CEAE Executive Advisory Board

Agenda

• Department Update
• Residential Academic Programs Tour with Campus Architect
• One-on-one Meeting with Students
  • Why did they choose CU Boulder?
  • What do they think they need to be successful?
• Open Board Discussion
  • What can we do to improve the student experience?
Joseph Adams
  President, E& I, MWH Global, Inc.

Bud Ahearn
  V.P., Emeritus, CH2M Hill

Paul Brinkman
  President & CEO, Brinkman Partners

Teal Brogden
  Sr. Principal, Horton Lees Brogden Lighting

Marco Campos
  Principal/Founder, Campos EPC

James Case
  Sr. Principal, Uzun & Case Eng.

Bill Green
  President, RMH Mechanical

David Gupta
  President, SDI

Jacqueline Hinman
  CEO, CH2M Hill, Inc.

Jonathon Jones
  CEO/Sr. Principal, Wright Water Eng.

Kevin Kayse
  President, Gekko Engineering

Hon-Yim Ko
  Professor Emeritus, CU

Wayne Lorenz (incoming)
  President & Sr. Engineer, Wright Water Eng.

David Lewis
  President, S.A. Miro, Inc.

Scott McNary
  Partner, McNary, Bergeron & Assoc.

Ben Nelson
  Principal, Martin/Martin Engineers

Kristy Schloss (incoming)
  President, Schloss Engineered Equip.

Richard Tocher (incoming)
  Sr. Geotechnical & Civil Engineer

Steve Vance
  President Emeritus, Broce Const.
CEAE Executive Advisory Board is to act as an advisory body to the Department Chair through:

- advising on *a strategic vision and programs* that will have an impact on students, engineers and society;
- encouraging *resource development* through advocacy for state and federal funding, and private gifts to benefit the Department, its students and its stakeholders;
- *recognizing achievements of alumni* of the Department and others; and
- *advocating publicly* for the Department and the University of Colorado at the state, federal and global levels.
Primary objective of our meeting today…

Take actions to improve the CEAE student experience

• Learn about the CU campus environment
• Talk with and listen to our students
• Make recommendations to improve the student experience and help them be holistic engineers
CEAE Vision

The CEAE department aspires to lead in extraordinary education and research for the sustainable development, management and safety of civil and architectural infrastructure systems – serving society in harmony with our natural resources.
CEAE Vision

Serve society in harmony with our natural resources

One of 17 Architectural Engineering Departments in US
CEAE Vision

Serve society in harmony with our natural resources

CEAE Professor Bernard Amadei founded EWB in 2001
By the numbers

Rankings...

- Ugrad - 20th overall & 13th among publics
- Grad - 19th overall & 14th among publics
- Doctoral - Ranked as high as the top 5%

- 6 NSF CAREER Award Winners
- 4 National Academy Engineering Members (one emeritus)
- 1 Pan-American Academy of Engineering
By the numbers

Research...
86 Grants totaling $10M in 2013

224 active research projects in 2013 - most in College
By the numbers

Students…

931 students

• 657 undergraduate students
  • 292 CVEN (+17% in 5 years)
  • 149 AREN (-46%)
  • 216 EVEN (+200%)

• 274 graduate students
  • 158 MS (+58%)
  • 116 PhD (+61%)

15:1 Ugrad/Fac Ratio
6:1 Grad/Fac Ratio
3:1 PhD/Fac Ratio

CEAE teaches ~15,400 student credit hours – most in the College
By the numbers

Development...

- $7.6 \text{ M} \text{ in current Capital Campaign}
- \#1 \text{ ranked department on Boulder campus}

Chairs ($2\text{M})
- Mortenson
Professorships ($500\text{K})
- Mortenson & Petry
Faculty Fellowships ($100\text{K})
- Bennett-Lindstedt, Ivanoff, Clark, DiLaura, Beavers & Lewis-Worcester

CEAE has more than 80 merit based scholarships most in the college
State-of-the-Department

CEAE 2013-2018 Strategic Plan

- People
- Places
- Programs
State-of-the-Department

Objective 1
Ambitiously seek to increase student enrollment, quality, and diversity.

IMPERATIVES
- CEAE plans to enroll 50 architectural engineering and 50 civil engineering undergraduate students per year with above-average quality metrics in the college and among its national peers.
- Additionally, CEAE strives to enroll 50 AREN and 50 CENV graduate students per year. These students should exhibit above-average quality metrics in the college and among peers.
- CEAE is also in the process of attracting a broader, more diverse student population by increasing student scholarships and fellowships by 30 percent.

ENABLERS
- To achieve a larger, more diverse student population, CEAE is vigorously engaging in high school recruitment efforts.
- CEAE will communicate and promote the fact that students can expect to find an enriching academic experience through internships, interaction with practicing engineers, service learning, and study abroad programs.
- CEAE will continue to actively engage in the University of Colorado's engineering honors programs.
- CEAE is increasing fellowship, research, and teaching assistantship resources for top graduates and undergraduate students.

Objective 2
Promote academic excellence by hiring faculty with diverse backgrounds.

IMPERATIVES
- CEAE will hire four additional tenured-track professors and two instructors in an effort to improve research opportunities and the academic experience.
- With the help of the CIJ Foundation, alumni, and friends, CEAE will seek to endow five additional faculty fellowships, professorships, or chairs.

ENABLERS
- CEAE is dedicating resources to retaining current faculty and securing additional tenured-track faculty and instructor lines.

Objective 3
Hire additional staff in order to further the strategic mission.

IMPERATIVES
- CEAE plans to increase staff by 30 percent to support student learning, research excellence, and communications and outreach.

ENABLERS
- With a higher staff budget, CEAE plans to recruit the best staff members who can support the strategic mission of extraordinary research, education, and service.
People: Objective 1 – Increase Enrollment

- Engagement in high school recruiting
State-of-the-Department

People: Objective 1 – Increase Enrollment

• Engagement in high school recruiting

MWH Global Field Trip

http://animoto.com/play/or20nRplNUaKELI5HwfBw
People: Objective 1 – Increase Enrollment

- Engagement in high school recruiting
People: Objective 1 – Increase Enrollment

- Increase in freshman enrollments
  - 31 CE, 47 EN & 20 AE incoming in 2012
  - 46 CE, 47 EN & 30 AE incoming in 2013
- Increase in diversity
  - Females 57% EVEN, 50% AREN & 17% CVEN
  - URM 4% EVEN, 17% AREN & 11% CVEN

College 23% female and 10% URM
State-of-the-Department

People: Objective 1 – Increase Enrollment

• New Opportunity – 300+ Pre-Engineering Students

<table>
<thead>
<tr>
<th>Engineering Field</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Mechanical Engineering</td>
<td>20%</td>
</tr>
<tr>
<td>Aerospace Engineering Sciences</td>
<td>19%</td>
</tr>
<tr>
<td>I don't know yet</td>
<td>12%</td>
</tr>
<tr>
<td>Computer Science</td>
<td>10%</td>
</tr>
<tr>
<td>Chemical and Biological Engineering</td>
<td>9%</td>
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<tr>
<td>Chemical Engineering</td>
<td>9%</td>
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<tr>
<td>Environmental Engineering</td>
<td>6%</td>
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<tr>
<td>Architectural Engineering</td>
<td>4%</td>
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<tr>
<td>Civil Engineering</td>
<td>4%</td>
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<tr>
<td>Electrical Engineering</td>
<td>4%</td>
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<tr>
<td>Engineering Physics</td>
<td>2%</td>
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<tr>
<td>Applied Mathematics</td>
<td>1%</td>
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<tr>
<td>Electrical and Computer Engineering</td>
<td>1%</td>
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<tr>
<td>General Engineering Plus</td>
<td>0%</td>
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</tbody>
</table>

Intro to Engineering “Side Quest”

5 pm October 30, 2013 & November 6, 2013
People: Objective 2 – Excellence in Faculty

- 1 new tenure-track growth line in environmental (5-year goal is 4)
- 1 new instructor for water engineering certificate
- 1 new instructor for environmental engineering (5-year goal is 2)
- 4 successful retention cases
  Cambridge, Columbia, Illinois and Mines
People: Objective 2 – Excellence in Faculty

- 3 new endowed faculty fellowships or chairs (5-yr goal is 5)
  - Bennett-Lindstedt Faculty Fellowship
  - Beavers CEM Faculty Fellowship
  - DiLaura Lighting Faculty Fellowship
  - Clark Faculty Fellowship
  - Lewis-Worcester Faculty Fellowship
- Need to focus on chairs and professorships
  - Chair $2M, Professorship $500K, Fellowship $100K
People: Objective 3 – Addition of Staff

- Goal of 30% staff increase in 5 years
- Achieved 20% increase
  - 0.25 FTE Communications
  - 0.5 FTE Facilities
  - 1.0 FTE Grant Administrator
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Objective 1
Enroll more top students with diverse backgrounds, making for a richer academic experience.

IMPERATIVES

- With these diverse, qualified students, CEAE is promoting and developing programs in the spirit of "engineering for a global society."

ENABILERS

- CEAE plans to build on the success of Engineers Without Borders, Bridges to Prosperity, and Habitat for Humanity in order to increase student quantity and quality.
- CEAE will build on the visibility and outreach of the Mortonson Center for Engineering in Developing Communities to multiply the impact of its faculty and student strengths.

Objective 2
Enhance research with greater activity and funding.

IMPERATIVES

- In order to improve research efforts, CEAE will establish three new research centers in areas that impact local, state, national, and global needs.

ENABILERS

- CEAE plans to systematically pursue large collaborative proposals through a standing research committee.
- With a broader funding base, CEAE can improve research efforts. Thus, CEAE is crafting partnerships with state agencies, nongovernmental organizations, and the civil engineering industry.
- Based on CEAE's funding success, CEAE is building connections with various federal research agencies that align with its mission and vision.

Objective 3
Improve the student experience by creating innovative enrichment experiences.

IMPERATIVES

- As part of CEAE, every student will have the opportunity to participate in at least one major enrichment experience, including internships, discovery learning, service learning, or study abroad.

ENABILERS

- For a more valuable student experience, CEAE anticipates implementing a formal and self-sustaining undergraduate internship program.
Programs: Objective 1 – More Top Students

- Continue to focus on EWB activities and Mortenson Center activities
Programs: Objective 1 – More Top Students

- EWB & CU course in Panama, Oct 5-11, 2014

CU will provide academic credits through its “extraordinary” continuing education program.

CU will provide CEUs for professionals.
State-of-the-Department

Programs: Objective 2 – Enhance Research

• 1 new research center \((5\text{-yr goal is 3})\)
  • Largest single NSF grant in college history
• 83% increase in research expenditures in 5 yrs
• 2% return in discretionary funds to faculty in 2013
State-of-the-Department

Programs: Objective 3 – Enrichment Experience

• Internships
• Research
• Study Abroad
• Service Learning
State-of-the-Department

Objective 1
CEAE will broaden its research efforts as it takes on international research and educational collaborations.

Imperatives
- For improved research, CEAE is establishing and sustaining three international research or education relationships.
- Enablers
  - By creating formal relationships with universities and a CEAE administrative structure, CEAE is expected to better support an international degree designation.
  - CEAE intends to explore new opportunities as it promotes established graduate exchanges in France and Chile.

Objective 2
Continuously improve laboratory and instructional facilities.

Imperatives
- Laboratory space will be expanded by 15 percent to accommodate for teaching and research programs to enhance the overall academic and research experiences.
- CEAE strives to enhance the quality of graduate and undergraduate facilities by working with the college and university to increase the undergraduate classroom spaces and graduate student research space.
- Enablers
  - Secure additional funds to fulfill CEAE building and space improvement plans.

Objective 3
Expand the Residential Academic Program to give students a more valuable educational experience.

Imperatives
- CEAE will support the existing Sustainable by Design Residential Academic Program by providing faculty resources for new and exciting resident experiences.
- CEAE will develop a second Residential Academic Program to allow students to explore the wide spectrum of topics related to renewable energy and its relationship to the built environment.
- Enablers
  - Inspired faculty members will be responsible for promoting the second Residential Academic Program.
# State-of-the-Department

**Places: Objective 1 – International Research and Education**

- No significant headway... but now we have a college strategy!

<table>
<thead>
<tr>
<th></th>
<th>dual degrees</th>
<th>tech course transfer</th>
<th>faculty-led tech</th>
<th>courses abroad</th>
<th>industry internships</th>
<th>research internships</th>
<th>% int'l students u/g</th>
<th>global courses in US</th>
<th>int'l certs or minors</th>
<th>int'l degree track</th>
<th>unique programs</th>
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<tbody>
<tr>
<td>Cornell U</td>
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<td></td>
<td>19%</td>
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<td>1st-year global seminars, global fellows program</td>
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<td>Georgia Tech</td>
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<td>18%</td>
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<td>&quot;International plan&quot; (language, engineering, internship)</td>
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<td>Penn State</td>
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<td>intro + capstone global design courses</td>
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<td>Purdue U</td>
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<td>21.8% (16.5)</td>
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<td>Global minors: language, internship; faculty-led quarter abroad</td>
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<td>UCLA</td>
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<td>16%</td>
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<td>1st-year global seminars</td>
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<td>U of Illinois U-Ch</td>
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<td>13%</td>
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<td>25 international student organizations participate in education</td>
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<td>U of Pittsburgh</td>
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<td>16%</td>
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<td>focus on underserved communities US/abroad</td>
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<td>UT-Austin</td>
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<td>Va Tech</td>
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<td>CU-Boulder CEAS</td>
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<td>14% (6/31.5)</td>
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<td></td>
<td>residential language/tech program Global Engineering/EWB</td>
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</table>
State-of-the-Department

Places: Objective 2 – Laboratory and Classroom Improvements

- $105 Graduate Collaboration space (Fall 12)
- $425 Environmental Sustainability Labs (Sum 13)
- $325K Building Systems Lab proposal pending (Sum 14)
- $400K Structures Lab upgrades in (13-15)
- Classrooms are next priority
Places: Objective 3 – Second Residential Academic Program

- Enrollments in Sustainability by Design RAP are lower than expected
- New Global Engineering RAP is oversubscribed
CEAE Executive Advisory Board

Agenda

- Department Update
  - Residential Academic Programs Tour with Campus Architect
  - One-on-one Meeting with Students
    - Why did they choose CU Boulder?
    - What do they think they need to be successful?
- Open Board Discussion
  - What can we do to improve the student experience?
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Topics and Dates for our next Meeting

Possible Topics

- International Programs
- Alumni Recognition
- Strategic Approach to Fundraising for Scholarships and Faculty Professorships

Possible Dates

- April 4, 11, 18, 2014?
- Panama ASCE/EWB conference on October 5-11, 2014