BCOE at a Glance

- **U.S. News Ranking**: 71, top one-third among those ranked (39th among public universities)
- **Leiden Ranking**: 8th among 750 international research universities in physical sciences and engineering
- **National Research Council**: Top quartile
- **Faculty**: 96 (goal to increase to 140 by 2020)
- **Undergraduate Enrollment**: 2,364 (projected to increase to 3,000 by 2020)
- **Graduate Enrollment**: 667 (projected increase to 700 PhD and 500 MS by 2020)
- **Research Expenditures**: $42 million (projected to increase to $80-100M by 2020)
- **IDC generated**: $4.1 million (Returned ~ $1.5M)
- **Endowment Support**: $36 million
- **Endowed Professorships**: 10
- **Philanthropic Gifts (‘12)**: $3.6 million received
- **NAE Member**: 2
- **Fellows of Professional Societies**: 81
- **NSF Career Awards**: 46 (cumulative)
- **Diversity**: 34 percent URM (2009 Claire Felbinger from ABET for outstanding service to URM)
The CWTS Leiden Ranking 2015 offers key insights into the scientific performance of 750 major universities worldwide. A sophisticated set of bibliometric indicators provides statistics on the scientific impact of universities and on universities’ involvement in scientific collaboration.

<table>
<thead>
<tr>
<th>Rank</th>
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<th>P</th>
<th>PP(top 10%)</th>
<th>Stability interval</th>
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BCOE Planned (2006) Vs. Actual

- Undergraduate
- Undergraduate (Projected 2006)
- Graduate
- Graduate (Projected 2006)

FACULTY HEADCOUNT
STUDENT HEADCOUNT

FALL

## BCOE vs UC vs Top 25

<table>
<thead>
<tr>
<th>UC Campuses</th>
<th>Rank</th>
<th>#Fac</th>
<th>Degrees Awarded</th>
<th>Degree Per Faculty</th>
<th>Enrollment</th>
<th>S/F Ratios</th>
<th>GS Fraction (%)</th>
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<td>4,019</td>
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<td>609</td>
<td>4.0</td>
<td>3,244</td>
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<td>51.0% 8.4%</td>
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<th>Top 25 Public (Non-UC)</th>
<th>Rank</th>
<th>#Fac</th>
<th>Degrees Awarded</th>
<th>Degree Per Faculty</th>
<th>Enrollment</th>
<th>S/F Ratios</th>
<th>GS Fraction (%)</th>
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</thead>
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<tr>
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<td>1,313</td>
<td>4.1</td>
<td>7,069</td>
<td>22.1</td>
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<tr>
<td>Average (including UC)</td>
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<td>1,160</td>
<td>536</td>
<td>4.1</td>
<td>6,123</td>
<td>21.6</td>
<td>48.3% 11.1%</td>
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Retreat Goals

- Engage faculty and staff in Strategic Planning
- Reassess our vision and update if necessary
- Identify & commit to the overall strategy to achieve our vision
- Develop and implement a plan supporting our strategy with achievable goals & milestones
And our biggest news item...

We broke our faculty population! Broke it in the sense that we are now over 100 faculty strong!
Richard B. Wilson  
ME/MSE  
Assistant Professor

Daniel Wong  
ECE/CEN  
Assistant Professor

Pending Hires:  
2 or 2 1/2 BIEN (Full)  
1 CSE (Full)  
1 Continuing ME/CEE

9 positions was authorized initially
GRADUATE EDUCATION
Graduate Student Enrollment

BCOE Graduate Student Enrollment - Fall

- Total Enrollment
- Incoming Cohort

Fall-Year


UCR
Bourns College of Engineering
Total Graduate Students by Department

BCOE Graduate Student Enrollment - Fall

Fall - Year


BCOE Graduate Enrollment by Department:
- CSE
- ECE
- CEE
- ME
- BIEN
- MSE
- CEN

UCR Bourns College of Engineering
A self-supporting program, which has been set up for highly qualified employed engineers who, for professional and personal reasons, are not able to attend traditional M.S. programs, yet are interested in obtaining the latest knowledge base of engineering and technology related to their area of work.


We started the program with a specialization drawn from Bioengineering in 2013, and will expand to 10 specializations in five years.

MSOL program is unique amongst the competing online programs since it offers an effective and well-balanced blend of professional core engineering management and specialization courses.
‘Transforming Engineers Into Leaders’

- The online Master of Science in Engineering is a comprehensive engineering program that encompasses both leadership strategy and technical skills.

- **36 total credits:**
  - 16 credits of core courses
  - 16 credits of specialization courses
  - 4 credits of a capstone course
Pearson Partnership
Marketing, Recruitment and Student Support

- Approved 9/12/2014
- 11 member team
- Site Launch 4/20/2015

- 926 leads since 4/20/15

- 1 accepted student for fall 2015 so far with a total goal of 10 (12 weeks to deadline)
- 3 new applications are accepted by the MSOL oversight committee awaiting final processing
- 11 other student applications have been started and awaiting materials

Steering committee meeting to be held fall 2015 to assess results and set goals
  - On-going development and feedback to ensure the highest academic quality

UC Riverside
Marketing
Recruitment
Student Support
Costs/Benefits

- Total Tuition/student: $30,000
- Application fee (US citizens): $80
- Cost per course: $3333

Online-Course Develop/Mgmt Fees
- Cost to develop 1st offering of new online course: $5,000
- Cost to update for each subsequent offering: $1,000
- Cost to update existing grad course to on-line: $2,000
- Instructional Services Fee (per student/offering): $500

Instructional Support
- Instructor compensation (per student/offering): $400
- .25-FTE TA/Reader costs/offering (on-line enrollment >5): $6,027
- .125-FTE TA/Reader costs/offering (on-line enrollment 1-5): $3,014
DIRECT DOCTORAL ADMISSION PROGRAM (DDAP)

- Partnership with HBCUs
  - Promising juniors identified by HBCU faculty (GPA > 3.3)
  - Students invited to participate in UCR Mentoring Summer Research Internship Program (MSRIP) working with BCOE faculty member
    - Graduate application preparation
    - Research experience
    - Assessment by BCOE faculty member
    - Applies for National GEM Fellowship
  - Student prospect applies to BCOE PhD program (maintain GPA > 3.3)
    - Participates in UCR GradEDge program preceding matriculation
    - Assistance in applying for National Science Foundation Graduate Research Fellowship (NSF GRF) and a National Defense Science and Engineering Graduate Fellowship (NDSEG)
    - Consideration for Graduation Division augmentation fellowships plus regular central fellowship
  - HBCU faculty invitation to serve on dissertation committee
  - Mentorship provided by CABE (Council for the Advancement of Black Engineers)
Undergraduate Education
# Enrollments

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<th>AY 14-15 Graduates</th>
<th>Incoming</th>
<th>F'15 Enrolled</th>
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<td>2</td>
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<tr>
<td>Chemical Engineering</td>
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</tr>
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</table>
AIS Distribution, F’15

College | Median | % BCOE above
---------|--------|-----------------|
BCOE     | 4529   | 50%             |
CNAS     | 4277   | 92%             |
CHASS    | 4113   | 100%            |
BCOE’s AIS Improvements

F’13  F’14  F’15

0%  10%  20%  30%  40%  50%  60%  70%  80%  90%  100%

5700  5200  4700  4200  3700
Student Development

- Professional Development
  - 23 professional student organizations (50.4% of total undergraduates)
  - 130 career development events (information sessions, resume & interview workshop, company visits, etc.)
  - 200+ student organization meetings & social events
Student Development

- Undergraduate Research
  - 97 students funded by College’s Grant from Dept. of Education
  - 152 paid positions in 2014-2015
  - 25.3% undergraduates are conducting research in lab
  - 54% undergraduates gets at least one faculty mentored undergraduate research experience before graduation
Student Development

- Outreach (K-12 & Community Colleges)
  - 41 events at local community colleges
  - Wind Turbine competition with 8 community colleges
  - 113 K-12 Outreach Events hosted by Faculty & Student Orgs
  - 57.95% of all UCR K-12 outreach events!
BCOE Laptop Requirement

- In place for one year. Going very well.
- Students have access to lots of software

<table>
<thead>
<tr>
<th>Software</th>
<th>Description</th>
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<tbody>
<tr>
<td>Ansys</td>
<td>LabVIEW System Design Software</td>
</tr>
<tr>
<td>ArcGIS</td>
<td>LockDown Browser</td>
</tr>
<tr>
<td>CADENCE</td>
<td>Mathematica</td>
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<tr>
<td>CHEM Kin-Pro</td>
<td>MathWorks MATLAB</td>
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<tr>
<td>COMSOL Multiphysics</td>
<td>Microsoft Office 365 Pro Plus</td>
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<tr>
<td>DYNSIM</td>
<td>Microsoft Visual Studios</td>
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<tr>
<td>IBM SPSS</td>
<td>PRO/II Process Stimulation</td>
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<tr>
<td>JMP</td>
<td>SAS (Statistical Analysis System)</td>
</tr>
<tr>
<td></td>
<td>SolidWorks: 3D CAD Design</td>
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</tbody>
</table>
Student Professional Development

- 23 student professional organizations
- Very active, with 1075 members (50% of BCOE students)
Summary Expenditures by Source (FY 2013-14)
Total $51.8M

- Contract & Grants: 31.9%
- General Funds: 50.3%
- Initial Comp: 5%
- Gifts: 2.8%
- Indirect Cost: 1%
- Tuition Fees & Other: 1%
- S&S: 7%

Total IDC Generated: $4.8M
Expenditures per Faculty FTE

Thousands

Expenditures per...
Research Activity – 15AY

- **Awards by Unit** (as of June 9, 2015)
  - BIEN: $923,528
  - CE-CERT: $5,450,923
  - CEE: $8,313,632
  - CSE: $4,013,297
  - CNSE: $302,000
  - CRIS: $300,000
  - ECE: $6,266,194
  - Dean’s Office: $1,006,019
  - MSE: $169,283
  - ME: $2,336,209
  - BCOE: $24,989,957
Center for Environmental Research Technology (CE-CERT)

Matthew Barth
Yeager Families Professor, Department of Electrical and Computer Engineering
Director, Center for Environmental Research and Technology

CE-CERT’s mission is to contribute to improved environmental quality and energy efficiency by conducting a broad program of interdisciplinary basic and applied research and by providing educational opportunities for the next generation of engineers, scientists and policy-makers.

CE-CERT Snapshot

- 25 Academic and Research Faculty, 22 staff, 55 graduate students and 60 undergraduates
- Multiple engineering disciplines: Chemical, Environmental, Mechanical, Electrical, Computer Science, Materials Science
- $12 million per year in active projects (industry, state, & federal agencies)
- ~100 industry partners
- ~40 academic partners

CE-CERT Research Areas

- Emissions from Advanced Technologies and Fuels
  - Emissions measurement/analysis, fuel effects, new instrumentation/methods, after-treatment
- Transportation Systems Research
  - Intelligent Transportation Systems, vehicle activity, energy/emissions modeling
- Atmospheric Processes Research
  - Secondary pollutant formation, mitigation methods, environmental modeling
- Sustainable Energy Research
  - Cellulosic ethanol, synthetic diesel fuel, energy distribution
- Southern California Research Initiative for Solar Energy, Energy Storage and Grid Integration Research
  - Solar devices, solar thermal, smartgrid, energy storage

www.cert.ucr.edu
AQMD Sustainable Transportation “New Grid” Project

- $2-million grant from South Coast Air Quality Management District
- 500-kilowatt photovoltaic solar installation at CE-CERT and Bourns, Inc.
- 1.1-megawatt rare earth lithium battery storage facility
- Electric vehicle charging stations at CE-CERT and in Riverside
- Conversion of trolley from diesel to electric power
- Groundbreaking in fall 2013
Recent Progress with the Sustainable Integrated Grid Initiative

- **California Energy Commission (1):** $3 million CEC EPIC funded project on electrical efficiency improvements of the water systems of California

- **California Energy Commission (2):** $2.6 million project funded by CEC EPIC program on clean energy solutions that support California’s industries, the environment, and the electrical grid (SC-RISE)

- **Southern California Edison SONGS funding:** $675K for two projects to support Vehicle to Grid research, and energy storage valuation

- **South Coast Air Quality Management District:** V2G funding coming soon
BCOE’s Growth & Critical Space Needs

- **The Chancellor’s Vision:**
  - Increase UCR’s faculty by 300 ladder-ranked positions.
- **A February 2013 preliminary report by UCR Capital Programs**
  - BCOE is currently in need of approximately 10,000 to 12,000 ft² of wet labs space.
- **BCOE’s space shortage will become more acute with the addition of new faculty members**
  - Limiting lab space to the new faculty to 600 ft²—No hoods available

**Solutions**
- EBU III;
- Additional building for CE-CERT
- Campus-wide MRB
- Renovation
Plans for EBU III

- Critical to BCOE’s growth:
  - EBU III;
  - Additional building for CE-CERT
  - Campus-wide MRB

- The Detailed Project Program (DPP) for Engineering Building Unit III (EBU III) was completed in August, 2006.
  - EBU III includes 27,200 ft² of research wet labs and 6,400 asf of core support facilities.
  - It is unclear when the funding will be available.

- SOLUTION
  - The college is looking for public/private/partnership (PPP) to raise funding for EBU III and a new building for CE-CERT
CE-CERT Space Needs

• Currently CE-CERT is gaining 1-2 faculty a year and additional students and staff in proportion to this growth.

• Additional office and laboratory space will continue to be needed.

• Thanks to Bourns, Inc., CE-CERT has the unique ability to lease incremental space to grow its laboratories
  o 2,500 ft2 of space added using this method in the last 2 years.

• Expansion is now limited, and we need to look at other opportunities for growing CE-CERT.
Project will create or enhance 23,465sf of wet lab space incorporating 17 rooms on the 2nd floor of Bourns B for existing faculty and new hires.

- UCR is providing $10M for this project
- Construction is planned to start in Spring 2016 and be completed by the end of 2016.
Thank you