Welcome

New member:

• Jim Cale, National Renewable Energy Laboratory
Agenda

• Department Update
• Industry Spotlight: Covidien
• Overview of School of Biomedical Engineering
• Break
• Breakout Session: Growing ECE’s Biomedical Program
• Discuss Results of Breakout Session
• Break
• Expanding the IAB
• Research Spotlight
• Lunch & Senior Design Presentations
Department Update
Tony Maciejewski, ECE Department Head
College Update

• New hires:
  – **Dean McLean** started July 1
  – **Matt Carlyon** named COE development director
  – Search underway for assistant development director

• Scott Bioengineering Building now open
New Faces in ECE

• **Sourajeet Roy**, new faculty
• **Kate Douglass**, academic advisor
Faculty News

• ECE professors receive NSF award to design green computers
• EUV ERC named new Research Experience for Teachers (RET) site by the NSF
• Rocca featured in *Nature Photonics*
• Professor Bringi tribute held at AMS Annual Conference on Radar Meteorology
• Menoni secures grant with DOD Office of the Secretary of Defense’s High-Energy Laser Technology Office
Student News

• “Backpackable Underwater Remote Operated Vehicle” wins Best Paper Contest
  – Rachel Dondero (EE), Sarah Romer (EE), Justin Kopacz (EE), Luke Stahler (Mech), and Michael Hake (Mech)
- Schiltz receives highly prestigious NSF Fellowship (advised by Menoni)

- Xiang and Rajkrishna named Young Student Fellows at IEEE/ACM Design Automation Conference (advised by Pasricha)

- Tarplee and Friese win Best Paper at international conference (advised by Maciejewski & Siegel)
Recent K-12 Outreach

• EUV ERC outreach to Girl Scouts
• ECE student led first STEM/Cyber Summer Camp with Northrop Grumman
• Nice turnout for annual *Design Your Future Day* last week (idea spawned at IAB meeting)
  – 32 engineers from 19 companies – **THANK YOU!**
ABET Update

• Site visit scheduled for early November
• Evaluators may call on IAB members for participation and input
• Thank you for your participation – your feedback is invaluable
### IAB Survey Results for ABET

**Industrial Advisory Board Survey Results (on scale of 1-4)**

<table>
<thead>
<tr>
<th>Outcome (a): Ability to apply knowledge of math, engineering, and science.</th>
<th>SP06</th>
<th>SP13</th>
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</thead>
<tbody>
<tr>
<td>3.3</td>
<td>3.6</td>
<td></td>
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<tr>
<td>Outcome (b): Ability to design and conduct experiments, an analyze and interpret data</td>
<td>2.7</td>
<td>3.2</td>
</tr>
<tr>
<td>Outcome (c): Ability to design a system, component, or process to meet needs.</td>
<td>2.6</td>
<td>3.2</td>
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<tr>
<td>Outcome (d): Ability to function on multi-disciplinary teams.</td>
<td>3.6</td>
<td>3.3</td>
</tr>
<tr>
<td>Outcome (e): Ability to identify, formulate, and solve engineering problems.</td>
<td>3.0</td>
<td>3.4</td>
</tr>
<tr>
<td>Outcome (f): Understanding of professional and ethical responsibility.</td>
<td>3.0</td>
<td>3.1</td>
</tr>
<tr>
<td>Outcome (g): Ability to communicate effectively.</td>
<td>2.9</td>
<td>2.7</td>
</tr>
<tr>
<td>Outcome (h): Broad education for understanding engineering in societal context.</td>
<td>2.8</td>
<td>2.9</td>
</tr>
<tr>
<td>Outcome (i): Recognition of need to engage in life-long learning.</td>
<td>2.9</td>
<td>2.8</td>
</tr>
<tr>
<td>Outcome (j): Knowledge of contemporary issues.</td>
<td>2.5</td>
<td>2.9</td>
</tr>
<tr>
<td>Outcome (k): Ability to use techniques, skills, and tools in engineering practice.</td>
<td>3.3</td>
<td>3.3</td>
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</table>
COE Research Expenditures

2012-2013

College of Engineering 46%

CIRA 27%

ATS 23%

ECE 20%

CEE 16%

ME 10%

CBE 4%
ECE Research Expenditures

Year: 2002-2003 to 2012-2013

2002-2003: $2,636,379
2003-2004: $12,863,408

Bar chart showing research expenditures from 2002-2003 to 2012-2013 with a peak of $12,863,408 in 2011-2012.
ECE ranks high in research

- ECE faculty rank 28th (out of 370 programs) in the country for research expenditures per faculty member
  - ECE is 36th overall for total research funding

- ECE outranks:
  - Purdue
  - Princeton
  - U. CA, Davis
  - Texas A&M
  - CU

*NSF data (2009)
Top ECE institutions & peers

**US News & World Report Top Institutions**
- Berkeley
- California Institute of Technology
- Carnegie Mellon
- Cornell University
- Georgia Institute of Technology
- MIT
- Princeton
- Purdue
- Stanford
- University of Illinois, Urbana-Champaign
- University of Michigan
- University of Texas, Austin

**CSU Peer Institutions (as ID’d by CSU BOG)**
- Iowa State University
- Kansas State University
- Michigan State University
- North Carolina State University
- Oklahoma State University
- Oregon State University
- Purdue University
- Texas A & M University
- University of California, Davis
- University of Illinois, Urbana-Champaign
- University of Tennessee
- Virginia Polytechnic Institute and State University
- Washington State University
ECE Research Expenditures per Tenured Faculty
Member: CSU & Peer Institutions
(2007 vs 2012)
Undergraduate Degrees Awarded

Number

- BSCpE
- BSEE

Year

2007-08
2008-09
2009-10
2010-11
2011-12
2012-13
Enrollment Trends by Class
ECE Freshmen Enrollment: Colorado Institutions (2007 vs 2012)

- **Colorado State University**: 70 (↓16%)
- **University of Colorado at Denver**: 8 (↑25%)
- **University of Colorado at Boulder**: 70 (↓34%)
- **University of Colorado at Colorado Springs**: 27 (↑37%)
- **University of Denver**: 4 (↑100%)
- **Colorado School of Mines (2007 Data Not Available)**: 44
Total ECE Undergraduate Enrollment: Colorado Institutions (2007 vs 2012)

- **Colorado State University**: 257 (↑13%)
- **University of Colorado at Denver**: 131 (↑27%)
- **University of Colorado at Boulder**: 327 (↑0.3%)
- **University of Colorado at Colorado Springs**: 142 (↓8%)
- **University of Denver**: 18 (↑150%)
ECE Freshmen Retention Rates

Persistence Rates Within Department by Cohort Department and Cohort Term
Persistence Rates within ECE

Cohort Size by Term

5th Fall Persistence Rates

Cohort Size

Persistence Rate
Women in Engineering (FA13)

Undergraduate
- Intra-College: 27%
- CEE: 31%
- ME: 20%
- ECE: 6%
- CBE: 16%

Graduate
- AS: 19%
- ECE: 23%
- CEE: 43%
- ME: 8%
- CBE: 4%
- Intra-College: 3%
Graduate Degrees Awarded

- **MS-Systems (on-campus)**
- **ME-Systems (distance)**
- **ME-Systems (on-campus)**
- **MS**
- **Ph.D.**

Full Year:
- 2007-08
- 2008-09
- 2009-10
- 2010-11
- 2011-12
- 2012-13

Number of Degrees Awarded:
- 2007-08:
  - MS-Systems (on-campus): 5
  - ME-Systems (distance): 10
  - ME-Systems (on-campus): 10
- 2008-09:
  - MS-Systems (on-campus): 15
  - ME-Systems (distance): 5
  - ME-Systems (on-campus): 20
- 2009-10:
  - MS-Systems (on-campus): 20
  - ME-Systems (distance): 10
  - ME-Systems (on-campus): 25
- 2010-11:
  - MS-Systems (on-campus): 25
  - ME-Systems (distance): 15
  - ME-Systems (on-campus): 30
- 2011-12:
  - MS-Systems (on-campus): 30
  - ME-Systems (distance): 20
  - ME-Systems (on-campus): 35
- 2012-13:
  - MS-Systems (on-campus): 40
  - ME-Systems (distance): 30
  - ME-Systems (on-campus): 45
% of International Degrees Awarded

Full Year

- ME-Systems (on-campus)
- MS
- Ph.D.
- Total
Update on Spring Action Items

- **Action item:** Visit new Advanced Beam Lab as part of a future IAB meeting.
  - **Status:** Added to the IAB agenda for SP14.

- **Action item:** Determine ECE’s role in the world of MOOCs. Use the opportunity as a marketing/recruitment tool.
  - **Status:** ECE faculty will discuss this topic at fall retreat tomorrow; we will report back at the spring IAB meeting.
• **Action item:** Help the public understand the importance of an engineering degree by publicizing salary benefits and job opportunities.
  – **Status:** Info included in recruitment presentations and will be prominently featured on new ECE web site.

• **Action item:** Create YouTube channel for ECE.
  – **Status:** Already exists, but new videos are being developed to highlight on the channel.

• **Action item:** Require senior design students to create project videos that could be used to promote the department.
  – **Status:** Experimenting with the idea this semester; we will report back in the spring.
• **Action item:** Show gender demographics as part of future department updates.
  – **Status:** Stats will be included in department update each fall.

• **Action item:** Maintain department Facebook page for marketing purposes; social media should be led by students.
  – **Status:** ECE student ambassador hired to manage Facebook.
Industry Spotlight: Covidien

Todd Hansell, Director, Design Quality Engineering
Overview of CSU School of Biomedical Engineering

Dr. Stuart Tobet, Director, School of Biomedical Engineering
Break

Colorado State University
Breakout Session
Growing ECE’s Biomedical Program
Considerations:

• Is the low number of EE’s doing biomed a problem? If so, how do we address this?
  – Why do you believe more students are interested in mechanical/biomedical engineering?

• Does your company play a role in the biomedical space? If so, in what capacity?

• As an employer, would you find attractive a student with a biomedical engineering and ECE background, even if you don’t interact in the biomedical field?
Discuss Results of Breakout Session

Facilitators: Jason Gentry and Scott Evans
Break

Colorado State University
Expanding the IAB

Andrea Leland
Goals for the board

• Expand the IAB to include more active, connected professionals like yourselves

• Structure should reflect the department as well as the local and national industry

• Include big and small companies that hire ECE alumni (not limited to Colorado)
Wish list (initial draft)

• Lockheed Martin
• AMD
• Seagate
• City of Fort Collins
• Kodak
• Ball Corp
• Micron

• Google
• Xcel Energy
• Oracle
• CenturyLink
• Cummins Corporation
• Qualcomm
Key responsibilities of IAB members

• Assist with ECE strategic plan
• Foster mutually beneficial relationships between department and industry (e.g., research collaborations)
• Provide input regarding curriculum plans
• Act as advocate for the ECE department
• Assist with fundraising priorities, donor identification, and cultivation
• Participate in events and activities to benefit the department
It’s all about the people

Desired qualifications:

• Manager level or above
• Someone with an interest in working with CSU
• Energetic and enthusiastic about education and the discipline
• Highly connected and knowledgeable
Homework

• Send me contact information for at least one potential board member: andrea.leland@colostate.edu

• Feel free to chat with me after the meeting about your ideas for members

• We will discuss your suggestions at our spring meeting
Research Spotlight

ECE Professor Randy Bartels
Lunch & Senior Design Presentation
Closing Remarks,
Tour of Bioengineering Lab

Tony Maciejewski