ECE 4901
Computer and Electrical Engineering Design I

Liang Zhang

http://ecesd.engr.uconn.edu
Our Team

• Faculty
  – Rajeev Bansal
  – Necmi Beyicli
  – John Chandy
  – Ashwin Dani
  – Shalabha Gupta
  – Sung-Yeul Park
  – Helena Silva
  – Liang Zhang
  – Peng Zhang
  – Shengli Zhou
• Lab Engineer: Philip Duncan
Course Objective

• The course objective is to provide an opportunity for students to apply their engineering knowledge to solve open-ended problems using a multidisciplinary team approach.
Multidisciplinary Teams

• Design teams include at least three members.

• Multidisciplinary Teams
  – May include members from different programs
  – May include members from the same program but with different areas of concentration, experience, strengths, or interests
  – Are assigned by us
Design I Overview

- Lectures & a Quiz on Design/Professional Issues
- Formation of Multidisciplinary Teams
- Weekly Team Meetings
- Project Statement and Specifications
- Senior Design Contract
- Components specified, ordered, and evaluated
- Proposal (Written)
- Design Review
- Initial development of prototype
- Final Report (Written and Presentation)
Design II Overview

- Design I teams carry forward
- Weekly Laboratory Sessions
- Weekly Team Meetings and Reports
- Completion of prototype development

Implementation

Redesign → Evaluation

- Final Report (Written and Presentation)
Weekly Team Reports

- Name of Project (also that of the Sponsor)
- Names of Team Members
- Work Completed during past week (individual contributions)
- Future Work
- Project Review (status)
Project Statement

• Title, Team Members, Sponsor, Date
• Statement of Need
• Preliminary Requirements
• Basic Limitations
• Technical Specifications
• Other Data
• Questions
Project Proposals (written)

• Title, Team Members, Sponsor, Date
• Executive Summary
• Statement of Need
• Project Description
  – Methods (discuss design alternatives)
  – Block diagrams, flow charts
  – Budget
  – Timeline
• Conclusion
Design Review
(oral)

• Defend your design in front of faculty team
• Preliminary design
  – Full technical review
  – Math/physics/EE basis
Final Report
(written and oral)

• Similar Structure to Proposal

• Includes
  – Complete design (discussion of design alternatives)
  – Complete List of Components
  – Verification of Design (e.g., by SPICE)
  – Preliminary eval. of comp., subsystems, and prototype
  – All details necessary for prototype completion
    • Detailed circuit diagrams, flow charts, code, mechanical drawings
What is expected of individuals?

- Attendance of lectures
- Quiz
- Active participation in team activities
- Maintenance of a laboratory notebook
- Full participation in all presentations
Grading

- Class participation  5%
- Weekly individual deliverables  15%
- Quiz  10%
- Weekly team deliverables  10%
- Project Statement and specs  10%
- Project Proposal  10%
- PCB Design Problem  5%
- Design Review  10%
- Final Report  15%
- Final Presentation  10%
Facilities

• ITE Senior Design Laboratories C19, C23, C25, and C43
• Dedicated instrumentation stations
  – Oscilloscopes
  – Power Supplies
  – Function generators
• Handheld Portable Oscilloscope
• Dedicated computers
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<tr>
<td>September 5</td>
<td>Team Assignments</td>
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<td>September 24</td>
<td>Project Statement Due</td>
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<td>October 22-26</td>
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<td>November 14</td>
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Conclusion

• Senior Design is a two-semester sequence which will allow you to use your skills to solve an open-ended design problem using a multidisciplinary team approach

• Challenging

• A great experience
What’s next??

• Student Survey
  – https://goo.gl/forms/ZqjqbHMAL34JvkHs1