



Instructors:

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Office Hours:	Mondays 3:30-4:30pm	Thursdays 3:00-4:00 pm
Office:	Simrall 333 and WebEx	Simrall 403

Notes on Office Hours: We want to meet with you! Starkville students, we are available in our Simrall office during our office hours unless prior notice has been sent out. Additionally, if you need an alternate meeting time, email 2-3 times that would work for your schedule and we will schedule an appointment.

Lecture Time: Thursdays, 2:00-2:50pm in Hand Auditorium

Lab Times: Starkville campus - lab time is assigned based on the enrolled lab section in Simrall 130

Prerequisites: Grade of C or better in both ECE 1013 and CSE 1284

Corequisites: N/A

Textbook: No required textbook

Software: **Required** - MATLAB and Simulink Student Suite (latest Student version) – Note that this is the same software you purchased in ECE 1013. The software costs \$99 (one-time cost) and will be used throughout your ECE degree program (all four years)

Hardware: Starkville campus – ECE 1013 tool and parts kit, plus additional parts and tools are distributed in face-to-face lab sessions
Distance campus - students must purchase parts and tools

Website: canvas.msstate.edu

Course Description and Objectives

(Prerequisite: Grade of C or better in both ECE 1013 and CSE 1284.). One hour lecture. Two hours laboratory. Technical communication (including engineering team communication) and engineering ethics. Project planning and management. Documenting, designing, prototyping, testing, and oral presentations of an engineering design project.

After successfully completing this course, the students will be able to:

- i. Collaborate with peers on an engineering team focused on designing, prototyping, testing, documenting, and managing a design project focused on a contemporary, real-world, technical problem.



- ii. Demonstrate laboratory skills and simulation tool knowledge necessary for success in basic ECE design activities
- iii. Demonstrate an understanding of professional and ethical issues that arise in engineering practice including ethical responsibilities involved in the presenting and processing of messages
- iv. Design technical communication for a variety of target audiences using effective visual aids, and credible sources
- v. Critique and improve peers' technical communication

LECTURE TOPICS (15 contact hours)

- I. Fundamentals of EE and CPE design (6 hours)
 - a. Creativity and curiosity in design
 - b. Engineering feats and failures
 - c. Team Dynamics and Conflict Resolution
 - d. Project Management
 - e. Requirements, Constraints, and Tradeoffs
 - f. Technical Analysis of Sensors and Subsystems
 - g. System Integration and Testing
- II. ECE Technical Communication (3 hours)
 - a. Project documentation
 - b. Audiences for engineering reports
 - c. Written engineering reports
 - d. Oral engineering project reviews
 - e. Oral engineering project reports
 - f. Communicating with clients and the public
- III. Engineering Ethics (4 hours)
 - a. Ethical theories and frameworks
 - b. Engineering ethics
 - c. IEEE and NSPE codes of ethics
 - d. Ethical decision making
 - e. Professional versus personal ethics
 - f. Ethics in technical communication
 - g. Oral ethics presentation
- IV. Oral Presentations (2 hours)

LABORATORY TOPICS (30 contact hours)

- 1. Lab Safety, Engineering Team Dynamics, Leadership, and Communication (3 hours)
- 2. Project Management: Scheduling, Verification, Quality Control (1 hours)
- 3. Arduino Sensors (4 hours)
- 4. Engineering Design Project: Idea Selection and Scoping (1 hours)



5. Engineering Design Project: Prototyping 1 (3 hours)
6. Engineering Design Project: Prototyping 2 and Ethics in Design (3 hours)
7. Oral Presentations: Mid-Project Management Review (3 hours)
8. Engineering Design Project: Prototyping 3 (3 hours)
9. Engineering Design Project: Testing, Data Collection, And Analysis (3 hours)
10. Engineering Design Project: Revision (3 hours)
11. Preview of Senior Design Courses / Senior Design Demo Day / Final Project Demos (3 hours)

Methods of Evaluation and Standards of Achievement

Your grade will be calculated using the following breakdown and scale.

Grading Breakdown		Grading Scale	
Assignment Type	Max Pts Possible	Grade	Points
Classwork, Homework, & Quizzes	250 pts	A	900-1000
Lab assignments and Design Project	750 pts	B	800-899
		C	700-799
		D	600-699
TOTAL	1000 pts	F	<600
<i>+Extra Credit</i>	<i>as announced</i>		

According to the University exam schedule for Spring 2024, the final exam time for ECE 1022 is **Tuesday May 7th from 3-6pm**. **Starkville campus students will participate in a Design Showcase during the final exam time. This will be in-person in Simrall.**

Note that **Final grades for group assignments (e.g., design project, presentations) can be adjusted by plus or minus 10% based on feedback collected from a peer review or self-assessment process.** Ideally, all team members contribute equally and, as a result, the team achieves their grade goals. Occasionally, peer review reveals that contributions are markedly uneven, despite all efforts to address the project as a team. As a part of self-assessment process, team members will submit a written evaluation of their fellow team members. All claims of mutiny, insurgency, poor performance, etc., must be documented in sufficient detail to be given consideration.

University Policies

The Mississippi State University Syllabus contains all policies and procedures that are applicable to every course on campus and online. The policies in the University Syllabus describe the official policies of the University and will take precedence over those found elsewhere. It is the student's responsibility to read and be familiar with every policy. The University Syllabus may be accessed at any time on the Provost website under Faculty and Student Resources and at <https://www.provost.msstate.edu/faculty-student-resources/university-syllabus>



ECE 1022 COURSE POLICIES

Course Grading Policies

Instructor-provided class materials are the only resources allowed while taking quizzes. **All quizzes, homework, laboratories, and presentations are INDIVIDUAL assignments.** If you share quiz questions, provide the quiz password, copy another student's work, or allow another student to copy your work, then you will be referred for an Honor Code violation.

You may use a calculator, lecture notes, lecture videos, and other instructor-provided material when taking quizzes. **No other outside resources are allowed.** Resources such as Chegg or any other unauthorized resource used during the completion of a quiz or homework is considered a violation of the Mississippi State University Honor Code.

Preparation, self-regulated learning, and participation are expected and required throughout the semester. These skills are demonstrated through attendance in lecture, consistent log ins to the Canvas site, frequent email reading and responding, viewing course videos, and/or timely submission of assignments.

Due dates matter. The rule in ECE 1022 is that assignments must be turned in on the due date by the time specified. Assignments typically close at the due date and time, and no late assignments will be accepted.

On occasion and with prior announcement, your instructor may choose to institute a “soft” deadline for an assignment to encourage you to work on an assignment early, but give you more time if needed. In these exception cases, the assignment will be open past the due date, which means Canvas will accept the assignment and mark it as “late”. Ignore the “late” label. We do not have late work / late penalties in the class – if an assignment is accepted through Canvas, it will be graded as an on-time assignment.

Except in cases of an excused absence as defined in Academic Operating policy 12.09 or “soft” deadlines described above, assignments will not be accepted after the due date listed in Canvas and will receive no credit. For excused absences, contact the instructor prior to the absence, if possible, or as soon as possible after the absences if the nature of the absence prevents prior notice. For other unusual emergency situations beyond the student’s control (e.g., housing disruption, family emergency), deadline extensions may be requested via email and may be granted solely based on the instructor’s discretion.

Assignment Submissions

Submit assignments well before the deadline! Engineering is often more about creating an efficient process than the final product, and engineering education is very similar. ECE 1022 is a large class with



many assignments. To be efficient, ECE 1022 uses the Canvas classroom management system for almost all “classroom transactions”: assignments are made via Canvas, homework assignments are submitted to Canvas, quizzes are administered and graded by Canvas, etc. It is impractical or impossible to adjust student submissions or computer-based grading on a student-by-student basis. Therefore, **it is YOUR responsibility to ensure that your submissions are in the right format and have been accepted by the Canvas system before the scheduled deadline.**

Missed quizzes. All quizzes are provided in the online environment and, in most cases, available for multiple days. ***There will be no make-up quizzes offered.*** In cases of true emergency or excused absence, the instructor may temporarily reopen a quiz if the instructor is notified of the emergency within 24 hours of the student’s return to campus, **and** it is reasonably feasible, **and** documentation of the circumstance is produced upon the instructor’s request.

Attendance Policies

Please refer Academic Operating policy 12.09. (<http://www.policies.msstate.edu/policypdfs/1209.pdf>Links to an external site.), regarding attendance expectations and accommodations. Note that official, university-approved and documented absences are not subjected to attendance penalties. It is the student’s responsibility to initiate a request of making up course work in a timely manner. Unless impractical, all communication regarding official, university-approved and documented absences and make-up work should take place prior to the absence.

Attendance Policy for Distance instruction

Distance students are expected to “attend” every class meeting by watching assigned lecture videos and reading assigned material. Both lecture and lab meetings are asynchronous, which means you can “attend” (e.g., watch videos) at a time convenient for your weekly schedule. However, you must attend class and turn in assignments according to the weekly class schedule and assignment due dates.

Further, once the design project is underway, **you and your team will be required to meet once per a week with your course TA and/or instructors** for a 30-minute team meeting. We will base the meeting time of team member and TA availability. Your team will also need to plan regular team meetings to communicate about the group project.

Course material will post by Monday and be due the following Monday.

AI Policy: Permitted for Select Assignments in this Course *with Attribution*

Generally, students are **NOT** permitted to use generative AI tools such as ChatGPT for assignments except those authorized specifically by their instructor in the assignment directions. The unauthorized use of a generative AI tool to complete an assignment constitutes academic dishonesty and may be reported as an Honor Code violation. All submitted work will be filtered through Turnitin’s AI writing detection tool, and other screeners may also be used.

For assignments in which generative AI has been explicitly permitted by your instructor, students must give credit and cite any AI-generated material according to citation-specific rules (e.g., IEEE style), including in-text citations, quotations, and references. Any work with more than the allowable percentage of AI-generated material specified in the assignment instructions, if applicable, could be reported as an Honor Code violation. Students must also include the following statement in assignments to indicate use of a generative AI tool: “The author(s) acknowledges the use of [Tool Name] in the preparation of this assignment for [brainstorming, grammatical correction, citation, etc].” Failure to acknowledge use of generative AI could be reported as an Honor Code violation.

Tools

The hands-on lab component of ECE 1022 (and the ECE degree program) involves prototyping, PCB stuffing, and testing. As tools tend to disappear in the lab environment, the department does not provide basic electronics hand tools. You acquired the nucleus of your personal electronics tools set in ECE 1013. Your ECE 1013 parts and toolkit are **REQUIRED** for this course.

You will need to purchase additional tools and/or parts (e.g., Arduino compatible sensors). The specific tools and/or parts will be defined by your team as you prototype your design project.

Expectations for the ECE 1022 Classroom and Communication

The following policies for course communication apply for **ALL students**:

- You are required to check your MSU email account regularly. This is considered an official means of communication by MSU for all students.
- The course materials for each week will be accessed through Canvas beginning on Mondays.
- Assignment submissions including quizzes will utilize Canvas unless otherwise specified by the instructor.
- You are required to have access to a computer that connects to the internet.
- Students should direct correspondence to the instructor directly related to the class via the mail feature in Canvas.



- Students should not discuss specific quiz questions.
- Students are encouraged to discuss homework together in a group, but the assignment should be completed individually.

The following policies for course communication apply to **students enrolled in ECE 1022 Online**:

- Faculty office hours will be hosted in WebEx. Students can join using a computer or smartphone app.
 - Students can correspond with each other via the general course discussion board. Please note that collaboration on individual work is not acceptable, but this course does require a group design project where collaboration with team members is essential.
 - Students should expect to log in to Canvas no less than 2-3 times per week to access course information, lectures, and updates.
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Minimum Technology Requirements

The following minimum technology requirements are necessary **for all students** to complete the course:

- Computer with web browser, Microsoft Office, and Adobe Reader
- Internet access
- Webcam and microphone (computer or smartphone) to upload video responses to assignments or participate in virtual meetings / office hours.
- Video recording and editing software (Camtasia is available to download free from MSU ITS)

Online students will also need:

- Webcam and microphone (computer or smartphone) to upload video responses to assignments or participate in virtual meetings / office hours.
- Video recording and editing software (Camtasia is available to download free from MSU ITS)

Quizzes are administered online via Canvas. **Ensure you have adequate internet access and power for your computer BEFORE you begin the quiz.** You will only be able to start the quiz one time. There are no time extensions available.

Technical Assistance

If you have questions about this course, please contact the instructor via Canvas messaging. For technical support (e.g., computer support, Canvas issues), please contact help@ece.msstate.edu or enr-dist-support@lists.msstate.edu or www.bagley.msstate.edu/distance.

Copyright

Copyrighted materials within the course are only for the use of students enrolled in the course for purposes associated with this course and may not be retained or further disseminated. Course materials must not be posted on any website or added to any database without the instructor's written permission. Do not distribute test problems, homework, or any other materials. Do not post course materials on websites such as chegg.com, slader.com, etc. Violations of this policy will be referred to the Honor Court.



Tentative Schedule

Week		Labs: Mon - Wed, Simrall 130	Lecture: Thursday 2pm, Hand 1100
0	1/15 – 1/19	No Labs	Intro to course and project; Assign pitch deck; Tech. Comm. w/ fellow engineers, managers, CTOs, general public; Arduino Lab 1 overview
1	1/22 – 1/26	Pitch Deck Presentations and Quick Arduino Lab	Team Dynamics and Conflict Resolution
2	1/29 – 2/2	Arduino Lab	Project Management / Assign Teams, Proposals, Charters / Design Review Process; Assign Resume Extra Credit - Know Your Audience
3	2/5 – 2/9	Project Proposals in Lab with Mentor Guidance - turn in proposal and charter	No Lecture - CAREER EXPO*** Eng 2/6, All 2/7, Business 2/8
4	2/12 – 2/16	Design Review with Managers (Mentors) and CTOs (Instructors)	3D sensor kit into; overview of switches, sensors, motors, etc. to spark critical thinking on design0 problems; final design document
5	2/19 – 2/23	Lab: Tradeoffs for Parts leading to Part selection Meeting w/ Manager Focus: 1) Proposal is approved - now what? 2) How did team decide how to tackle division of tradeoffs?	Lecture on simulating inputs; tradeoffs, requirements, searching for parts; final design document
6	2/26 – 3/1	Lab: Simulate Digital and Analog Inputs Meeting w/ Manager Focus: 1) How is team communicating and sharing work/ideas? 2) What does the parts order look like?	Project Management Revisit / Flowchart Reminder / Update Project Timeline
7	3/4 – 3/8	Lab: Develop flowcharts of programs for project; Write/emulate the core code/operation of the device Meeting w/ Manager Focus: 1) Project Management: What does the rest of schedule look like? Update Gantt charts 2) Finalize parts order by end of lab.	Communication / Presentations: Discuss TC assignments: Project Videos, Design Review, Design Document, and Showcase. Also discuss meeting communication expectations for after Spring Break (team-led / manager observing)
8	3/11 – 3/15	Spring Break Week - No Class & No Labs	
9	3/18 – 3/22	Lab: Project Work (in lab!!!); Refine flowchart to include more details about purchased parts Weekly Scrum Meeting Focus: Parts are in/ Work Progress (Scrum questions)	3D Printing
10	3/25 – 3/29	Lab: Project Work (in lab!!!) Weekly Scrum Meeting Focus: 1) Work Progress (Scrum questions), 2) 3D Printing for your project	System Integration and Testing
11	4/1 – 4/5	No Labs - Easter Monday	
12	4/8 – 4/12	Lab: Subsystem integration and testing Weekly Scrum Meeting Focus: Work Progress using three Scrum questions	Ethics Lecture 2
13	4/15 – 4/19	Lab: Project Work (in lab!!!); subsystems are fully integrated, but full assembly and testing may remain to be worked on this week Weekly Scrum Meeting Focus: Work Progress (Scrum questions); Review draft slides for Final Design Review Presentation	Capstone Design Voting / Best ECE 1022 Project Voting
14	4/22 – 4/26	Final Design Review / Project Presentations with Managers (Mentors) and CTOs (Instructors)	Course Wrap Up; Demo Day Instructions
15	4/29 – 5/3	No Labs or Lecture - Monday 4/29 Last Class Day	
Exam	5/6	ECE 1022 Design Showcase 3-6pm on Tues May 7 in Simrall	