What do you remember of 2005?

YouTube
Launched - February 2005
By 3 PayPal Employees &
bought by Google for
$1.65 BILLION a year later

Most sought after Christmas toys

May 23, 2005
When Tom Cruise jumped on Oprah’s couch

Superbowl Champions
And did you know?

Average price of a new home $297,000

Top Movies

Average median income $46,326

Cost for a gallon of gas $3.18
And what was new in 2005 at BCOE?

Reza Abbaschian is new Dean
September 12, 2005

Reza Abbaschian began his tenure as the new Dean of Bourns College of Engineering today, September 12.

His former position was at the University of Florida, where he was Vladimir A. Grodsky Professor of Materials Science and Engineering and served as Department Chair for 16 years. Under his leadership, the department grew to among the largest in the country in graduate and undergraduate enrollment and research.

His research concentration is in materials processing, including high temperature-high pressure growth of diamond crystals. He has more than 230 scientific publications, four patents, eight patent disclosures and eight books. This month he will become President of ASM International, the largest materials society in the United States.

For those present at the City Farewell Reception, you may recall that when hired, Reza stood 6 foot 6 inches tall! According to Ravi over the years Reza’s dedication has caused great pressure that’s what caused him to shrink!
So what other interesting factoids were there for 2005?

<table>
<thead>
<tr>
<th>BCOE 2005 FACTOIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of Undergraduate Students</strong></td>
</tr>
<tr>
<td><strong>Number of Graduate Students</strong></td>
</tr>
<tr>
<td><strong>Number of Faculty</strong></td>
</tr>
<tr>
<td><strong>Number of Departments</strong></td>
</tr>
<tr>
<td><strong>Number of Fellows in Professional Societies</strong></td>
</tr>
</tbody>
</table>
And where are we now??

<table>
<thead>
<tr>
<th>BCOE 2016 FACTOIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Undergraduate Students</td>
</tr>
<tr>
<td>Number of Graduate Students</td>
</tr>
<tr>
<td>Number of Faculty</td>
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<tr>
<td>Number of Departments</td>
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<td>Number of Fellows in Professional Societies</td>
</tr>
</tbody>
</table>
But what happened in between? Let's see just how much we rocked!

Sharon will go over in more detail information on Undergraduate Education.
But what happened in between? Let’s see just how much we rocked!

Ravi will go over in more detail information on Graduate Education

Number of Graduate Students

We Engineer Excellence - BOURNS COLLEGE OF ENGINEERING

JUNE 10, 2016
But what happened in between? Let’s see just how much we rocked!

Number of Faculty

05-06 06-07 07-08 08-09 09-10 10-11 11-12 12-13 13-14 14-15 15-16 16-17

70 76 81 85 85 82 78 83 89 96 102 125
BCOE at a Glance

- U.S. News Ranking: 71, top one-third among those ranked (39th among public universities)
- Leiden Ranking: 8th among 478 international research universities in natural sciences and engineering
- National Research Council: Top quartile
- Faculty: 101 (goal to increase to 140 by 2020)  
  NOTE: Additional 22-25 faculty by Fall 2016
- Undergraduate Enrollment: 2,390 (projected to increase to 3,000 by 2020)
- Graduate Enrollment: 747 (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: 11
- Philanthropic Gifts: $3.6 million received
- NAE Member: 2
- Fellows of Professional Societies: 88
- NSF Career Awards: 50 (cumulative)
- Diversity: 34 percent URM (2009 Claire Felbinger from ABET for outstanding service to URM)
The Vision of the College of Engineering is to become a nationally recognized leader in engineering research and education

“Create a college with the profile of a top 25 Engineering School”

Our Mission is to:

• Produce engineers with the educational foundation and adaptive skills to serve rapidly evolving technology industries
• Conduct nationally recognized engineering research focused on providing a technical edge for the U.S.
• Contribute to knowledge of both fundamental and applied areas of engineering
• Provide diverse curricula that will instill in our students the imagination, talents, creativity and skills necessary for the varied and rapidly changing requirements of modern life
• Enable our graduates to serve in a wide variety of other fields that require leadership, teamwork, decision making and problem solving abilities
• Be a catalyst for industrial growth in the Inland Empire
Degrees

- **BS**: BIEN, CHE, CEN, CS, EE, ENVE, Bus Info, ME, and MSE (all accredited except for Bus Info)
- **MS and PhD**: BIEN, CEE, CEN, CS, EE, ME, MSE
ABET Accreditation

BIEN, CHE, CEN, CS, EE, ENVE, ME, MSE

Thanks to an army of participants, we earned outstanding reviews of our undergraduate programs and the maximum full accreditation until 2019.
• Materials Research is one of the strength areas of research at UCR; MSE provides a ‘glue’ for research in BCOE, CNAS and UCR
• MSE at UCR is an interdisciplinary program with participating faculty from Engineering (BCOE) and physical sciences (CNAS)

BCOE Core Faculty: 15
Participating faculty members:
28 from BCOE
13 from CNAS

Award B.S., M.S. and PhD degrees
Tremendous graduate student growth: Have ~45 grad students (in just 3 incoming classes)

New MSE building: A ‘Nucleation Point’ for MSE Teaching and Research
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.
Collaborative centers and initiatives attract research funding, providing opportunities for students to prepare for careers of discovery and innovation:

- Center for Bioengineering Research
- Center for Environmental Research Technology (CE-CERT)
- Center for Nanoscale Science and Engineering (CNSE)
- Center for Research in Intelligent Systems (CRIS)
- Center for Ubiquitous Communication by Light (UC-Light)
- Southern California Research Initiative for Solar Energy (SC-RISE)
- Winston Chung Global Energy Center
- Phonon Optimized Engineered Materials (POEM)
The center will bridge the gap between industry and academia to address energy generation, storage, and distribution needs and issues.

$10 million endowment established in 2011:
- Winston Chung Global Energy Center
- Winston Chung Endowed Professorship in Sustainability
- Winston Chung Endowed Professorship in Energy Innovation

$6.2 million additional Funding:
- $2.5M rare earth lithium-ion Storage batteries to Winston Chung Hall
- $2.5M storage batteries to power CE-CERT AQMD
- $1,200,000 funding for energy related research year for two years

Nosang Myung, Co-Director
Sadrul Ula, Co-Director
Sustainable Integrated Grid Initiative
BCOE Planned (2006) Vs. Actual

- Undergraduate
- Undergraduate (Projected 2006)
- Graduate
- Graduate (Projected 2006)
- Faculty Headcount
- Faculty Headcount (Projected 2006)

+88% TA FTE 29.75 to 31.5, 1.75 FTE increase

+92% BCOE Planned (2006) Vs. Actual
College deeply engaged with the local community, the region and world

- Bourns Engineering Day
- Wind Turbine Competition for region’s community colleges
- MESA Robotics Competition
- Engineers Without Borders – Guatemala trips
- SPIRIT Program to engage local teachers in promoting math and science
- IEEE Boy Scout Merit Badge Day
### Top 25 Graduate Engineering Program Comparisons

#### 2013 ASEE College Profile Data

#### UC Campus

<table>
<thead>
<tr>
<th>UC Campus</th>
<th>2015 Rank</th>
<th># of Fac</th>
<th>Degrees Awarded</th>
<th>Degrees Per Faculty</th>
<th>Enrollment</th>
<th>S/F Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>UC Berkeley</td>
<td>U3</td>
<td>247</td>
<td>1,079 BS, 436 MS, 243 PHD</td>
<td>4.4 BS, 1.8 MS, 1.0 PHD</td>
<td>4,019 UG, 399 MS, 1,537 PHD</td>
<td>16.3 UG, 1.6 MS, 6.2 PHD</td>
</tr>
<tr>
<td>UC San Diego</td>
<td>14</td>
<td>194</td>
<td>1,057 BS, 419 MS, 144 PHD</td>
<td>5.4 BS, 2.2 MS, 0.7 PHD</td>
<td>6,503 UG, 691 MS, 1,024 PHD</td>
<td>33.5 UG, 3.6 MS, 5.3 PHD</td>
</tr>
<tr>
<td>UC Los Angeles</td>
<td>16</td>
<td>155</td>
<td>682 BS, 545 MS, 160 PHD</td>
<td>4.4 BS, 3.5 MS, 1.0 PHD</td>
<td>3,158 UG, 914 MS, 940 PHD</td>
<td>20.4 UG, 5.9 MS, 6.1 PHD</td>
</tr>
<tr>
<td>UC Santa Barbara</td>
<td>19</td>
<td>124</td>
<td>290 BS, 124 MS, 101 PHD</td>
<td>2.3 BS, 1.0 MS, 0.8 PHD</td>
<td>1,347 UG, 178 MS, 587 PHD</td>
<td>10.9 UG, 1.4 MS, 4.7 PHD</td>
</tr>
<tr>
<td>UC Davis</td>
<td>31</td>
<td>198</td>
<td>600 BS, 218 MS, 132 PHD</td>
<td>3.0 BS, 1.1 MS, 0.7 PHD</td>
<td>3,503 UG, 383 MS, 747 PHD</td>
<td>17.7 UG, 1.9 MS, 3.8 PHD</td>
</tr>
<tr>
<td>UC Irvine</td>
<td>38</td>
<td>115</td>
<td>539 BS, 259 MS, 92 PHD</td>
<td>4.7 BS, 2.3 MS, 0.8 PHD</td>
<td>3,235 UG, 339 MS, 474 PHD</td>
<td>28.1 UG, 2.9 MS, 4.1 PHD</td>
</tr>
<tr>
<td>UC Berkeley</td>
<td>69</td>
<td>91</td>
<td>305 BS, 67 MS, 58 PHD</td>
<td>3.4 BS, 0.7 MS, 0.6 PHD</td>
<td>2,364 UG, 134 MS, 460 PHD</td>
<td>26.0 UG, 1.5 MS, 5.1 PHD</td>
</tr>
<tr>
<td>UC Santa Cruz</td>
<td>81</td>
<td>78</td>
<td>321 BS, 44 MS, 31 PHD</td>
<td>4.1 BS, 0.6 MS, 0.4 PHD</td>
<td>1,788 UG, 78 MS, 302 PHD</td>
<td>22.9 UG, 1.0 MS, 3.9 PHD</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td>150</td>
<td>609 BS, 264 MS, 120 PHD</td>
<td>4.0 BS, 1.6 MS, 0.8 PHD</td>
<td>3,240 UG, 390 MS, 759 PHD</td>
<td>22.0 UG, 2.5 MS, 4.9 PHD</td>
</tr>
</tbody>
</table>

#### Top 25 Public (non-UC)

<table>
<thead>
<tr>
<th>Public Campus</th>
<th>2015 Rank</th>
<th># of Fac</th>
<th>Degrees Awarded</th>
<th>Degrees Per Faculty</th>
<th>Enrollment</th>
<th>S/F Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Georgia Tech</td>
<td>6</td>
<td>436</td>
<td>1,823 BS, 1,051 MS, 313 PHD</td>
<td>4.2 BS, 2.4 MS, 0.7 PHD</td>
<td>9,278 UG, 1,766 MS, 2,138 PHD</td>
<td>21.3 UG, 4.1 MS, 4.9 PHD</td>
</tr>
<tr>
<td>Illinois</td>
<td>6</td>
<td>406</td>
<td>1,604 BS, 583 MS, 282 PHD</td>
<td>4.0 BS, 1.4 MS, 0.7 PHD</td>
<td>8,186 UG, 1,421 MS, 1,733 PHD</td>
<td>20.2 UG, 3.5 MS, 4.3 PHD</td>
</tr>
<tr>
<td>Michigan</td>
<td>8</td>
<td>381</td>
<td>1,299 BS, 1,115 MS, 245 PHD</td>
<td>3.4 BS, 2.9 MS, 0.6 PHD</td>
<td>5,923 UG, 1,642 MS, 1,538 PHD</td>
<td>15.5 UG, 4.3 MS, 4.0 PHD</td>
</tr>
<tr>
<td>Purdue</td>
<td>8</td>
<td>307</td>
<td>1,405 BS, 510 MS, 232 PHD</td>
<td>4.6 BS, 1.7 MS, 0.8 PHD</td>
<td>7,742 UG, 1,383 MS, 1,702 PHD</td>
<td>25.2 UG, 4.5 MS, 5.5 PHD</td>
</tr>
<tr>
<td>Texas</td>
<td>10</td>
<td>277</td>
<td>1,100 BS, 392 MS, 231 PHD</td>
<td>4.0 BS, 1.4 MS, 0.8 PHD</td>
<td>5,611 UG, 747 MS, 1,413 PHD</td>
<td>20.3 UG, 2.7 MS, 5.1 PHD</td>
</tr>
<tr>
<td>Texas A&amp;M</td>
<td>11</td>
<td>328</td>
<td>1,394 BS, 566 MS, 285 PHD</td>
<td>4.3 BS, 1.7 MS, 0.9 PHD</td>
<td>8,390 UG, 1,544 MS, 1,522 PHD</td>
<td>25.6 UG, 4.7 MS, 4.6 PHD</td>
</tr>
<tr>
<td>Wisconsin</td>
<td>17</td>
<td>186</td>
<td>692 BS, 401 MS, 101 PHD</td>
<td>3.7 BS, 2.2 MS, 0.5 PHD</td>
<td>4,347 UG, 749 MS, 906 PHD</td>
<td>23.4 UG, 4.0 MS, 4.9 PHD</td>
</tr>
<tr>
<td>Virginia Tech</td>
<td>21</td>
<td>317</td>
<td>1,331 BS, 456 MS, 213 PHD</td>
<td>4.2 BS, 1.4 MS, 0.7 PHD</td>
<td>7,177 UG, 848 MS, 1,345 PHD</td>
<td>22.6 UG, 2.7 MS, 4.2 PHD</td>
</tr>
<tr>
<td>Maryland</td>
<td>22</td>
<td>208</td>
<td>832 BS, 521 MS, 130 PHD</td>
<td>4.0 BS, 2.5 MS, 0.6 PHD</td>
<td>3,834 UG, 1,040 MS, 882 PHD</td>
<td>18.4 UG, 5.0 MS, 4.2 PHD</td>
</tr>
<tr>
<td>Penn State</td>
<td>25</td>
<td>353</td>
<td>1,653 BS, 386 MS, 183 PHD</td>
<td>4.7 BS, 1.1 MS, 0.5 PHD</td>
<td>10,021 UG, 556 MS, 1,163 PHD</td>
<td>28.4 UG, 1.6 MS, 3.3 PHD</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td>320</td>
<td>1,313 BS, 598 MS, 222 PHD</td>
<td>4.1 BS, 1.9 MS, 0.7 PHD</td>
<td>7,051 UG, 1,170 MS, 1,434 PHD</td>
<td>22.1 UG, 3.7 MS, 4.5 PHD</td>
</tr>
<tr>
<td><strong>Average (including UC)</strong></td>
<td></td>
<td>280</td>
<td>1,160 BS, 536 MS, 205 PHD</td>
<td>4.1 BS, 1.9 MS, 0.7 PHD</td>
<td>6,110 UG, 991 MS, 1,316 PHD</td>
<td>21.6 UG, 3.5 MS, 4.8 PHD</td>
</tr>
</tbody>
</table>
Summary
Expenditures by Source (FY 2013-14)
Total $51.8M

Total IDC Generated: $4.8M
The University of California at Riverside is embarking on a major new hiring initiative that will add 300 tenure-track positions over the next three years. This significant expansion of our faculty, along with strategic investments in research infrastructure, will focus on 33 interdisciplinary areas that were selected through a peer-reviewed competition. This initiative will achieve critical mass in vital and emerging fields of scholarship, foster truly cross-disciplinary work, and further diversify the faculty at one of America’s most diverse research universities.

118 Open Recruitments in FY 2015-16

What does this mean for BCOE? Additional 22-25 faculty by Fall 2016
The new faces to expect Fall 2016

XIAOPING HU
BIEN

JINYONG LIU
CEE

MOHSEN LESANI
CSE

CRAIG SCHROEDER
CSE

SHANE CYBART
ME

HYOSEUNG KIM
ECE

SALMAN ASIF
ECE

KONSTANTINOS
KARYDIS
ECE

SINISA COH
ME/MSE

HENG YIN
CSE
The new faces to expect Fall 2016

CHENGYU SONG
CSE

AHMED ELDawy
CSE

EVANGELOS
PAPALEXAKIS
CSE

MANISH SAGGAR
BIEN

CHEN LI
ME/MSE

HONGDIAN YANG
BIEN

AXEL HOFFMAN
ECE

YANRAN LI
CEE

And still more coming!
New budget model encourages financial sustainability

**BUDGET MODEL PRINCIPLES**

1. **Transparent**
   - Enable campus to understand flows of revenue and use of resources

2. **Incentivized**
   - Distribute tuition based on performance (student credit hours, majors, & graduation rate improvements)

3. **Risk Tolerant**
   - Reward entrepreneurial behavior by department/unit (e.g., increasing grant funding)

**CURRENT FUNDS FLOW**

- General Funds
- Student Fees
- Contracts & Grants
- Gifts
- Sales & Service
- Other Revenue
- Auxiliary

- Central University
- Administrative & Support Units
- Schools & Colleges
- Auxiliary Enterprises

Key:
- Financial Year-End Forecast
- Recharge
- Cost Recovery
- Current

Source of Revenue:
- Tuition
- Student Fees
- Gifts
- Sales & Service
- Other Revenue
- Auxiliary

Costs:
- Central University
- Administrative & Support Units
- Schools & Colleges
- Auxiliary Enterprises

Revenue Sources:
- Enrollment
- Tuition
- Grants
- Gifts
- Sales & Service
- Other Revenue
- Auxiliary

* Figures in text may differ from those in the diagram due to rounding.
New budget model encourages financial sustainability
This could be the start of a new course sequence!

• **ENGR 101** – Engineering of Coffee

*The Design of Coffee* provides a non-mathematical introduction to chemical engineering, as illustrated by the roasting and brewing of coffee. Hands-on coffee experiments demonstrate key engineering principles, including material balances, chemical kinetics, mass transfer, fluid mechanics, conservation of energy, and colloidal phenomena. The experiments lead to an engineering design competition where contestants strive to make the **best tasting coffee** using the **least amount of energy** – a classic engineering optimization problem, but one that is both fun and tasty!

Anybody with access to a sink, electricity, and inexpensive coffee roasting and brewing equipment can do these experiments, either as part of a class or with your friends at home. *The Design of Coffee* will help you understand how to think like an engineer – and how to make excellent coffee!

**FEATURES:**
* Covers all aspects of making coffee, from green beans to the final brew
* Does not require calculus or college-level chemistry
* Emphasizes the scientific method and introductory data analysis with guided data sheets and lab report questions
* Includes 9 full experiments, each with background on key concepts, overview of necessary equipment, and detailed instructions:
  - Lab 1 - Reverse Engineering a Drip Coffee Brewer
  - Lab 2 - Process Flow Diagram and Mass Balances for Coffee
  - Lab 3 - The pH of Coffee and Chemical Reactions
  - Lab 4 - Measuring the Energy Used to Make Coffee
  - Lab 5 - Mass Transfer and Flux during Brewing
  - Lab 6 - Coffee as a Colloidal Fluid and the Effect of Filtration
  - Lab 7 - First Design Trials: Optimizing Strength & Extraction
  - Lab 8 - Second Design Trials: Scaling Up to 1 Liter of Coffee
  - Lab 9 - Design Competition and Blind Taste Panel

• **ENGR 102** – Engineering of Wine
• **ENGR 103** – Engineering of Beer
Thank you

• Next to present will be:

Sharon Walker, Associate Dean for Academic Student Affairs

Chinya Ravishankar, Associate Dean for Graduate Education & Research

This presentation brought to you by HotLabs productions