



Syllabus – Integrated Systems Design II
ECE 4960, Section 400
Spring 2022

Meeting Time: Common class time, MW 4:40 p.m. – 6:40 p.m.
Mandatory weekly team progress meetings with Instructor (Meeting times TBD)

Instructors: Dr. Hassan Raza
300C Riggs Hall
864-656-5924
hraza@clemson.edu

Teaching Assistants: Available by appointment arranged via email.
See TA Contact Information on the Syllabus tab on Canvas.

Office Hours: Office hours will be held using Zoom. See the “Office Hours and Contact Information” page under Modules for the office hours Zoom link and the office hours schedule. Available without appointment during scheduled office hours. Any temporary changes in office hours will be posted on Canvas. Also available by appointment outside of scheduled hours (schedule an appointment via email).

Classroom: Online synchronous. Zoom link available on Canvas.

Laboratory: Riggs Hall Rm B29 (bench assignments will be posted on Canvas)

Modality: Online synchronous.

Web Resources: Canvas course management site, <http://www.clemson.edu/canvas>

Prerequisites: EE prereqs: ECE 3210, 3600, 3810, 4090 and 4950.
CpE prereqs: ECE 3270, 3520, 4090, 4950.

Course Description:

ECE 4960 is a laboratory/design project course which brings together electrical and computer engineering students with varying specializations to work as a team on specified design projects. The class is divided into teams of size 4, 5, or 6, depending on enrollment. Each team will independently develop and implement an engineering project by leveraging the team members’ knowledge and skills. This course is designed to highlight the transition from academic analysis to industrial goal-oriented engineering practice. The students, as a team, are expected to acquire resources, make design decisions, and implement and verify the solution. In particular, students will find that effective technical communication is essential within the team, with information resources (experts, vendors, peers, etc.), and between the team and the instructor. The team grade, and ultimately each individual’s grade, depends upon the full completion of the project and its final demonstration. On the other hand, students do have an option of working on instructor-defined project with instructor-assigned team, for which a separate grading criterion would apply.

This course seeks to encourage a principled design approach. Design decisions should be, so far as possible, backed up by empirical data, theoretical calculations, or (even better) both. The performance of your system and its subsystems should be characterized as fully as possible, both qualitatively (e.g. raw video footage, written observations, etc.) and quantitatively (e.g. sensor measurements, performance metrics, etc.). Performance data should be actively collected throughout the semester, not just when deliverables are due. Presentations and written reports should support all

performance claims with appropriate data and/or analysis. In the final report, you will be asked to highlight specific elements of your project that illustrate a principled design approach.

Email Contact:

Please adhere to the following guidelines for all email communication regarding ECE4960. The guidelines will ensure that your message is properly routed by my email filter.

The subject line of all emails must start with the prefix

“ECE4960-<teamID>: ”

Note that the only space occurs after the colon. The identifier “<teamID>” should be replaced appropriately with the team identifier assigned after project selection. For example, if the team identifier is 7, the subject prefix would be “ECE4960-7:”. Note that “<” and “>” do not appear in the prefix! (Team identifiers are assigned when projects are assigned. Teams are initially assigned a number, but you should cease to use the number once the team identifier is assigned.) After the prefix, include a short subject description. For deliverables, the subject line will be specified.

The group email address for instructor and TAs is clemson-ece4960-support@googlegroups.com. This address should be used, for example, to request lab assistance, to request input on problems, to report equipment failure, to set up a laser cutter appointment, etc. The email list forwards to the TAs as well as the instructor. This helps ensure that we can track commonly occurring issues across teams and that everyone’s issues are addressed in a timely manner. Please do not email individual TAs directly. The instructors’ individual email address is hraza@clemson.edu – Dr. Raza is the primary instructor this semester. Dr. Raza’s email address should be used for direct inquiries to him or when specified (e.g. for submission of status reports and some deliverables).

We will attempt to answer all email inquiries with 48 hours.

Grading:

Please read the Grading Policy table (available on Canvas) for the grade contribution breakdown in each category.

Team Grade Categories:

- Team SWOT Analysis
- Proposal Activities
- Milestones and Demos
- Reporting
- Video
- Poster

Individual Deliverables:

- Individual SWOT Analysis
- Milestone Postmortems
- Peer Evaluations
- Final Report Review
- Opt-in and Preference Forms, if applicable

Grading takes into account team as well as individual performance. The Team Grade will be calculated using the weights listed above for the various grade categories. The team grade curve is designed to capture the following qualitative attributes

TG=	60.00-69.99	D	Failed to complete a substantial portion of the project
	70.00-79.99	C	Met majority of project requirements but failed to overcome some obstacles that could have been reasonably surmounted
	80.00-89.99	B	Met project requirements. Overcame all obstacles that could be reasonably surmounted
	90.00-100.0	A	Exceeded project requirements. Demonstrated high degree of engineering competency and creativity.

Each individual is assigned an Individual Grade Modifier (IGM). The IGM reflects your individual contribution relative to the average level of contribution from your team. The IGM is based on (but not limited to) the instructor's evaluation of contribution and participation (from milestone post-mortems, attendance, participation, ability to answer questions about the project in private and public forums, activity in lab, etc.) and peer evaluations. The more uneven the participation is in your team, the broader the distribution of the IGMs. IGMs are **positive or negative** and are assigned such that the sum across the whole team is zero. If some members have positive IGMs, other members must have negative IGMs.

The Final Individual Grade (FIG) is the sum of the Final Team Grade and the Individual Grade Modifier, $FIG=FTG+IGM$. Thus, the Final Team Grade will be the average of the Final Individual Grades of the team members. (The Final Individual Grade may be penalized, for example, for unexcused absences from required meetings and events and for failing to submit required individual deliverables such as the milestone postmortems and peer evaluation. In case of such penalties, the Final Team Grade will be higher than the average of the Final Individual Grades.)

The Final Letter Grade is determined by truncating (not rounding) the Final Individual Grade and applying the standard grade boundaries, as listed for the Final Team Grade above. Thus, a Final Individual Grade of 89.99 is still a B.

It is **critical** that each team member contribute substantively to the project and that other teammates are aware of and understand the individual's contributions. Peer Evaluation Forms will be collected after the final report is submitted. Peer Evaluations allow each individual to characterize his or her teammates' contributions and performance.

Lab Etiquette:

Bench assignments will be posted to Canvas. Do NOT touch equipment from a bench that is not assigned to you. The senior design labs are a frequent stop for visitors to the department, and the appearance of the labs reflects on you, on the department, and on the university. Keep your bench clean and tidy throughout the semester. Please throw away trash and tidy up your work area on a regular basis. If you are doing anything that generates a lot of dust or dirt, take precautions to protect equipment (e.g. covering with a cloth) and clean up after yourself (a shop-vac is available). Wood should be sawed outside.

Reporting Faulty Equipment: Make note of any malfunctioning equipment and report it via email to clemson-ece4960-support@googlegroups.com. (See section on Email Contact for further information.) Your report should include a description of the tests you performed to verify that the equipment is malfunctioning (Poorly fabricated cables are found to be the source of many equipment malfunctions). **DO NOT SWAP LAB EQUIPMENT WITHOUT PERMISSION FROM TAs or INSTRUCTOR.**

Attendance Policies

- You may consider class canceled if the professor or a guest lecturer does not arrive within 15 minutes of the scheduled start of class. Before leaving class, please check email in case technical difficulties have caused the delay.
- Please note, attendance is required for team meetings.
- Please use either the Notification of Absence module or send me an email if you expect to miss class.

Accessibility

Clemson University values the diversity of our student body as a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources. Students who experience a barrier to full access to a class should let the instructor know and make an appointment to meet with a staff member in Student Accessibility Services as soon as possible. You can make an appointment by calling 864-656-6848 or by emailing

studentaccess@lists.clemson.edu. Students who receive Academic Access Letters are strongly encouraged to request, obtain, and present these to their instructors as early in the semester as possible so that accommodations can be made in a timely manner. It is the student's responsibility to follow this process each semester. You can access further information here: <http://www.clemson.edu/campus-life/campus-services/sds/>.

Title IX Statement

Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran's status, genetic information or protected activity in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972.

Safe Campus

Clemson University is committed to providing a safe campus environment for students, faculty, staff, and visitors. As members of the community, we encourage you to take the following actions to be better prepared in case of an emergency:

- a. Ensure you are signed up for emergency alerts (<https://www.getrave.com/login/clemson>)
- b. Download the Rave Guardian app to your phone (<https://www.clemson.edu/cusafety/cupd/rave-guardian/>)
- c. learn what you can do to prepare yourself in the event of an active threat (<http://www.clemson.edu/cusafety/EmergencyManagement/>)

Academic Integrity

As members of the Clemson University community, we have inherited Thomas Green Clemson's vision of this institution as a 'high seminary of learning.' Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty detracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form. In instances where academic standards may have been compromised, Clemson University has a responsibility to respond appropriately to charges of violations of academic integrity. Further information on Academic Integrity can be found in the [Undergraduate Announcements](#) and in the [Graduate School Policy Handbook](#).

Copyright Statement

Materials in this course are copyrighted. They are intended for use only by students registered and enrolled in this course and only for instructional activities associated with and for the duration of the course. They may not be retained in another medium or disseminated further. They are provided in compliance with the provisions of the Teach Act. Students should be reminded to refer to the Use of Copyrighted Materials and "Fair Use Guidelines" policy in on the Clemson University website for additional information: <https://clemson.libguides.com/copyright>.

Specific COVID-19 related information for in-person classes

All students must follow Clemson's official rules re: health and safety matters related to COVID.

Modification Statement

The instructor reserves the right to modify any aspect of the syllabus including grading at any time during the semester for reasons including but not limited to COVID-related situations.

This syllabus was modified by Dr. Hassan Raza on 01/12/2022 based on the syllabus prepared by Dr. Richard Groff in Fall 2020, which is subsequently based on a draft provided by Dr. Carl Baum.