## Faculty Meeting Minutes

**UNIVERSITY OF COLORADO**  
**CEAE DEPARTMENT**  
**FACULTY MEETING MINUTES**

<table>
<thead>
<tr>
<th>Date</th>
<th>May 14, 2013</th>
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</thead>
<tbody>
<tr>
<td>Time</td>
<td>9:00 AM – 2:00 PM</td>
</tr>
<tr>
<td>Facilitator</td>
<td>Keith Molenaar</td>
</tr>
<tr>
<td>Scribe</td>
<td>Keith Molenaar</td>
</tr>
<tr>
<td>Location</td>
<td>UMC 247</td>
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<tr>
<td>Subject</td>
<td>2013 Spring Planning Retreat</td>
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</table>

### Attendees

Balaji, Bielefeldt, Crimaldi, Cook, Dashti, Goodrum, Halek, Hearn, Javernick-Will, Leil, McCartney, Pak, Ryan, Saouma, Sideris, Silverstein, Summers, Xi, Zhai, Znidarcic

### Key Points discussed

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<tr>
<th>No.</th>
<th>Topic</th>
<th>Highlights</th>
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</table>
| 1   | 2013 State-of-the-Department – Keith Molenaar | • Keith presented highlights of the 2013 year. The agenda included department facts, people, programs and places.  
• Please see Keith presentation attached. |
| 2   | International Programs – Diane Seiber      | • Diane Seiber described the new strategy for global engagement in the college.  
• There will be a new staff position in the college to support international activities.  
• Please see Diane’s presentation attached.  
• CEAE can get plugged in by:  
  o Using the new college resources, including staff support and advising support.  
  o Sending any existing interuniversity MOUs and/or descriptions of international activities to Diane. She is currently collecting these activities. |
| 3   | Undergraduate Update – Angela Bielefeldt  | • Angela gave highlights of the undergraduate activities for the year. The discussion focused on freshman recruiting, alternate college optioned (ACO’d) students, first year Intro to Engineering course, advising, capstone design and FE exam pass rates.  
• The faculty voted unanimously to move CVEN capstone design from fall to spring. This will allow students to complete more of their design courses in the fall prior to taking capstone design.  
• Please see Angela’s presentation attached. |
| 4   | Advisory Board                             | • Two of our advisory board members, Jon Jones and Ben |
“Town Hall” – Jon Jones, Wright Water & Ben Nelson, Martin/Martin

Nelson, joined us for a discussion and “town hall” meeting. They started the presentation by answering two questions:

- Why do you hire our civil and environmental engineering graduates?
- What do our freshman need to know to be successful when the graduate in 4 years?

- Ben Nelson spoke first. Some highlights include:
  - Ben stated that all his employees are expected to be licensed PEs, so they must pass their FE to be considered.
  - Furthermore, in the structures area, he noted that the MS is the entry level degree.
  - He emphasized the need to tell our students about the importance of professional licensure.

- Jon spoke next.
  - Jon wanted us to stress that we work for the public and we must hold the wellbeing of the public foremost in all of our decisions.
  - He stated that we should not be afraid to push our students with work as they must learn time management.
  - We should be sure that students are prepared to be professionals, continue their education and get involved in service.
  - Wright water looks for high quality students who are well rounded. They believe that CU provides these types of students.

- Questions from the faculty...
  - Should MS students be required to do a research project? BN – Yes, the thesis is a good option as long as it is topical for the employer.
  - What courses should be taken as a structural engineer? BN – Be sure that the fundamentals are covered (e.g., steel, concrete, timber, masonry) and then higher level graduate courses (e.g., earthquake engineering, etc.)
  - If the fifth year is required for entry, how do we accommodate those students who cannot get into graduate school? Both – There was not a good answer at this point, but they did not want to dilute the quality of the graduate degree. We should keep our standard
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|   | for entry high.  
|   | o What are the new markets for building? BN – Sustainability, retrofitting and repurposing?  
|   | o What are the new markets for water? JJ – The changing codes and environmental policies continue to generate new work and upgrades to existing facilities in the water area.  
|   | • The department thanked Jon, Ben and all of the advisory board members for their time and contributions. |
| 5 | MOOCs – Michael Lightner |
|   | • Michael Lightner joined the retreat to discuss massive online courses. The University of Colorado joined “Coursera” as the platform to participate in the MOOC landscape.  
|   | • MOOCs have the potential to significantly change the way in which we deliver our classes. They can be used to flip courses at the undergraduate level and provide learning prior to lectures and homework assignments. They may significantly impact the approach to delivering professional master’s degree programs.  
|   | • Please see Mike L.’s presentation attached. |
| 6 | Graduate Committee Update – Keith Molenaar for Michael Brandemuehl |
|   | • Mike could not attend the meeting, but sent ahead a summary of activities from the graduate committee.  
|   | • The graduate committee completed a revision of the graduate rules, implemented a new graduate student database and implemented a new set of Doctoral Assistantships for excellence.  
|   | • Please see Mike B.’s slides attached. |
| 7 | Open Discussion |
|   | • The open discussion was brief. The topic of upgrading group websites was discussed. There was some interest in organizing a one or two-day “hackathon” to revise the discipline websites. Keith will take the action to contact CU web communications and find some faculty volunteers to complete the task over the summer. |
Meeting Goals

• Catch up on the year’s accomplishments (overall, undergraduate & graduate)
• Gain insights from advisory board leadership
• Explore our place in CEAS international programs
• Explore our place in the landscape of MOOCs and changing graduate education landscape
## Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter(s)</th>
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<tbody>
<tr>
<td>9:00-9:30</td>
<td>State-of-the-department (Keith)</td>
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<tr>
<td>9:30-10:15</td>
<td>International programs (Diane Sieber)</td>
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<td>10:30-11:00</td>
<td>Undergrad Ed update (Angela)</td>
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<tr>
<td>11:00-11:45</td>
<td>Advisory board “town hall” discussion (Ben Nelson &amp; Jon Jones)</td>
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<tr>
<td>11:45-1:00</td>
<td>MOOCs (Michael Lightner)</td>
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<tr>
<td>1:00-1:30</td>
<td>Grad Ed update (Keith for Mike B)</td>
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<tr>
<td>1:30-2:00</td>
<td>Wrap-up and open discussion (Keith)</td>
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## State-of-the-Department

- Just the facts
- Highlights of accomplishments in 12-13
- Upcoming challenges and opportunities
Just the Facts

Our department serves ~931 students
• 657 undergraduate students
  • 292 CVEN (+17% in 5 years)
  • 149 AREN (-46% in 5 years)
  • 216 EVEN (+200% in 5 years)
• 274 graduate students
  • 158 MS (+58% in 5 years)
  • 116 PhD (+61% in 5 years)

~16,394 SCH – most in the college but down ~1,000 from 2011
MS program – largest in college

Just the Facts

45 faculty in our department
• 23 Professors
• 7 Associate Professors
• 9 Assistant Professors
• 3 Instructors
• 1 Scholar in Residence
• 2 Research Faculty

New faculty
Fall 13 – Kasprzyk, Ren and Sideris
Spring 14 – Srubar
Fall 14 – Cook + SESM

15:1 Ugrad/Fac Ratio
6:1 Grad/Fac Ratio
3:1 PhD/Fac Ratio
12-13 Accomplishments

Completion of strategic plan
- People
- Places
- Programs

People
- Engagement in high school recruiting
- Increasing freshman enrollments
  - 46 CE, 47 EN & 30 AE incoming in 2013
  - 31 CE, 47 EN & 20 AE incoming in 2012
- Increasing Staff Support
  - 0.75 FTE for EVEN (Carrie)
  - 0.50 FTE for Facilities (Scott)
  - 0.25 FTE for Communications (Amanda)
12-13 Accomplishments

People

• One new TT growth line (EVEN – Cook)
• New endowed faculty support
  • Bennett-Lindstedt Faculty Fellowship
  • Beavers CEM Faculty Fellowship
  • New DiLaura Faculty Fellowship
• 31 different faculty awards!
• No faculty have left!!!

12-13 Accomplishments

Programs

• First AREN graduate students in spring 13
• New Water Engineering & Management Certificate
• New EDC Professional Masters Program proposal
• RMLA Kickoff in June
12-13 Accomplishments

Programs

• External expenditures increased 83% in 5 yrs
  • New NSF SRN, SEP and sole PI grants
  • Averaged more than 4 papers/faculty in 2012
• 25% ICR return to faculty
• New Doctoral Assistantships for Excellence
• New CEAE seminar series support
• New CEAE graduate student funding assistance

Places

Places

• Completed graduate student space
• Nearing completion of Env sustainability space
• New $325K Larson Lab proposal pending
• New beautification funding
  
  ECOT Hall Lighting Lab
  EVEN Meeting EVEN Kitchen
  Bechtel Upgrades **ECCE Hall**
Challenges

1. How do we cope with the growth of the EVEN undergraduate program?
2. Can we successfully launch an EVEN graduate degree?
3. How can we ensure that the AREN undergraduate enrollment continues to rebound?
4. Can we help the SbD RAP grow?
5. Where do we fit in the new college GEEN degree?
6. Can we continue to retain our best faculty?
7. How do we optimize our budget best support our faculty, staff and students?

Administrative Updates

• Carrie Olson is supporting EVEN faculty financial needs
• Erin Jerick is full-time AREN advising
• Sandra Vasconez will serve as interim Associate Chair for Undergraduate Education
• We will be hiring a new lab technician for the civil labs next year
• I will be going on sabbatical in Fall 2014 (as promised…)
Agenda

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9:30-10:15 International programs (Diane Sieber)
10:30-11:00 Undergrad Ed update (Angela)
11:00-11:45 Advisory board “town hall” discussion (Ben Nelson & Jon Jones)
11:45-1:00 MOOCs (Michael Lightner)
1:00-1:30  Grad Ed update (Keith for Mike B)
1:30-2:00  Wrap-up and open discussion (Keith)
The Global Engineer
CEAS' International Strategy
CEAE Faculty Retreat
May 14, 2013

Previous International "Strategy"

- Increase international student recruitment, enrollment and retention by 10%
- Increase participation in global programs up to 8%
- Increase globally focused research, creative work, teaching and service by 10%
- Internationalize the undergraduate curriculum to educate global citizens
- Develop internationally focused graduate programs
- Develop comprehensive international partnerships

Previous strategy had many relevant and important initiatives; not linked to a global strategy and prioritized outcomes
Benchmarking of Peers' Programs

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Dual degrees</th>
<th>Exchange programs</th>
<th>Faculty-led study abroad</th>
<th>Industry experience</th>
<th>Research experience</th>
<th>% Intl. students</th>
<th>% Intl. grad. students</th>
<th>Global courses</th>
<th>Intl. research tracks</th>
<th>Unique programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cornell U</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>10%</td>
<td>10%</td>
<td>✔</td>
<td>✔</td>
<td>10-yr global seminars, global fellowship program</td>
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<tr>
<td>Georgia Tech</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
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<td>✔</td>
<td>10%</td>
<td>10%</td>
<td>✔</td>
<td>✔</td>
<td>“International plan” (language, engineering, internship)</td>
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<tr>
<td>Penn State</td>
<td>✔</td>
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<td>✔</td>
<td>10%</td>
<td>10%</td>
<td>✔</td>
<td>✔</td>
<td>Intro + report + global design courses</td>
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<td>Purdue U</td>
<td>✔</td>
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<td>21% (16%)</td>
<td>10%</td>
<td>✔</td>
<td>✔</td>
<td>Global minors, language, internship, faculty-led study abroad</td>
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<td>UCLA</td>
<td>✔</td>
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<td>10%</td>
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<td>✔</td>
<td>✔</td>
<td>10-yr global seminars</td>
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<tr>
<td>U of Illinois Ch</td>
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<td>✔</td>
<td>10%</td>
<td>10%</td>
<td>✔</td>
<td>✔</td>
<td>20 international student organizations participate in education</td>
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<tr>
<td>U of Pittsburgh</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>10-yr global seminars</td>
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<tr>
<td>UT Austin</td>
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<td>10%</td>
<td>✔</td>
<td>✔</td>
<td>Focus on underserved communities (US abroad)</td>
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<td>NY Tech</td>
<td>✔</td>
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<td>✔</td>
<td>✔</td>
<td>10-yr global seminars</td>
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<tr>
<td>U of Boulder/CSAS</td>
<td>✔</td>
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<td>Residential/Engineering program, Global Engineering/TVAB</td>
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</tbody>
</table>

International offerings have become a competitive requirement. Unique programs are the differentiator.

International students in the US (2012)

30% of international students in U.S. are in engineering or computer science programs.
Global Engineering Strategy

- Produce globally competent graduates who are equipped to work across cultures and, as a result, can better identify opportunities, understand market foci, and successfully research and commercialize new technologies.
  - Define the key competencies of the global engineer
  - Plan and prioritize for directed approach to achieving competencies
  - Address 3 disparate communities:
    - CU students studying or working abroad
    - CU students remaining on campus
    - International students studying at CU

Engineering is a global profession. Industry and students expect an education that prepared graduates for success.

Key Global Engineer Competencies

- Broad comparative knowledge of world economies, markets, and international business issues
- Ability to deliver discipline practice across cultures, political and economic work systems
- Ability to work in and influence cross-cultural teams, both in person and through IT-mediated communication platforms
- Knowledge of regulatory requirements, business/engineering ethics

These competencies are important components for developing a Global Engineering mindset
### Strategic Alignment

<table>
<thead>
<tr>
<th>Program</th>
<th>Actions Needed</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
</tr>
</thead>
<tbody>
<tr>
<td>College Strategy Alignment</td>
<td>Agree competencies, strategic objectives, priority of focus areas</td>
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<td></td>
<td>Agree outcomes assessment plan</td>
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<tr>
<td>Campus Leverage</td>
<td>ID opportunities to influence and leverage campus resources and programs</td>
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<tr>
<td>Program Director</td>
<td>Hire/onboard director with shared vision</td>
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<tr>
<td>Branding and Communications Plan</td>
<td>Align on College differentiators; develop branding and marketing messages</td>
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### CEAS Students Out

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<th>Program</th>
<th>Actions Needed</th>
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<tbody>
<tr>
<td>Study Abroad</td>
<td>Inventory current classroom partnerships; estab best practices; ID country/degree gaps</td>
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<tr>
<td></td>
<td>New partnerships with tech institutes; obtain agreement on curriculum/degree transfer</td>
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<tr>
<td>Research Abroad</td>
<td>Inventory current research collaboration agreements</td>
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<tr>
<td></td>
<td>Establish new collaborations with tech institutes</td>
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<tr>
<td>Work Abroad (co-ops, interns)</td>
<td>Inventory current industry relationships; ID gaps and best practices</td>
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<td></td>
<td>Develop additional industry relationships/commitments</td>
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<tr>
<td>Service Abroad</td>
<td>Develop agency relationships with charitable orgs that foster student summer work</td>
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## Global Engineering Students In

<table>
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<tr>
<th>Program</th>
<th>Actions Needed</th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
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</thead>
<tbody>
<tr>
<td>Recruitment</td>
<td>Develop College Global Recruitment Strategy (countries/outreach)</td>
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<td></td>
<td>Targeted recruitment visits for growing student interest; finding study abroad relationships</td>
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<tr>
<td>Orientation</td>
<td>Develop College program; link to language/cultural immersion; tie to campus program</td>
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<tr>
<td>Advising</td>
<td>Allocate resources and train for global student integration</td>
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<tr>
<td>Cultural Integration</td>
<td>Create programming to integrate global student culture into engineering students experience in College</td>
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<td></td>
<td>Faculty and Staff cross-cultural training to equip for classroom issues and questions on visas, US regs, etc</td>
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<td>Cross-cultural programs for students to broaden awareness and sensitivity; build informed/sensitive College culture</td>
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## Exchanges

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<th>Actions Needed</th>
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<tbody>
<tr>
<td>Student Exchanges</td>
<td>Inventory current agreements and ID best practices; understand balances and future viability usage</td>
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<td></td>
<td>Establish new exchanges with technical institutes</td>
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<tr>
<td>Research Exchanges</td>
<td>Inventory current agreements and ID best practices; understand balances and future viability usage</td>
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<td></td>
<td>Establish new exchanges with technical institutes</td>
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## Integrating Global Engineering across CEAS

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<th>Program</th>
<th>Actions Needed</th>
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<tr>
<td>RAPS</td>
<td>Implement Global Eng RAP (GERAP)- Spanish language</td>
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<td></td>
<td>GERAP - add French and Portuguese</td>
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<td>GERAP - add Mandarin</td>
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<td>Certificates</td>
<td>Implement Global Certificate</td>
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<tr>
<td></td>
<td>Grow International Certificate</td>
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<tr>
<td>Minors</td>
<td>Develop multi-college global minors with A&amp;S</td>
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<tr>
<td>EWB/EDC</td>
<td>Survey participants to determine value and opportunity for improvement</td>
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<tr>
<td></td>
<td>Grow participation</td>
<td></td>
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<tr>
<td>Global Curriculum</td>
<td>Develop financial support for curriculum changes</td>
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<td>GEEN 1500/GEEN 1400</td>
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<tr>
<td>Intl Ambassadors</td>
<td>Elevate group to be springboard for cultural broadening; fund 1 event/month</td>
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<tr>
<td>Intl Faculty</td>
<td>Leverage FIRST Scholar summer program and other visiting faculty opportunities</td>
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### Questions for Discussion

- Are we targeting the right global competencies for students?
- How does this strategy differentiate our students and College? What is missing?
- How do you propose that departments and programs bring a global focus to their curricula?
- Anything else for consideration?
Undergraduate Updates

CEAE Faculty Retreat
May 14, 2013
Angela Bielefeldt

First Year Student Enrollment
Recruiting Activities

- Four CEAE seniors called admitted AREN/CVEN students
- Bielefeldt emailed admitted AREN/CVEN students (multiple times); + ACOd
- Gregor sent a letter to all admitted AREN students
- Balaji/Gregor/Keith admitted students day in April
- Participation in Oct. and on-campus recruiting events
- Advisory board, Keith, ASCE, etc. making presentations at local high schools
- Improved website (Erin, Amanda)
  - [http://ceae.colorado.edu/prospective-students/undergraduate-studies/](http://ceae.colorado.edu/prospective-students/undergraduate-studies/)

149 admitted CVEN [44], 98 admitted AREN [29];
ACOd 49 [21] CVEN, 62 [34] AREN

ACOd & Pre Engineering Program

- Alternate College Option
  - Do not meet CEAS criteria, admitted into College of Arts & Sciences
  - ~480 expected at CU in fall 2013
- New CEAS Pre Engineering program in cooperation with A&S
  - We emailed and recommended SBD RAP
  - They will have A&S and engrg advisor
  - Taking GEEN 1500; some new spring sections of GEEN 1400
- About 500 ACOd students confirmed into PreEng
First Year Intro to Engrg Course

- Fall 2012 GEEN 1500-2 cr not received well by students / lots of work for all depts
- Fall 2013 GEEN 1500 pilot version 3
  - back to 1 credit; req’d OPEN, ACoD PreEng, ...
  - NOT yet required for all engrg students
  - CEAE provide lecture, “experiences”
- AREN 1316/CVEN 1317 (2 cr) combined
  - *What to do with missing 1-credit for transfers (?)*

Advising

- Erin all AREN students
- Christina all CVEN students
  - [http://ceae.colorado.edu/category/advising-blog/](http://ceae.colorado.edu/category/advising-blog/)
  - Plans for individualized advising each semester as frosh/sophomores; replace group advising (?)

- New placement into Calculus/pre-calc via ALEKS
  - Block diagrams showing path to graduation
  - Other calculus concerns w/ students avoiding APPM
  - *Does CEAE want to require APPM ?*
- New College-wide drop date and withdraw date
Curriculum Committee 2012/2013

• Special topics course process
• Sub-committee Geomatics / CAD
  – Tad, Milan, Paul G.
• AREN & CVEN tracks in general engrg degree
• Structures JEC in April 2013
• Implementation details for new AREN curriculum (started Fall 2012)
• Implementation for new CVEN curriculum to start Fall 2013
  – New CEM courses
  – Desire to move senior design to senior spring

Motion from CEAE curriculum committee:
switch CVEN 4899-4 cr Senior Design and new 2-cr Prof Issues course in the CVEN block diagram

<table>
<thead>
<tr>
<th>Semester</th>
<th>Course</th>
<th>Credits</th>
<th>Proficiency</th>
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<td></td>
<td>FREE ELECTIVE Cr</td>
<td>3 S-H Elective</td>
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</table>
Next Year 2013/2014

- FE practice exam in CVEN senior design
- FE exam online in spring 2014
- DARS degree audit system (Erin/Christina)
- JECs (CEM, geotech; meet spring 2014)
- New General Engineering Degree (recruit F2014 class)
MOOCs, Online and Engineering
5-14-13
CEAE Retreat
M. Lightner

MOOCs - The short form
- Taking advantage of/driving
- Pedagogical changes in online ed
- Power of crowdsourcing
- Pressures to reduce cost of higher ed
- Time-to-Degree, completion rates
- Continued erosion of public support of higher ed
- Fed pressure for competency-based learning
- Much cheaper the CMU OLI courses
- OLI - $1M/course – but proven effective
MOOCs and Engineering

• Major PR – 3.2M pairs of eyes
• Significant improvement in student learning
• SJSU – Circuits – 55% pass rate normal course, 90% pass rate, blended with EdX/MIT course
• Significant improvement in online pedagogy
• Note: CU LearnChemE 1M hits on YouTube
• Significant peer interaction

Massive Open Online Courses

Office of Academic Affairs
Thursday, February 21, 2013
What is a MOOC?

**Massive:** A typical classroom holds 30 students. An auditorium holds 300. A MOOC can go exponentially beyond these numbers, to thousands and hundreds of thousands.

**Open:** Available for free to anyone willing and able to participate, regardless of geography.

**Online:** Anyone with access to the internet can participate anywhere in the world.

**Course:** A sequence of lessons sharing the knowledge of the instructor and the group. The possibilities are endless.

A History of MOOCs

- **2008**: Stanford MOOC on Artificial Intelligence enrolls 160,000 students
- **January 2012**: MITx opens first course: 6.002x: Circuits and Electronics
- **February 2012**: Coursera launched by Daphne Koller and Andrew Ng, with $16M in funding
- **March 2012**: MIT and Harvard launch edX, contributing $30M each
- **April 2012**: Sebastian Thrun leaves Stanford to start Udacity
- **May 2012**: The University of Manitoba coins the term "MOOC," offering a course free to 2,300 on-line students
Growth of the MOOC

Number of MOOCs Offered

- 2008: 0
- 2009: 20
- 2010: 40
- 2011: 60
- 2012: 180

Major MOOC Platforms

- ** Udacity (Funding: $15 Million)
  - Courses: 24
  - Participating Schools: Not school based
  - Participating Students: 160,000+

- ** Coursera (Funding: $22 Million)
  - Courses: 338
  - Participating Schools: 62
  - Participating Students: 3,322,940

- ** edX (Funding: $60 Million)
  - Courses: 32
  - Participating Schools: 12
  - Participating Students: 360,000+
What is Coursera?

Coursera is a social entrepreneurship company that partners with the top universities in the world to offer courses online for anyone to take, for free. Coursera envisions a future where the top universities are educating not only thousands of students, but millions. Its technology enables the best professors to teach tens or hundreds of thousands of students.

Coursera is a hub for learning and networking

The Growth of Coursera

More than 3.3 Million Students Worldwide
38 University Partners
(and growing)

The Coursera Course
Community Video Conference

In-Video Quiz

**Attack 1:** two time pad is insecure!!

Never use stream cipher key more than once!!

- $C_1 \leftarrow m_1 \oplus PRG(k)$
- $C_2 \leftarrow m_2 \oplus PRG(k)$

Eavesdropper does:

$C_1 \oplus C_2 \rightarrow$
The potential for CU
CU Participation in MOOCs

Udacity participation is based on individual faculty proposals, not branded as CU, and so backlogged with proposals that there is little chance of coordinated input from CU.

EdX – elite, invitation only (we asked and were not invited, at least currently) and requiring significant investment to partner – think $10M

CU Participation in MOOCs

Coursera – many peer institutions participating

• No entry fee for institution
• Have been focused on AAU campuses, or top 10% in other countries
  • Some special exceptions
• Daphne Koller, co-founder, presented to System staff, Chancellors, Provosts and CFOs
If CU was to participate Boulder would have to take the lead

Many questions, but the system task force recommended that if Boulder wanted to join Coursera that it could be good for CU and provide important experience for the other campuses.

Over a period of a few months a contract with Coursera was developed and signed and we were part of the last ‘launch announcement’

Contract requires no $ from CU and we can withdraw with simple notice

Non-exclusive – we can be part of other MOOCs, e.g. EPFL in Coursera and EdX.
Coursera

Boulder is entering Coursera with an experimental mindset – no great expansion, but rather a careful testing of the waters and then an evaluation on how to proceed.

Plan was to have a faculty committee vet proposals for courses and review materials to help put the best face on CU.

However, a lapse in communication caused the late realization that we needed to announce courses in order to be part of the ‘launch’. A small number of courses were suggested at the campus level and then reviewed and approved by the Provost.
Initial Courses

Introductory Physics with calculus (freshman)
Comics and Graphic Novels
Linear and Integer Programming
Power Electronics (graduate)

<table>
<thead>
<tr>
<th>Course</th>
<th>Course Description</th>
<th>Enrollments</th>
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<tbody>
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<td>comics-001/</td>
<td>Comic Books and Graphic Novels</td>
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<tr>
<td>power-electronics-001/</td>
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<tr>
<td>physics1-001/</td>
<td>Physics 1 for Physical Science Majors</td>
<td>5683</td>
</tr>
<tr>
<td>linear-programming-001/</td>
<td>Linear and Integer Programming</td>
<td>5512</td>
</tr>
</tbody>
</table>
System Task Force for New Technology
Formed by President Benson

Faculty from all campuses, recommended by campus leadership

Co-Chairs, VPAA Kathleen Bollard, Michael Lightner

Boulder Members of Task Force - Solicited and Selected by Russ Moore

Michael Grant
Noah Finkelstein
Mike Eisenberg
Mary Ann Shea
Diane Sieber
Deborah Keyek-Franssen
Michele Jackson

Chris Braider
Geoffrey Rubinstein
(Mike Lightner, Melinda Piket-May)
**President Benson’s Interests**

Can technology be used to increase access to CU and still maintain the quality of our student experience?

Can technology improve the learning experience of our students?

Can technology reduce the cost of higher ed?

Can technology provide an avenue to increase revenue for CU?

---

**Board of Regents**

Share the interests of President Benson

Why a System-level committee?

- Look for synergies and/or efficiencies working across the campuses
- Share best practices
- Help highlight difference across campuses
Initial Tasks

Gather available information from campuses on technology usage in support of learning
Informally explore exciting practices among cognate disciplines across the campuses
Review and make recommendations regarding MOOCs

Going Forward

Provost has requested that the Deans provide names of faculty to serve on a campus committee – Academic Affairs Oversight Committee

Among the charges for the committee will be determining mechanism for deciding on proposals for offering courses on Coursera and tracking the progress and quality of CU courses on MOOCs
Going Forward

- CU-Boulder – total ‘enrollments’ have exceeded 27,759
  - All faculty offering MOOCs are getting some additional support
    - At least half is coming from departments, mostly in the form of course buyout or additional TA support, the rest is coming from a redeployment of campus level fellowship support
  - No additional salary for faculty
  - No CU credit for Coursera courses

Going Forward

Coursera contract is non-exclusive and IP remains with CU
We could decide to offer our own MOOC – supported by D2L
We could decide to participate in other MOOCs as they develop
We could also, with experience, decide that we do not want to continue to offer MOOCs
Higher Ed is Changing

- MOOCs are a disruptive influence on higher ed
  - UT - $50M center – lab courses coming
  - MITx – simulations for courses
  - Georgia Tech – 51 courses in preparation
  - SUNY System – wants to add 100,000 new students
  - Only one year old
  - Major technological improvements coming quickly
  - New ecosystem for app development

Courses from our peers and betters in many areas of engineering and applied science

EdX driving into community colleges – can this help GoldShirt students? Transfers?

Course-only MS degrees are likely to be threatened
Higher Ed is Changing

We need to be a player

Participate, innovate, leverage

Make the value proposition of bricks and mortar institution clear – we need compelling case of our existence and our cost

Thank you

Questions?
Overview

- Revised Graduate Rules
- Database implementation
- Application review
- Fellowships
- AREN degree
Graduate Rules

- Graduate Committee reviewed departmental rules in Fall 2012
- Objectives
  - Improve consistency and clarity
  - Mend some loopholes
  - Identify and revisit variations from Graduate School Rules
- Changes to take effect Fall 2013

Major Changes

- Transfer Credits
  - For PhD students, increase the maximum number of course work transfer credits from another institution from 15 to 21 credits
  - For PhD students, increase the maximum number of transfer credits from CU MS course work from 21 to 30 credits
  - Eliminate requirement that half of course work from CEAE courses
**Major Variations from Graduate School Rules**

<table>
<thead>
<tr>
<th>GRADUATE SCHOOL</th>
<th>CEAE</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Up to 6 credits of 3000/4000 may be applied to Master’s degrees</td>
<td>• Up to 6 credits of 4000 outside CEAE may be applied to Master’s degrees</td>
</tr>
<tr>
<td>• Courses with grades of C or higher may be applied to Master’s degrees</td>
<td>• Courses with grades of B- or higher may be applied to Master’s degrees, C or C+ with approval of advisor</td>
</tr>
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</table>

**Applicant Test Requirements**

- GRE required for applicants to be considered for financial aid (assistantships and fellowships)
- Minimum TOEFL score of 100
  - Exceptions allowed
Graduate Student Database

- All Fall 2013 applicants processed through new database
- Provides online access to application materials and faculty review comments
- Will be expanded to include current students

Application Numbers
Fellowships and Assistantships

- Six Doctoral Assistantships for Excellence (DAE) awarded for Fall 2013
  - At least 3 year commitment
  - Department/Faculty split funding
- Fifteen Teaching Assistantships
  - Two each for the six groups
  - Three in interdisciplinary areas (civil systems, geoenvironmental, engineering science, EDC)

AREN Graduate Degrees

- Began accepting students for Fall 2013
- No degree subplans
  - Single set of prerequisites
  - Common core courses
- Four specializations defined by Graduate Certificates (under development)
  - Construction Engineering and Management
  - Building Energy Systems
  - Building Illumination Systems
  - Renewable Energy for Buildings
- Beginning Spring 2014, BSP will not be offered in CVEN and CEM will be offered in both AREN and CVEN