsible for all assignments and other work you submit, or submitted on behalf of yourself by a teammate.
- Work submitted should be your own, and any AI tools or assistance used for work in the course should be clearly acknowledged and disclosed.
- Any content (text, figures, design concepts, etc.) generated/created by or with the assistance of AI tools should be cited just as it would be when incorporating, quoting, or summarizing any other content, images, etc. that are not your own.
- Do not copy LLM text into deliverables (including Arduino code) without attribution.
- Treat LLM output like any web source and cite it appropriately. Just as you would not copy-paste an entire paragraph into your paper from a Web source, you may not copy generated text directly into your paper and imply authorship of it.
- Verify facts with authoritative references and cite those, not the LLM.
- **Unacceptable use of LLM's include:**

- Copy-pasting blocks of LLM text into your report or slides.
- Using LLMs to generate data, citations, specifications, or test results.
- Presenting LLM output as authoritative without independent verification.
- Asking LLMs to write your analysis or conclusions for you, even if it is accurate to your team's process and opinions.

This policy has been adapted from 'Requirements for Developing Generative AI Tool Policies in WCP Courses', available at: **https://sites.gatech.edu/bfhandbook/requirements-for-developing-generative-ai-tool-policies-in-wcp-courses** (https://sites.gatech.edu/bfhandbook/requirements-for-developing-generative-ai-tool-policies-in-wcp-courses)

Code of Conduct

- Students in this class are expected to abide by the Georgia Tech Honor Code (**https://osi.gatech.edu/students/honor-code**, (https://osi.gatech.edu/students/honor-code).) and avoid any instances of academic misconduct, including but not limited to
  I. possessing, using, or exchanging improperly acquired written or verbal information in the preparation of an assignment;
  II. substitution of material that is wholly or substantially identical to that created or published by another without adequate credit notations
  III. false claims of performance or work that has been submitted by the claimant.
- In the event of an honor code violation, all team members may be responsible for issues with team deliverables.
- Teams should be aware that it is an honor code violation to put a team member's name on a deliverable to which that individual did not contribute.

(https://sites.gatech.edu/bfhandbook/requirements-for-developing-generative-ai-tool-policies-in-wcp-courses)

Mental Health & Wellness

- As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, depression, difficulty concentrating and/or lack of motivation.
- These mental health concerns or stressful events may lead to diminished academic performance or reduce a student's ability to participate in daily activities.
- GT offers services to assist you with addressing these and other concerns you may be experiencing.
- If you or someone you know is experiencing any of the issues noted above, consider utilizing the confidential mental health services available on campus.
- I encourage you to reach out to GT CARE (**www.care.gatech.edu** (http://www.care.gatech.edu/), 404-894-3498) or the Counseling Center (**www.counseling.gatech.edu** (http://www.counseling.gatech.edu/), 404-894-2575) for support. An on-campus counselor or after-hours services are available to assist you.