ECE 401 and ECE 402: Senior Design I and II

IN

OUT

Pre-requisites

- General pre-requisites are (C) or better in:
  - ECE311/312 or PH353/PH314
  - ECE331/332 or CS320
  - ECE341/342 or ECE452
- Some projects may require additional pre-requisites - Any project-specific pre-requisites are listed in the offered projects file posted on ECE401/402 website

Skills Needed

- Required skills are determined for each project individually
- To be accepted on the project, student must show prior knowledge and interest in learning skills related to the area of the project

Application Procedure

- Examining offered projects and choosing the one that aligns with personal interest
- Writing and submitting an application
- One-on-one interview with project supervisor

Project Work:

- Work on the project
- Reporting to and receiving guidance from supervising professor, graduate students, industry mentors and/or customers
- Using already mastered skills and improving them
- Learning new tools and techniques related to the area of the project
- Understanding and applying standards
- Maintaining project notebook

Weekly Lectures:

- Choosing your future: large company, small company, startup, graduate school
- Preparing for the interview; examining company values and expectations
- Building a championship team
- Planning and executing (a project) for success
- Device testing, validation and characterization
- Oral presentation skills / types of audience
- People and diversity in the work environment
- Global engineering
- Engineering ethics
- Patents, IP's, trademarks, copyrights
- Design for customer vs. Design for manufacturing: differences and highlights
- Current status and trends in ECE applications in semiconductors, power, biomedicine, cloud computing

Team Management and Team Work

- Define project requirements and deliverables
- Create individual assignments and project timeline; re-working the timeline during life of the project
- Manage time and resources
- Managing budget
- Create test plan and meeting the requirements
- Switch team leaders, in order for everyone to experience responsibility for timely deliverables and communication with supervisor
- Divide assignments between team members based on individual skills and project needs; re-accessing the assignments

Written and Oral Skills

- Preparing team and individual deliverables
- Short, 5-min project presentation
- Longer, 10-15 min project presentation in the conference-like setting with an audience and Q&A for each project
- PowerPoint presentation
- Project website design
- Written report
- Poster session and presentation to a panel of judges (E-Days)
- Exposure to different audience types: high school students, IAB members, alumni, press…

Self and Peer Evaluation

- Evaluate work of others (peer evaluation)
- Evaluate own work and proposing plans for self-improvement (self-evaluation and plans for improvement)

Project-Related Skills

- Knowledge and expertise in the project-related area, tools and skills