Welcome

Introducing our new members and visitors …

- Bruce Bigler
- Dan Ferguson
- Randy Guthrie
- Alma Rosales
- Patty Swigart
Agenda

- Department Update & Spring Action Items
- Industry Spotlight: National Semiconductor
- ECE Senior Design Program Overview
- Breakout Session I
- Break
- Discuss Results of Breakout Session I
- Breakout Session II
- Working Lunch & Discuss Results of Breakout Session II
- Next Steps & Closing Thoughts
Department News

- ECE Welcomes New Faculty & Staff
  - Dr. J. Rockey Luo, Assistant Professor
  - Dr. Branislav Notaros, Associate Professor
  - Dr. Ricky Kwok, Associate Professor (arriving in July ’07)
  - Olivera Notaros, Head of Sr. Design
  - Mary Kroeger, Program Assistant
  - Karen Ungerer, Program Coordinator

- 2007 Faculty Search Under Way
- Dr. Sandra Woods Named Dean
Department News

- Dr. Randy Bartels Receives Presidential Early Career Award
- Dr. V. Chandrasekar Meets President of India
- Dr. Louis Scharf Named Life Fellow of IEEE
- Dr. Jorge Rocca Receives IEEE LEOS Distinguished Lecture Award
- ECE Scientists Create World’s Smallest Tabletop Microscope
Department News

- ECE Receives Grant from National Semiconductor for Professorship in Analog Circuit Design
- Aram Budak ECE Fellowship Exceeds $50K to Establish Endowment
- Upcoming Events:
  - K-12 Engineering Outreach Event at New Belgium Brewery: Tonight
  - IS&T Day for High School Students: November 3, 2006
  - Engineering Internship Fair: February 20, 2007
- Preparing for upcoming ABET visit
Student News

- First-Ever Best Paper Contest Winner Announced in June (previous IAB action item)
- Memorial Scholarship Established to Honor Former Student, Chris Kautz
- Good Samaritan Places at National & International Competitions
- RamBox Product Wins National Design Award
- Guangwei Yuan Receives Prestigious SPIE Scholarship
Trends in Freshmen Enrollment

![Bar chart showing trends in freshmen enrollment for Computer Engineering (CpE) and Electrical Engineering (EE) from 1997 to 2006.](chart.png)
Graduate Degrees Awarded

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<th>MS</th>
<th>Ph.D.</th>
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Percent of Graduate Degrees Awarded to Int'l Students

Academic Year

AY 99-00
AY 00-01
AY 01-02
AY 02-03
AY 03-04
AY 04-05
AY 05-06

ME
MS
PhD
Total
ECE Research Expenditures
Spring Action Items

- Share the board’s curriculum recommendations with ECE Academic Adviser, Elisabeth Wadman, and ask her to share the information with students.
  - Status: IAB recommendations currently available to students on ECE web site.

- Continue encouraging industry involvement in ECE education such as giving talks to the senior design class, serving as adjunct faculty, participating in student activities, collaborating on special events, etc.
  - Status: ECE continues to solicit IAB involvement in ECE activities
    - Record participation at this year’s Student Advising Day
    - Board members continue to volunteer their time for senior design talks and projects
Spring Action Items

- Solicit the support of the IAB to help create an optimal senior design experience for today’s engineer

  - Status: Subject of Today’s Meeting
Industry Spotlight:
National Semiconductor

Mike Noonen
Senior Vice President of Worldwide Sales and Marketing
ECE Senior Design Program Overview

Olivera Notaros
Head of Senior Design
Program Overview

54 students
21 projects
11 professors

Group Sizes
- 1 student: 8 projects
- 2 students: 3 projects
- 3 students: 6 projects
- 4 students: 1 project
- 6 students: 3 projects
Current Senior Design Requirements

- Two-semester course
- Weekly Lectures
- Group Meetings
- Senior Design Notebook
- Written Report
- Oral Report
Weekly Lectures

15 weeks / 13 lectures
per semester

Lectures satisfy ABET criteria and help prepare students for the global workplace.
Outcomes

- Apply knowledge of math, science, engineering
- Define/solve engineering problems
- Design/conduct experiment, use data
- Communicate effectively
- Function in multidisciplinary teams

- Use modern engineering technology, tools
- Broad education, engineering impact
- Knowledge of contemporary issues
- Professional and ethical responsibilities
- Lifelong learning
Examples of Weekly Lectures

- Career planning and resume tips
- Practically working
- Getting started in a technical career
- Starting a company the Silicon Valley way
- People management, and diversity
- Life is too short to not have your dream job
- Ethics
- Patent system issues in industry today
- Your first job out of college
- A management perspective on engineering
Range of Design Projects

- Battery Charger
- BioAlgorithms
- Electronic Organ
- ERC Nanotechnology
- Inductively Coupled Plasma in Liquids
- Laser Power Supply
- Magnetodynamics
- Microscope
- Microwave Circuit Evaluation Board
- MMIC
- Multilayer Mirrors
- Plasma Induction
- Radar in Space
- Reliability of Deep Submicron CMOS
- RFID
- Sensor Networks
- Short Pulse High Power Laser
- Sim Pooch
- USAR
- WAPA
- Wireless remote
Program Components for Your Consideration

- Soliciting proposals – industrial involvement
- Choosing projects
- Group sizes
- Student time commitment
- Supervision/advising
- Design notebooks
- Written and oral presentation
- Seminars, competitions, conferences
Types of Projects for Your Consideration

- Interdisciplinary projects
- Entrepreneurial projects
- Community service and outreach projects
- International collaborations
- Projects for competitions
Example -- Interdisciplinary Project

- **RAMBox project** -- licensed by Rosco Laboratories in 2005 as “Keystroke”

- Interdisciplinary project between ECE and Theatre Department

- This weekend, Keystroke will receive the **Projection Product of the Year Award** at The Live Design International Conference in Las Vegas
Example -- Entrepreneurial Project

InfoVision Design Team – Georgia Tech

Students in management, science, engineering, and law collaborate to learn about the challenges of commercializing new technologies and bringing innovative products to the marketplace.

Team placed 3rd at the Idea-to-Product® (I2P™) Competition

Students competing in I2P are asked to address the uniqueness of their product and its potential market.
Example -- Community Service & Outreach Project

- **EPICS Project w/Columbia Park Zoo - Purdue University**

  - Team designs engineering projects to aid Zoo in inspiring the community with an appreciation for the world’s animals.

  - Current projects: electronic board game, interactive kiosk, and primate behavioral conditioning system.
Example -- International Collaboration

- NSF-Sponsored project: University of Missouri-Rolla & Universidad de San Carlos de Guatemala-Centro Universitario del Occidente (CUNOC)

  - A multi-disciplinary group of UMR design students study the water disinfection problem in Guatemala

  - UMR students connect with indigenous population through collaborations with CUNOC
Example -- Project for Design Competitions

Good Samaritan Search-and-Rescue Robot

- Placed 4th at 2006 World RoboCup Championship in Bremen, Germany; also won an award for “Most Realistic Deployment”

- The team also took top honors among U.S. teams at the RoboCup U.S. Open in Atlanta in the spring.
Industry Input Key to Senior Design Program

Strong programs attract and retain the best & brightest students - how can we build a Senior Design practicum of international prominence?
Breakout Session I
Breakout Groups

- Interdisciplinary
- Entrepreneurial
- Community service and outreach
- International
What are the components of a good senior design program?

What should the general structure look like?

What topics should be covered during weekly lectures?

What types of exercises will help teach effective communication skills to both a technical & non-technical audience?

How do we design a program that guarantees relevant technical expertise and relevant design experience?

What project management skills, techniques, and processes should be implemented to prepare students for the industry?
Break
Discuss Results of Breakout Session I

Facilitators:
Debbie Goldman and Fernando Tomasel
Breakout Session II
Work as a group to come up with at least one project idea.

Considerations:
- Can industry play a role in your project?
- If yes, how would you engage the industry and solicit their support?
- Keeping in mind that we want to recruit the best and brightest students, would your project attract the interest of a high school student?
- If students were working on your project, what are the biggest obstacles and challenges they would face? What skill sets should we teach students to overcome these challenges?
- Should you enter your project in a competition? If yes, how would this benefit the students, and what kind of competition would make sense?
- Evaluate the pros & cons of your project with respect to the items discussed in Breakout 1 – is your approach a good vehicle for implementing what you determined was important in a sr. design program?
Working Lunch and Discuss Results of Breakout Session II

Facilitators:
Debbie Goldman and Fernando Tomasel
Next Steps and Closing Thoughts

Tony Maciejewski