ECE 4335: ECE Design I

Dr. Len Trombetta
(course coordinator)
Ltrombetta@uh.edu

Amanda Zabaneh
(undergraduate advisor)
azabaneh@central.uh.edu

Capstone Website:

https://www.ee.uh.edu/capstone-design

Senior Design Enrollment

- Senior Design (ECE 4335: ECE Design I) is a two-semester engineering design course. It must be completed in your last two semesters.

- You cannot enroll in ECE 4335 on your own. To be admitted, you must do the following.
  - Complete the course prerequisites
    - ECE 3355/3115 Electronics and Electronics Lab
    - ECE 3436 Microprocessor Systems
    - ECE 3317 Applied Electromagnetic Waves
    - INDE 2333 Engineering Statistics I
    - ECE 3340 Numerical Methods (EE students only)

Prerequisite waivers are rare but will be considered in special circumstances.

Senior Design Enrollment

You also need to…

- Complete the "Senior Design Enrollment Request" form
  - Tell us what you will be enrolled in your final two semesters
  - If the information provided is complete and you are on track to graduate in two semesters, then…

- …you will be:
  - given permission to add the course
  - notified by the department when that happens
  - added to a MS Team

The *Senior Design Enrollment Request* form is available on the Capstone Design web site.

Senior Design II Presentations

You must also:

- view a portion of the Capstone Design Conference (Senior Design II) presentations
- fill out evaluation forms for three talks.

Presentation videos and evaluation forms are provided on the Capstone website.

Organization

- **Teams:**
  - 3-5 students
  - You are encouraged to form teams before the semester starts.
- **Cohorts:**
  - 4-5 teams with similar technical issues.
- **Guidance:**
  - You will interact with one or more of the following.
    - *Facilitator:* A course instructor who will provide overall guidance and handle administrative issues.
    - *Faculty Consultant:* A UH faculty member who is familiar with the project.
    - *Industry Engineer:* A technical contact who is familiar with your project (for industry projects).
    - *IAB Mentor:* An Industry Advisory Board member will provide real-world advice.

ECE Industry Advisory Board (IAB)

- **The IAB** is ~ 30 engineers and engineering managers from...
  - HP Enterprise
  - Omron
  - Keysight
  - NOV
  - CenterPoint Energy
  - NASA and NASA contractors
  - Engineers in business for themselves
  - ...

- They want to get involved with senior design!
  - Mentoring (resources, project management advice, technical support)
  - Professional development presentations
  - Presentations reviews
  - Grand Challenges prizes

Engineering Grand Challenges

UH is a signatory with other schools on an agreement to champion the [Engineering Grand Challenges](#).

The Industry Advisory Board has arranged for cash prizes to be awarded to teams in ECE 4335 and ECE 4336 that demonstrate the best Grand Challenges project.

Qualifications for consideration as a Grand Challenges project will be discussed in class.

Course Expectations

- In the first semester, your team will work on project management:
  - Statement of Deliverables
  - Engineering specifications
    - Tests showing that specs are achievable
  - Test plan and Schedule
  - Bill of Materials

- Your team will give periodic reports
  - Oral presentations by the team and by individual members
  - Written presentations by the team
  - Engineering ethics essay

- This is YOUR project...you will need to put in the effort to make it successful

4335/4336 Meetings

- Both courses meet 10:00 – 11:30 am TTH

- Types of meetings:

  - General Class Meetings

    - Administrative details

    - Professional development presentations

      - Engineering Standards; Engineering Specifications; Engineering Ethics; Risk Analysis…

  - Oral Presentations by Teams

    - Presentations will be organized by cohort.

  - Team meetings

    - Teams will meet with the facilitator (course instructor), and with the project technical advisor, as necessary.

Interdisciplinary Projects

- Collaboration with other departments is encouraged!!
- MECE is a popular choice, but many others are possible
  - BioE/Biology
  - Business
  - INDE
  - …

Project Sources

- **Where Do Projects Come From?**
  - Project Master List posting on MS Team
  - industry
  - student employers
    - if you are currently employed by a company that wishes to sponsor a project, please contact the facilitator for further instructions
  - faculty
  - engineering competitions
    - NASA
    - SparkFun
    - IEEE...
  - students themselves
    - visit your instructors or Dr. Trombetta

Show me the Benjamins!

- **Where Does Money Come From?**
  - industry sponsors
    - industry sponsors are asked to make purchases or provide equipment and supplies, and to make a donation to the Capstone design fund…
  - capstone design fund
    - make your own purchases and get reimbursed
    - get the department to buy it for you

- **Can the team pay for it?**
  - Sure.

- **Who keeps the project?**
  - Whoever paid for it.

One more thing…

- **You are on a team!**
  - It's not just about you anymore. Your team's success…and final grade…depend partly on you.

- **Don't overcommit**
  - If you're taking too many credit hours, and/or working too many hours, you cannot give the team members the support they need.

Questions? Contact us!