ECE 3011 Syllabus

Junior Design, Section C (2 credits)

Fall 2026

Instructor Information

Instructor: Benjamin B. Yang

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General Course Information

Description

This course teaches system-level design, including both software and hardware. Through activities and projects, students gain exposure to entrepreneurship, product lifecycle management, prototyping, and testing.

Course Learning Outcomes

At the end of the term, students will be able to:

- development documentation for the lifecycle of a product
- perform task decomposition
- develop and conduct a validation plan
- select appropriate components based on end use and economic and energy considerations
- work in teams to design engineering systems
- perform a needs analysis to determine the demand for a product
- understand the fundamentals of design and be able to conduct a design and build of a product from the fundamental requirements through testing

Required Course Materials

All required course material will be on the Canvas website

Grading Policy:

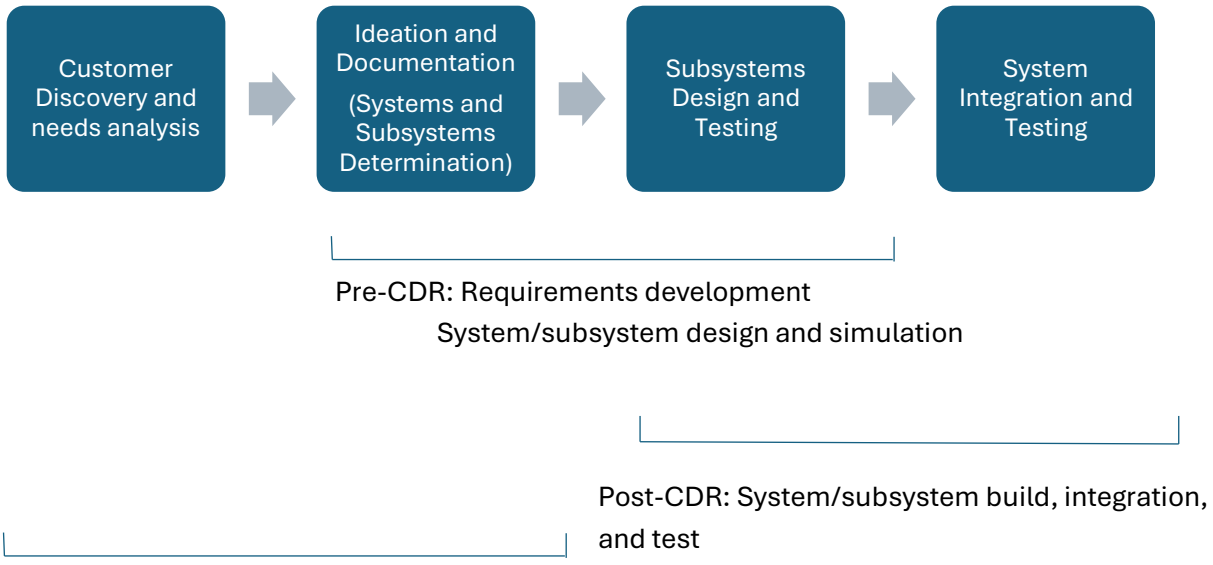
The course grade will be determined by the completion and quality of the following major deliverables:

Task	**Topic**	**Percent Grade**
Design Project	Preliminary Design Review	10
	Critical Design Review	15
	Final Demonstration and Reports	30
Entrepreneurial Project	Final Exam	10
Skills	Basic Skill	2.5
	Advanced Skill	2.5
Attendance and Assignments	Assignments	20
	Attendance and Knowledge Checks	10

Description of Graded Components

Overview of Projects:

A rough view of the design process includes the following steps along with the part of the process that the three main stages of the class address, where CDR stands for Critical Design Review.



Overview of Skills:

To receive credit for this class every individual is required to complete a set of skills. Each member of the class must complete the one basic skill and at least one advance skill.

Basic Skills	**Advanced Skills**	
Soldering (ECE)	Project Management (Group Lead)	Laser Cutting (IDC)
Debug Circuit (ECE)	Surface Mount Soldering (ECE Shop)	3D Printing (IDC)
	PCB Fabrication (IDC)	CAD Design (Individual)
	Machine Shop Certification(s) (ECE or IDC)	

Class Cadence:

ECE 3011 has a lecture portion and a studio period. The studio time is mostly dedicated to working on team projects throughout the semester. We will break the class into teams of between 3-5 students. The project expectations will be greater for teams with larger number of students. ECE 3011 shall have a weekly rhythm as follows.

- **Prior week to class:** A lecture video shall be posted to CANVAS. Make sure to watch the video BEFORE class.
- **Class Lecture:** We shall start the class with a simple quiz (knowledge check) to ensure that each student has watched the lecture video prior to class. The Knowledge Check quiz opens 5 minutes before class the class start time and closes 5 minutes after the class start. You will have 5 minutes to complete the quiz after you initiate it. These are hard start/stop times that track attendance and measure your preparation. No exceptions will be made. Classes will be held in-person though they will be recorded and archived for future viewing.
- **Studio Time:** We will meet in-personal or virtually with the design teams. Scheduling will vary over the semester given the current activity. Check CANVAS for the weekly schedule.
- **Team Projects:** This course will focus on two projects over the course of the semester. A design project that entails design, fabrication, integration, and demonstration.

Followed by an entrepreneurial project where a market survey is conducted to examine the viability of a product.

- **Attendance:** We will be taking attendance for the class time as well as studio time.

Final Exam: Shall be a power-point and a video submission detailing the entrepreneurial project. The professor will meet with the team in-person or virtually

Course Policies

Attendance and/or Participation

Attendance is required for ECE 3011 and does not support remote students. We will abide by the Institute policy on attendance, see http://catalog.gatech.edu/rules/4/. The following policies apply to this course: Students are required to complete all course assignments and in-class activities. Please discuss all absences with the course instructors, prior to the absence if it is planned. If not an excused absence, credit will be deducted from project work and other assignments will not be accepted late.

- Students are required to complete all course assignments and in-class activities
- Covid-related guidance: ECE3011 will allow for excused absences that follow the Georgia Tech guidance for circumstances that require isolation and quarantine.
- All other cases for missing class are at the discretion of the instructor for allowing students to make up all or part of the work. To allow for these types of absences on a broad basis, ECE3011 will drop the two lowest Knowledge Check grades. Please contact the instructor as soon as possible to request consideration.
- If not an excused absence or the instructor has not allowed for the work to be made up, credit will be deducted from project work, and other assignments will not be accepted late.

Religious Considerations

If you are going to miss class due to religious observances, you must provide a letter with the dates of the absences within the first two weeks of class in accordance with the Rules and Regulations article IV section B.5 http://catalog.gatech.edu/rules/4/. The instructors will work with the students on an individual basis to make accommodation.

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.

Core IMPACTS

Core IMPACTS is the University System of Georgia's General Education curriculum. If you are teaching a course that counts towards Core IMPACTS, you should include a syllabus statement about the Core area and associated career competencies. This resource developed by the Center for Excellence in Teaching and Learning and Online Education at Georgia State University includes template syllabus statements for each of the Core IMPACTS areas that you may adapt for your course.

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.

Pre- &/or Co-Requisites

ECE2031 AND ECE2040 AND (ECE2035 OR ECE2036)

Extra Credit Opportunities

Extra credit opportunities will be considered at the discretion of the instructor.

Collaboration, Group Work, and Use of Generative AI

The projects must be done by a team of students. Students will have some time during class period to work on their projects but must also plan to work with their teams outside of class time. All students will be working in groups for the projects and many in-class activities. All students are expected to participate substantially. If a student is not contributing to the group, the instructor should be informed immediately. There will be a group meeting with the instructor to try to address the issues. If the issues continue the

offending student shall be removed from the group and will complete the remaining work of the semester individually. At all times students are expected to follow the Academic Honor Code (http://www.catalog.gatech.edu/policies/honor-code/).

It is your responsibility to learn the skills, knowledge, and critical thinking required for this course. Over-reliance on AI can hinder your learning process. You are accountable for the content of any assignments or projects you submit. While you are not allowed to use generative AI to write your answers or complete reflections in assignments, you may use it for editorial assistance to improve your writing. In general, use AI as a tool to assist you in this class, such as for editorial help, brainstorming feedback, and surveying existing methods. Always acknowledge the use of AI in any assignment or project.

Extensions, Late Assignments, & Re-Scheduled/Missed Exams

Please reach out to the instructor as early as possible if an assignment is likely to be late. Accommodations will be made for Institute-approved reasons. All others are at the discretion of the instructor.

Inclement Weather and Digital Learning Days

In the event of inclement weather, Microsoft Teams will be used to communicate the required content if asynchronous delivery or rescheduling of content is not possible.

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)