

Senior Design II

EEL 4924C Class No. 12943 and Class 12944

Morning Class Periods: Class No. 12943, M, W, F, Period 4, 10:40 AM – 11:30 AM,

Location: LAR 330, for 3 weeks, NEB 212 after that

Afternoon Class Periods: Class No. 12944, M, W, F, Period 8, 3:00 PM – 3:50 PM,

Location: LAR 239, for 3 weeks, NEB 212 after that

Academic Term: Fall 2023

Instructors:

William Eisenstadt, Michael Stapleton, and Eric Liebner

Emails: wre@tec.ufl.edu, mstap@ece.ufl.edu, EricL@ece.ufl.edu

Office Phone Number: (352) 392-4946, 352-392-2727, 352-392-4923

Office Hours: Eisenstadt, Office hours: M, W, 7th Period, 1:50PM to 2:40PM, NEB 529,

Zoom office hours by arrangement.

Stapleton, Available Daily

Liebner, Available Daily

Teaching Assistant/Peer Mentor/Supervised Teaching Student:

Please contact through the Canvas website

- TBA

Course Description

Selected design projects involving engineering applications in the various areas of electrical engineering. Laboratory.

Course Pre-Requisites / Co-Requisites:

EEL 3923C and two breadth electives and one depth elective.

Course Objectives

To provide the framework for specification of a design problem in a written design proposal.

To communicate and discuss of design progress in oral project briefing meetings at weekly intervals and through written progress assessment vehicles.

To document technical approaches in weekly class deliverables checked and reviewed at weekly intervals.

To demonstrate, present and provide written documentation of the completed design project.

Materials and Supply Fees

\$10

Professional Component (ABET):

This course consists of 3 credits of Engineering Design

Relation to Program Outcomes (ABET):

The table below is an example. Please consult with your department's ABET coordinator when filling this out.

| Outcome | Coverage* |
|---|-----------|
| 1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics | |
| 2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors | Medium |

| | |
|---|--------|
| 3. An ability to communicate effectively with a range of audiences | High |
| 4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts | Medium |
| 5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives | High |
| 6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions | High |
| 7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies | High |

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

Required Textbooks and Software

Course requires the use of design software as appropriate for the Design Project.

Recommended Materials

None

Course Schedule

Week 1: Topic: Project Selection, Lecturers: Eisenstadt and Stapleton, Select projects and consultants
 Week 2-3: Topic: Finalize Project ideas, Upload Project abstracts, Project presentations by students,
 Week 4: Attend Lab Class, Show work on Project, Weekly Project Progress Assessment on Canvas,
 Week 5: Attend Lab Class, Show work on Project, Weekly Project Progress Assessment on Canvas
 Week 6: Attend Lab Class, Show work on Project, Weekly Project Progress Assessment on Canvas
 Week 7: Attend Lab Class, Show work on Project, Weekly Project Progress Assessment on Canvas
 Week 8: Attend Lab Class, Show work on Project, Weekly Project Progress Assessment on Canvas
 Week 9: Attend Lab Class, Show work on Project, Weekly Project Progress Assessment on Canvas
 Week 10: Attend Lab Class, Show work on Project, Weekly Project Progress Assessment on Canvas
 Week 11: Attend Lab Class, Show work on Project, Weekly Project Progress Assessment on Canvas
 Week 12: Attend Lab Class, Show work on Project, Weekly Project Progress Assessment on Canvas
 Week 13: Attend Lab Class, Show work on Project, Weekly Project Progress Assessment on Canvas
 Week 14-15: Final project presentation/Demo, Final design report due

Attendance Policy, Class Expectations, and Make-Up Policy

This class will be presented in the assigned section classrooms. Students are required to interact with the instructors to work on an manage projects weekly when the class is in NEB 212. Missing class more than two weeks will result in lowering of the student final grade.

Excused absences must be consistent with university policies in the undergraduate catalog (<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>) and require appropriate documentation.

Evaluation of Grades

| Assignment | | Total Points | Percentage of Final Grade |
|--|--|----------------|---|
| Abstract | | 10 | 2.5% |
| Presentation | | 10 | 2.5% |
| Preliminary design report | | 20 | 5% |
| Lab Attendance in NEB 212 starting week 5 | | | Weekly lab attendance is required. More than two weeks absent will result in dropping your final grade. |
| Canvas and in lab weekly progress assessments | | 5 points each, | 5%, |
| Design Project -a working project that meets the design spec 50% -Project Complexity 20% | | | 75% |
| Final report | | 20 | 10% |

Note 1: All of the above must be completed to receive a passing grade!

Note 2: In order to pass the class, students must finish their design projects and show a working demo. See the course website on Canvas for examples.

Grading Policy

| Percent | Grade | Grade Points |
|-------------|-------|--------------|
| 93.4 - 100 | A | 4.00 |
| 90.0 - 93.3 | A- | 3.67 |
| 86.7 - 89.9 | B+ | 3.33 |
| 83.4 - 86.6 | B | 3.00 |
| 80.0 - 83.3 | B- | 2.67 |
| 76.7 - 79.9 | C+ | 2.33 |
| 73.4 - 76.6 | C | 2.00 |
| 70.0 - 73.3 | C- | 1.67 |
| 66.7 - 69.9 | D+ | 1.33 |
| 63.4 - 66.6 | D | 1.00 |
| 60.0 - 63.3 | D- | 0.67 |
| 0 - 59.9 | E | 0.00 |

More information on UF grading policy may be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

ECE Computer Equipment and Tool Requirements listed on the IT Resources page

As Electrical and Computer Engineering majors you will enroll in lab-intensive courses* to complete your degree program. Specific lab equipment and supplies are needed for your success in our lab courses. Listed below is the equipment you will use the most as a student in the ECE Department. Students should also review course syllabi each semester for any updates or adjustments.

Computer Requirements

Analog Discovery 2 (REQUIRED):

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The Diligent Analog Discovery 2 (DAD) board or the National Instruments Analog Discovery 2 (NAD) are exactly the same internally, with only cosmetic differences in packaging. Board ordering information for the DAD can be found at <http://tinyurl.com/DAD-UF-u20>. Board ordering info about the NAD can be found at <http://tinyurl.com/NAD-UF-u20>. For those who wish to use financial aid or want it right away, the bookstore may carry the NAD at a slightly elevated price.

Multimeter (REQUIRED):

- *ekpower MAS830L AC/DC 600V, DC 10A Digital Multimeter with Continuity Test & Back-lit Display, MS8268, Series, Tekpower OEM*
- *FLUKE-106 Palm-Sized Digital Multimeter*
- *Fluke 110 Plus essential multimeter true-rms 77*

Soldering Iron (Purchase is highly recommended, but not required. Students need to have immediate access to this equipment)

Additional Equipment:

- *Safety glasses: CREWS CL110 Checklite Anti-Scratch Resistant Safety Glasses Clear Lens*
- *Needle-nosed pliers: Performance Tool 1105 5" Long Nose Pliers*
- *Wire cutters: DOWELL Micro Cutter Flush Cutter Electronics Soft Wire Cutter Professional Cutting Copper And Aluminum Wire Cables*
- *Flux: MG Chemicals 837-P Water Soluble Flux Pen, 10mL*
- *Desoldering braid: MG Chemicals Desoldering Braid #2 Fine Braid Super Wick with RMA Flux, 5' Length x 0.05" Width, Yellow*
- *Solder: WYCTIN 60-40 Tin Lead Rosin Core Solder Wire for Electrical Soldering and DIY 0.0236 inches(0.6mm) 0.11lbs*
- *Soldering Iron: Weller SP25NUS Weller SP25NUS 25-Watts Soldering Iron, 3.000mm, Red/Black*
- *Soldering Station:*
- *Soldering Station, 65W Tilswall Solder Station Welding Iron with Smart Temperature Control (392°F-896°F), Extra 5pcs Soldering Tips, Built-in Transformer, Ideal for School Lab, Hobby, Electronics*
- *Weller WLC100 Hobbyist Soldering Station*
- *Weller WE1010NA Digital Soldering Station*

**EEL3000, EEL3111C, EEL3008, EEL3211C, EEL3701C, EEL3923C, EEL4744C, EEL4712C, EEL4924C, EEE3308C, EEE3396C and EEE4306 heavily utilize this equipment. Other courses may also require this equipment. Please check individual course syllabi for more information.*

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://sccr.dso.ufl.edu/process/student-conduct-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator
- Jennifer Nappo, Director of Human Resources, 352-392-0904, jpennacc@ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <https://registrar.ufl.edu/ferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <https://counseling.ufl.edu>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence

If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu.
<https://lss.at.ufl.edu/help.shtml>.

Career Connections Center, Reitz Union, 392-1601. Career assistance and counseling; <https://career.ufl.edu>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.
<https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>; <https://care.dso.ufl.edu>.

On-Line Students Complaints: <https://distance.ufl.edu/state-authorization-status/#student-complaint>.