Electrical & Computer Engineering Department
Industrial Advisory Board (IAB) Meeting Minutes
Friday, April 24, 2009


Faculty & Staff: Anura Jayasumana, Andrea Leland, Tony Maciejewski, Olivera Notaros, H.J. Siegel

ECE Students: Matt Duwe, Wes Fuller, Manasi Katragadda, Joel Kindt, Anthony Navarro, Lauren Netherton, Celia Pietsch, Mark Woolston

Guests: John Haines, College of Engineering; Carl Melle, CSU Continuing Education; Don Morris, retired engineering director from Agilent.

1. Introduction and Welcome (John Nichols, IAB President)
   John kicked off the meeting by welcoming new members and visitors: student representatives, Don Morris, and Dale Whiteside. He discussed the agenda and then turned it over to Tony Maciejewski for the department update.

2. ECE Department Update (Tony Maciejewski, ECE Department Head)
   Tony started by recognizing and thanking IAB members with 10 years of service or more: Tim Ash, Colin Baldwin, Duncan Halstead, Diane Sparn, Duane Spence, and Tom Williams. He then gave his department update, covering the following topics:
   a. Big year for Professor Carmen Menoni:
      — Named Fellow of American Physical Society, Optical Society of America
      — Recipient of CSU’s Margaret Hazaleus Award
      — Featured in “Women in Optics” monthly planner
      — Work spotlighted in major trade publications
   b. Professor Chandrasekar received IEEE-GRSS education award
   c. ECE in the media (visit www.engr.colostate.edu/ece):
      — Chong’s research to improve military radar
      — EUV microscope publicity
      — CASA’s radars and tornado tracking
   d. ECE received large equipment gift from Avago – special thanks to Jason Gentry
   e. Education Prof. Michael DeMiranda named to joint appointment with ECE department
   f. Ed Sedivy, EE ’79, recipient of 2009 Alumni Award
      — Sedivy also won a Breakthrough Innovator Award by Popular Mechanics for successful Mars Mission in May 2008
   g. Remaining spring events:
      — ECE graduation reception (announce Best Paper Contest winner)
   h. Planned fall events (dates forthcoming):
      — Student Advising Day
IS&T Day for high school students and counselors
— Engineering Exploration Day
i. Centennial Celebration in spring 2010

**Graphs and charts:**

j. ECE research expenditures
k. ECE research funding sources
l. ECE enrollment trends
m. Undergraduate degrees awarded
n. Freshmen enrollment trends
o. Women in ECE
p. Graduate degrees awarded
q. Percentage of graduate degrees awarded to international students
r. Update on trends in international graduate applications
s. Change in international graduate applications by field
t. ECE graduate applications (mid-March 2005-2009)
u. ECE graduate admits (mid-March 2005-2009)
v. ECE graduate admits – percentage international (mid-March 2005-2009)

3. **Update on Systems Engineering Program (Tony Maciejewski)**

Tony covered the following points regarding the new Systems Engineering program:

— Systems Engineering program will hire two new faculty members (ECE and ME) with funding from federal earmark (previous IAB action item)
— Optimize alignment with:
  a. Faculty interests
  b. Global trends/needs
  c. Clean Energy Supercluster strengths in “Energy Systems”
  d. Collaboratory “Energy Systems” strengths
  e. Industry partner interests
  f. Government interests
— Phase I proposal favorably received; phase II proposal nearly completed.

4. **Update on Fall Action Items (Tony Maciejewski)**

Tony provided an update on the following action items:

○ Action item: Foundation of the Systems Engineering program is good. Would like to see more emphasis on software-enabling technology; test/validation; basic methodology of software simulation for teaching; project management

○ Status: Topics addressed in:
  **Core courses:** ECE 530–Systems Engineering Processes, CIS 600–Information Technology and Project Management
  **In-depth courses:** Mech 513–Simulation Fundamentals, CS 610–Software Development Methodology

○ Action item: Energy efficiency should be incorporated into overall program.

○ Status: As part of phase II proposal, new faculty will create specific courses in energy efficiency. Energy efficiency also incorporated in existing courses: ECE 562–Power Electronics and ECE 561–Hardware/Software Design of Embedded Systems

○ Action item: Bring in speakers to address important topics that aren’t included in the core curriculum.

○ Status: Several reputable professionals have presented on a range of relevant topics. Speakers include: Tom Gendron, President and CEO, Woodward; David Swanson, Director, Engineering and Architecture, USAF; Richard Truly, Retired Vice Admiral, former Astronaut, NASA; Joe Rouge, Director, National
o **Action item:** Create a co-op or internship component for Systems Engineering program.

  o **Status:** John Haines, Assistant Dean of Career Services, is working to develop a new co-op program for the College of Engineering. The program will be available to systems engineering students.

  o **Action item:** Add soft skills (e.g., working in a technical environment, working across disciplines, etc.) to enhance the Systems Engineering curriculum.

  o **Status:** Professional Learning Institute courses are available to systems engineering students. Guest speakers address soft skills as well. Additionally, College of Business courses on negotiation and selling concepts are allowed as free electives.

  o **Action item:** Use the IAB and related avenues to spread the word about the systems engineering program.

  o **Status:** A marketing plan has been implemented to promote the program. In addition to strategically placed banner web ads, packets have been mailed to every Air Force base in the U.S. The plan also targets major corporations and may be expanded to include engineering organizations such as the IEEE and EE Times.

  o **Action item:** The board recommended a number of soft skills to supplement their recommendations to the technical electives.

  o **Status:** The Professional Learning Institute offers seminars in the subjects recommended by the board. These presentations are led by key industry partners across the country. ECE students are now required to participate in the PLI program. The department will also approve business school courses as electives in these areas.

  o **Action item:** Consider implementing a personality assessment test (perhaps via senior design) to help students understand their unique personalities and how to work with others.

  o **Status:** Alma Rosales administers a personality test as part of her annual lecture to the senior design class. She has students breakout in groups to demonstrate how different personality types can work together.

### 5. The Economy and Higher Education (Tony Maciejewski)

Tony discussed the economy and higher education, briefly touching on endowment performance (CSU endowments down 30%) and the impact of state funding cuts. He also shared positive news related to the federal stimulus package. The funding will give a boost to Pell grants, help stabilize state funding, and will heavily invest in organizations that provide research support to the ECE department, including the National Science Foundation, the National Institutes of Health, and the Energy Department. Tony also shared financials for CSU and the ECE department.

### 6. Should the Economy Change Your Engineering Plans (Don Morris, former Director of Engineering – Asia, Asian Design Centre)

Don Morris, who has more than 40 years of engineering and international management experience, provided his perspective on the economy and the future of engineering. He emphasized that engineering and all other professions must compete globally and that there is no evidence that engineering will disappear from
high labor cost areas. He also touched on the cyclical nature of the economy, stating that in a 40-year career a person might experience eight to ten recessions. Don’s lively presentation generated much discussion and questions from board members.

7. **Breakout Session: Electrical & Computer Engineering and the New Economy**  
*Facilitator: Alvin Loke, IAB Vice President, Advanced Micro Devices*

Alvin asked the board to consider and discuss among their tables the following questions:

- How can the ECE department provide support to industry in this economy (e.g., offer courses through distance education, provide access to job postings through the Career Center)?
- How can industry provide support to the ECE department in this economy (e.g., assist department with student recruitment, help current students prepare and market themselves in the new economy)?

**Summary of group discussions:**

- Provide greater flexibility with distance education courses to assist those who are seeking professional development opportunities because of furloughs, layoffs, etc. For example, offer 8-week or 1-week sessions instead of 16-week courses.
- Most board members said their companies are still reimbursing for continuing education courses, however, the approval process is much more stringent. Some companies are starting their own internal education programs.
- Help students prepare to compete in a global economy by encouraging more interaction with international student population.
- Find more free activities.
- Educate students on cyclical nature of the economy to provide encouragement during down times.
- Professors should take advantage of a down economy to strengthen relationships with industry to encourage additional research activity.
- To help prepare students for a global economy, consider encouraging study abroad. Question from Tony: Does the country matter? IAB response: No, but non-English speaking schools are better.
- Make it easier for companies to donate equipment to the department.
- Create a business engineering course that demonstrates the connection between engineering practice and the business application.
- See if there are ways to help engineers facilitate the transition from older industries to newer ones, e.g., semiconductor industry to renewable energy.
- Increase opportunities for social networking between CSU and IEEE, especially now that more people are networking and seeking employment. Could be a good marketing opportunity to showcase ECE offerings.
- Offer certificate programs or short courses in specialty areas that can be used for professional development and to enhance an engineer’s portfolio. Question from group: What is the right number of classes to make up a certificate? Answer from Carl Melle: Normally three, if you have the right courses.
- Offer more summer continuing education courses.
- ECE department could reach out to industry on specific topics, having them give lectures and/or create courses and teach them. CSU would help facilitate the process. The department could identify potential areas of interest and solicit companies for interested presenters.
Create an online social networking group, e.g., LinkedIn, to serve as an additional communication mechanism and place for networking.

Institute exit interviews for all graduating students, and then try to get feedback a few years after graduation (note: the College of Engineering already administers exit interviews along with a follow-up alumni survey). Use feedback to continuously improve department and guide subsequent IAB actions.

Get information from Fernando Tomasel on the Trade Adjustment Assistance program to see if ECE can provide support that readily fits with the training that people recently laid off may need.

8. Open Forum with Students (Facilitator: John Nichols)
Seven ECE students participated in an open forum with board members. Each student was given an opportunity to ask questions concerning the economy and their future plans. The students asked questions related to topics such as skill requirements for new graduates, graduate school, theoretical learning vs. hands-on learning (e.g., student projects with real-world applications), interview tips, and resume preparation. The board offered their opinions and suggestions on these subjects. They seemed to enjoy interacting with the students and hearing their perspectives. Likewise, the students said they appreciated receiving first-hand advice from the board.

9. IAB Elections (Facilitator: John Nichols)
The board unanimously voted in favor of Michael Coddington as the new IAB vice president. Alvin Loke becomes IAB president.

10. Student Design Presentations
Two student groups presented their senior design projects to the board. Lauren Netherton and Joel Kindt shared their project, “Optical Biosensors,” while Mark Woolston gave a detailed overview of his project, “Power Electronics for High Power Lasers.”

11. Closing Remarks (Tony Maciejewski)
Tony wrapped up the meeting and thanked the board for their participation.

**ACTION ITEMS:**
— Provide greater flexibility with distance education courses. For example, offer 8-week or 1-week sessions instead of 16-week courses or develop new certificate programs or short courses in specialty areas.
— Help students prepare to compete in a global economy by encouraging more interaction with international student population.
— Educate students on cyclical nature of the economy to provide encouragement during down times.
— Encourage professors to strengthen relationships with industry to solicit additional research activity during a down economy.
— To help prepare students for a global economy, encourage study abroad at an international university.
— Make it easier for companies to donate equipment to the department.
— Increase opportunities for social networking between CSU and IEEE.
See if industry partners are interested in giving lectures and/or teaching short courses on specific topics. The ECE department could identify potential areas of interest and solicit companies for interested presenters.

Create an online social networking group, e.g., LinkedIn, to serve as an additional communication mechanism and place for networking.

Get information from Fernando Tomasel on the Trade Adjustment Assistance program to see if ECE can provide support that readily fits with the training that people recently laid off may need.

Please mark your calendar for the fall IAB meeting on **Friday, October 30, 2009**.