Industrial Advisory Board
Spring 2010
Welcome

Introducing new members and guests...

- James Bower, Industrial Liaison, EUV Engineering Research Center
- James Bradley, LSI
- Michael Kotson, VT Miltope
- Susan Hunter, Optidoodle (returning member)
- Michael Miller, Seagate
Agenda

- Department Update & Fall Action Items
- Research Spotlight: Professor Kevin Lear
- Industry Spotlight: Wolf Robotics
- Break
- Background on Existing ECE Retention Activities
- Breakout Sessions: Student Retention
- Discuss Results of Break Sessions
- Elections
- Lunch and Senior Design Presentations
- Next Steps & Closing Thoughts
Tony Maciejewski
Prof. and Head, ECE Department
Recognition of Service

- IAB members with 10 years of service (or more):
  - Colin Baldwin
  - Chuck Duey
Department News

- Chandra named Distinguished Professor of Finland, awarded $1.5 million
- Mark Berrill receives prestigious Wigner Post-doctoral Fellowship Award
- Pasricha wins Best Paper Award at ISQED 2010 Conference
Department News

- Professor Menoni named IEEE Fellow

- Update on search for smart-grid faculty candidate
Department News

- ECE in the Media:
  www.engr.colostate.edu/ece
  - ABC World News Tonight – CASA
  - STEM outreach – Chen’s NSF grant
  - “Sensing the Killer” – Krapf’s TB research

- Best Paper Contest begins next week

- Tom Williams named 2010 recipient of University Distinguished Alumni Award for the College of Engineering
Department News

- ECE prevailed at 2010 E-Days celebration
  - ECE Optical Biosensors senior design team won grand prize

- Join us for the ECE Centennial Celebration tomorrow, May 1
Distribution of COE Research Expenditures

2008-2009

- AS: 28%
- CIRA: 27%
- ECE: 17%
- CEE: 17%
- ME: 8%
- CBE: 3%

Engineering Departments: 46%

AS
CIRA
ECE
CEE
ME
CBE
ECE Research Expenditures
National Engineering Enrollment Trends

- Biomedical Engineering
- Electrical & Computer Engineering
- Mechanical Engineering
- Chemical Engineering
- Engineering Science
- Civil Engineering
- Environmental Engineering
- Total Engineering
International Enrollment Trends

- The number of Chinese students majoring in engineering is declining - now below 10% of all graduates.

- Preference for majors like economics and finance reflect a new value orientation - average monthly income of graduates in engineering much less than those in finance.

- Decline is a reoccurring phenomenon within rapidly developing economies - Japanese engineering students dropped from 18% total enrollment in 1986 to 8.7% in 1991 while finance-related majors spiked within the same 5-year period.

- Top achievers are tempted by the financial sector with lower-scoring students studying engineering - overall quality drops.

Source: *Global Times*, 1/5/10 (“Engineering an endangered major”)
Undergraduate Degrees Awarded

Number

Calendar Year

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009

BScpE BSEE
Enrollment Trends by Class

- Freshmen Total
- Sophomore Total
- Junior Total
- Senior Total

Years: FA98, FA99, FA00, FA01, FA02, FA03, FA04, FA05, FA06, FA07, FA08, FA09
Freshmen Enrollment Trends

- Freshmen CpE
- Freshmen EE
## ECE Admissions Outlook

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University New Freshmen Persistence & Graduation

Fall-to-Fall Persistence

Graduation Rates

- 2nd Fall
- 3rd Fall
- 4th Fall
- 5th Fall
- 6th Fall

- 4 Years
- 5 Years
- 6 Years
Engineering New Freshmen Persistence and Graduation
Semester Persistence – New Freshmen
ECE to CSU

Percentage Enrolled/Graduated

- 1st Fall
- Spring
- 2nd Fall
- Spring
- 3rd Fall
- Spring
- 4th Fall
- Spring
- 5th Fall
- Spring
- 6th Fall
- Spring
- 7th Fall
- Spring

FA90 FA91 FA92 FA93 FA94 FA95 FA96 FA97 FA98 FA99 FA00 FA01 FA02 FA03 FA04 FA05 FA06 FA07 FA08 FA09 AVE
Semester Persistence – New Freshmen
ECE to College of Engineering

Percentage Enrolled/Graduated

FA90  FA91  FA92  FA93  FA94  FA95  FA96  FA97  FA98  FA99  FA00  FA01  FA02  FA03  FA04  FA05  FA06  FA07  FA08  FA09  AVE
Semester Persistence – New Freshmen
to ECE

Percentage Enrolled/Graduated

FA90 FA91 FA92 FA93 FA94 FA95 FA96 FA97 FA98 FA99 FA00 FA01 FA02 FA03 FA04 FA05 FA06 FA07 FA08 FA09 AVE
Graduate Degrees Awarded
% of Grad Degrees Awarded to Int’l Students

Calendar Year

Percentage

ME
MS
PhD
Total

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009
Fall Action Items

- Investigate feasibility of “Smart-Build” course, i.e. soft skills, IP, business plans, sales and marketing.
  - **Status:** Some of the topics are already being addressed through the Professional Learning Institute. We are suggesting speakers to address others.

- Share the board’s suggestion for the Master of Management Practice program with MMP academic adviser to possibly use as a guideline for engineering students interested in the program.
  - **Status:** Information shared with Tonja Rosales. She is eager to continue working with department to help ECE students succeed with the right coursework. Would like to create specific track for engineers.

- Follow-up on the idea of having board members serve as industry sponsors for freshmen and sophomore classes.
  - **Status:** Discussing retention strategies as part of today’s meeting.
Fall Action Items

See if there is a business course that could be geared toward engineering students – a “Business for Engineers” class. Product management and product lifecycle concepts are particularly important.

**Status:** The COE and Wade Troxell have been working with the College of Business to tailor coursework and plans of study for engineering students interested in business.

Establish a partnership with the COB for senior design projects.

**Status:** COE senior design faculty to meet with COB faculty to identify potential team collaborations in Fall 2010.

Fall 2011– engineering students ready for COB entrepreneur program (need to take prerequisite coursework).
Research Spotlight

Professor Kevin Lear
Industry Spotlight

Lance Guymon, Wolf Robotics
Break
Background on Existing Retention Activities

Professor Louis Scharf and Karen Ungerer
Breakout Session

Facilitator: Michael Coddington, IAB VP, and Tiger Team Members
Breakout Groups

1. Care and Feeding in ECE (Ungerer)
2. Energizing Student Organizations (Siegel)
3. Designing the Freshman and Sophomore Years for Motivation and Retention (Jayasumana)
4. Summer Internships for Honorable Students (Scharf)
5. Tools and Programming in the ECE Curriculum (Chen)
6. Misc Pedagogical Innovations in the ECE Curriculum (Maciejewski)
Considerations for Breakout Session

- How do we engage students at the freshman level?
- What existing efforts should we continue and/or potentially expand?
- What can the board do to help improve student retention?
- How can we revamp our circuits classes to be more engaging, while providing students with a clearer idea of how the knowledge can be applied to real-world projects?
Discuss Results of Breakout Session

Facilitator: Michael Coddington, IAB VP
Elections

Facilitator: Alvin Loke, IAB President
Lunch and Senior Design Presentations

ECE Senior Design Teams
Closing Thoughts

Tony Maciejewski