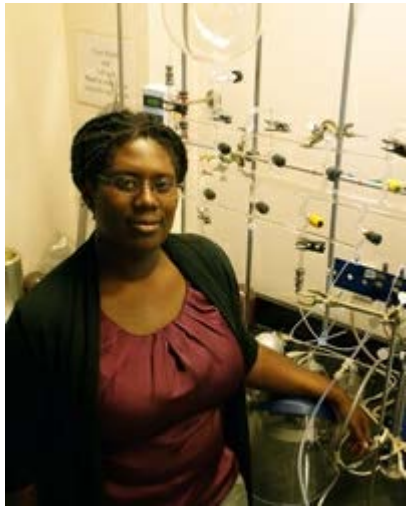
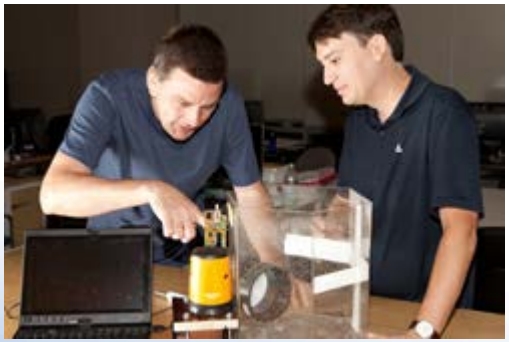
UNIVERSITY OF CALIFORNIA
UC RIVERSIDE

We Engineer Excellence

Bourns College of Engineering



BEST COLLEGES
U.S.News & WORLD REPORT
ENGINEERING PROGRAMS
2012



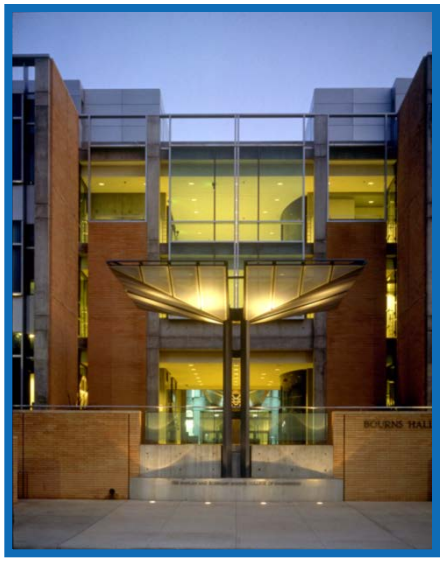
BCOE College Meeting

June 6, 2012

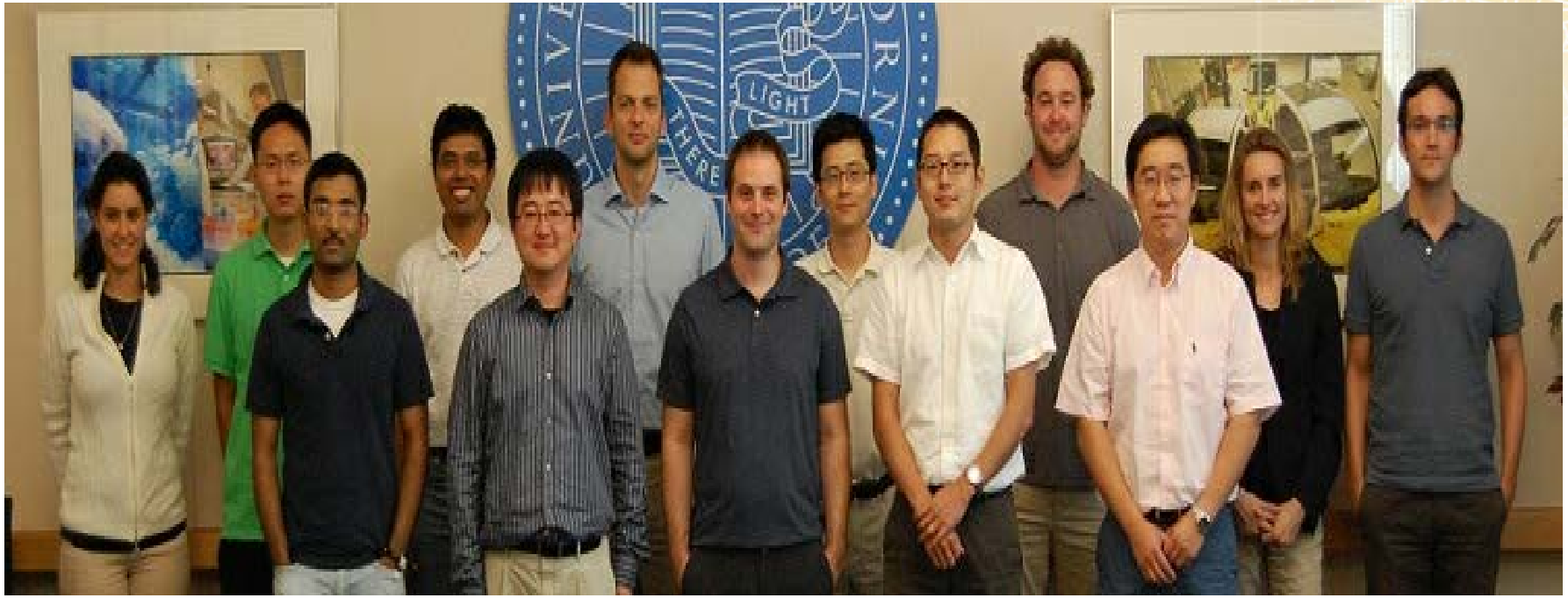
Special thanks to Jay Farrell who served as Chair of the Executive Committee

Bourns College of Engineering at a Glance

U.S. News Ranking	64th nationally (38th among public)
NRC Rankings	CEE, CSE, EE and ME in top quartile
Undergraduate Enrollment	2,138 (projected to increase to 2,500 by 2020)
Graduate Enrollment	520 (projected to increase to 850 by 2020)
Research Expenditures	$30+ million per year
Endowment Support	$37 million
Endowed Professorships	9
Accreditation	ABET (CHE,CEN, CS, EE, ENVE, ME) (BIEN and MSE new)
Diversity	33 percent URM (recipient of 2009 Claire Felbinger Award for Diversity from ABET for outstanding service to under-represented students)



BCOE Welcomes 11 Distinguished New Faculty to Its Ranks



UCR

Bourns College of Engineering

Mission and Vision

The Vision of the College of Engineering is to become a nationally recognized leader in engineering research and education.

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

Departments and Programs

- Bioengineering
- Chemical and Environmental Engineering
- Computer Science and Engineering
- Electrical Engineering
- Mechanical Engineering
- Materials Science and Engineering program (college-wide UG, campus-wide G)

Degrees

- B.S.: Bien, CHE, CEN, CS, EE, ENVE, Bus Info, ME, MSE
- BS/MS for high achieving students
- M.S. and Ph.D.: Bien, CEE, CEN, CS, EE, ME, MSE
- Online M.S. in engineering approved 2012
- First specialization to be offered in Bioengineering beginning in 2013

Research Centers

- Collaborative centers and initiatives attract research funding, providing valuable 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)
- Southern California Research Initiative for Solar Energy (SC-RISE)
- Center for Ubiquitous Communication by Light (UC-Light)
- Winston Chung Global Energy Center
- NSF I/UCRC --new

- Annual research expenditure: $35 million
- (Represents 29 percent of UCR funding)

MS Online

- The MS online degree program is self-supporting ($30k/ student).
- The income (10-10-80 model) goes to the department offering specialization to supports faculty (~$400 per student/offering), TA, direct costs and PhD student support.
- The program is targeted at practicing engineers allowing them to earn a master's degree through on-line courses or attending on-campus classes.
- The program combines engineering and professional development classes.
- The program allows student involvement in projects developed jointly between faculty and participating companies.
- Director, Professor Kambiz Vafai

MS online degree (36 units)

• Common Core Courses (offered at the college level)	- (16 units)
• Specialization Courses (offered by each department)	- (16 units)
• Independent Study Project (Supervised by the faculty)	- (4 units)
TOTAL	36 units

Specializations

- Bioengineering in 2013
- Additional specializations, 1-2 per year, up to maximum of 10.

Academic Standards

- Students entering the online M.S. in Engineering Program must meet same admission standards as those for BCOE's traditional M.S. degrees.
- In order to graduate, each student must complete a comprehensive exam or a M.S. project.
- Each course is taught under the oversight of an existing UCR department.

MS online classes

- The core courses will be taught by either BCOE faculty or practicing professionals.

- The specialization courses will be taught by BCOE faculty as **regular classes to on-campus MS and PhD students while being stored** (video, DVD or streaming) for students in remote locations. These students can attend regular on campus courses if they so choose. E.G., BIEN 223, 224, 249, and 264 for Bioengineering specialization.

- The approach will
  - assure the utmost in educational quality
  - Provide the greatest convenience to students
  - Provide efficiency to the faculty
  - Minimize the cost

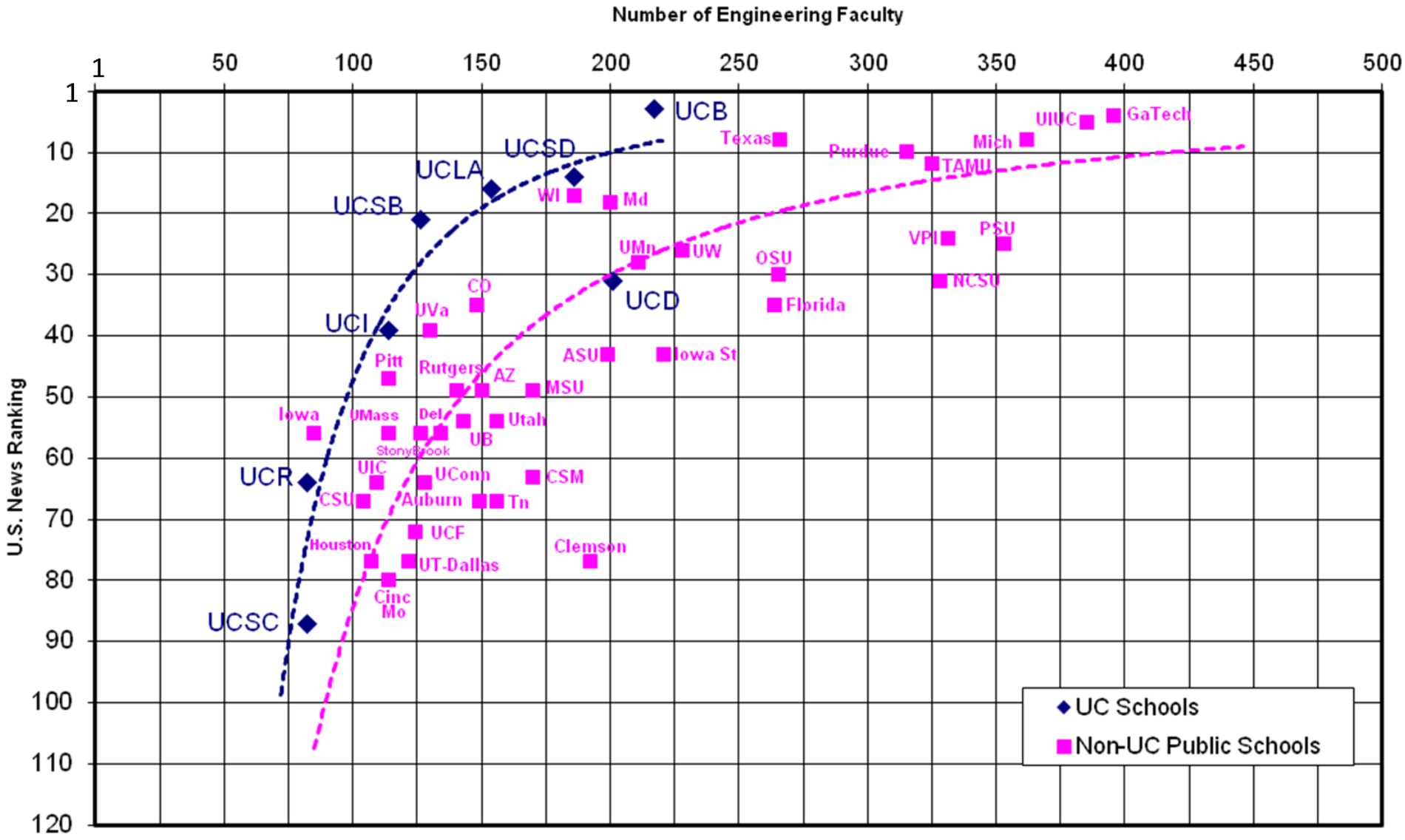
Common Core Courses - (16 units)

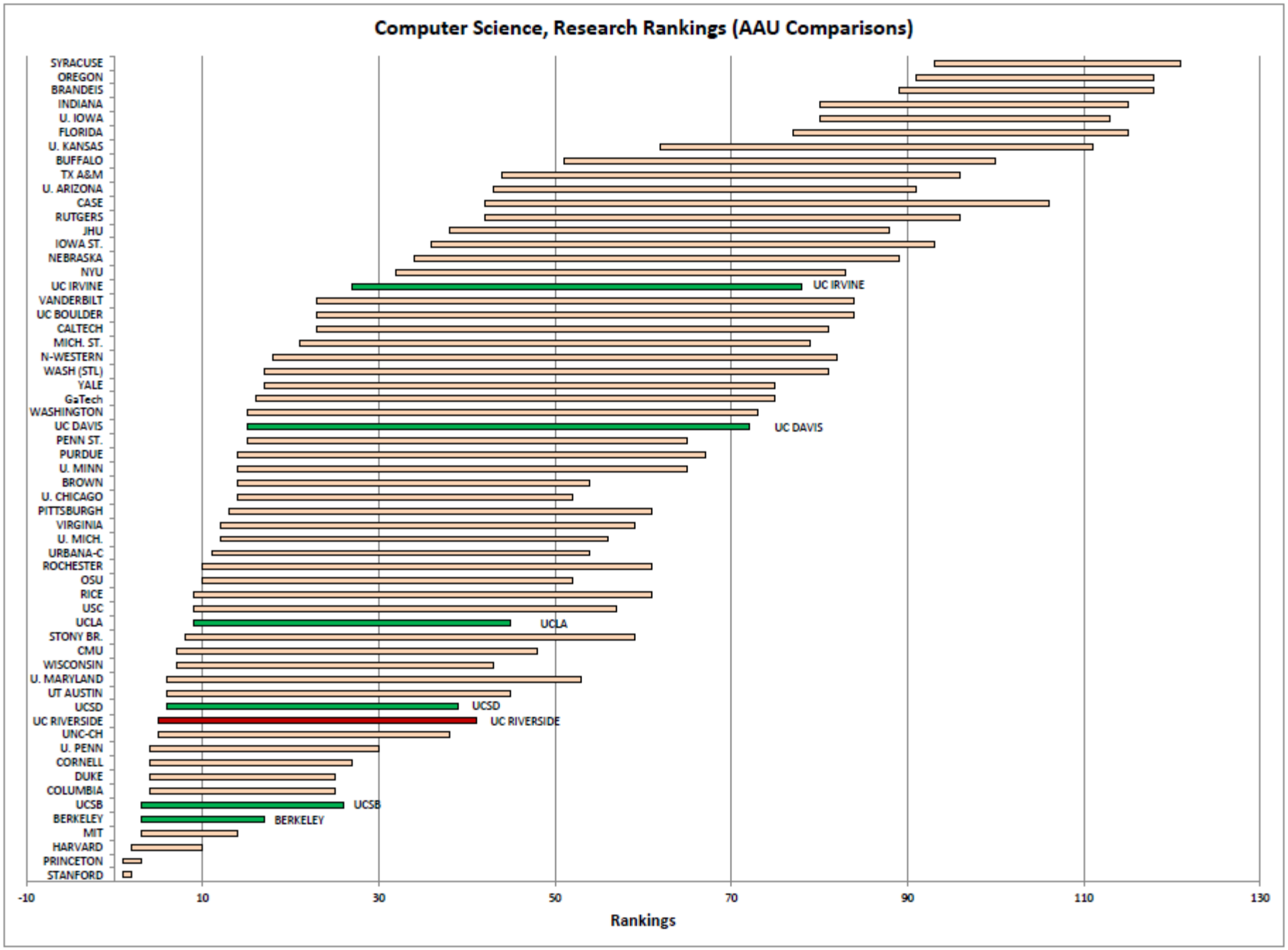
- Four 4-unit courses from the following tentative courses:
  - ENGR 200--Engineering in the Global Environment
  - ENGR—201--Principles of Engineering Management
  - ENGR 202--Introduction to Systems Engineering
  - ENGR 203--Technology Innovation and Strategy for Engineers
  - Others (Professional Communication & Information Management, Engineering Project Planning & Management, Engineering Analysis, Computer Methods in Engineering, Professional Practice, Management of Technology-based companies, Innovation and Entrepreneurship, Managerial Economics, …….)

- ENGR 296A (preparation for M.S. Comprehensive Examination).

- Each student will also be required to take a comprehensive examination or complete a M.S. design project.

Faculty Size vs 2013 US News Ranking




Computer Science, Research Rankings (AAU Comparisons)
SYRACUSE
OREGON
BRANDEIS
INDIANA
U. IOWA
FLORIDA
U. KANSAS
BUFFALO
TX A&M
U. ARIZONA
CASE
RUTGERS
JHU
IOWA ST.
NEBRASKA
NYU
UC IRVINE
VANDERBILT
UC BOULDER
CALTECH
MICH. ST.
N-WESTERN
WASH (STL)
YALE
GaTech
WASHINGTON
UC DAVIS
PENN ST.
PURDUE
U. MINN
BROWN
U. CHICAGO
PITTSBURGH
VIRGINIA
U. MICH.
URBANA-C
ROCHESTER
OSU
RICE
USC
UCLA
STONY BR.
CMU
WISCONSIN
U. MARYLAND
UT AUSTIN
UCSD
UC RIVERSIDE
UNC-CH
U. PENN
CORNELL
DUKE
COLUMBIA
UCSB
BERKELEY
MIT
HARVARD
PRINCETON
STANFORD
UC IRVINE
UC DAVIS
UCLA
UCSD
UC RIVERSIDE
UCSB
BERKELEY
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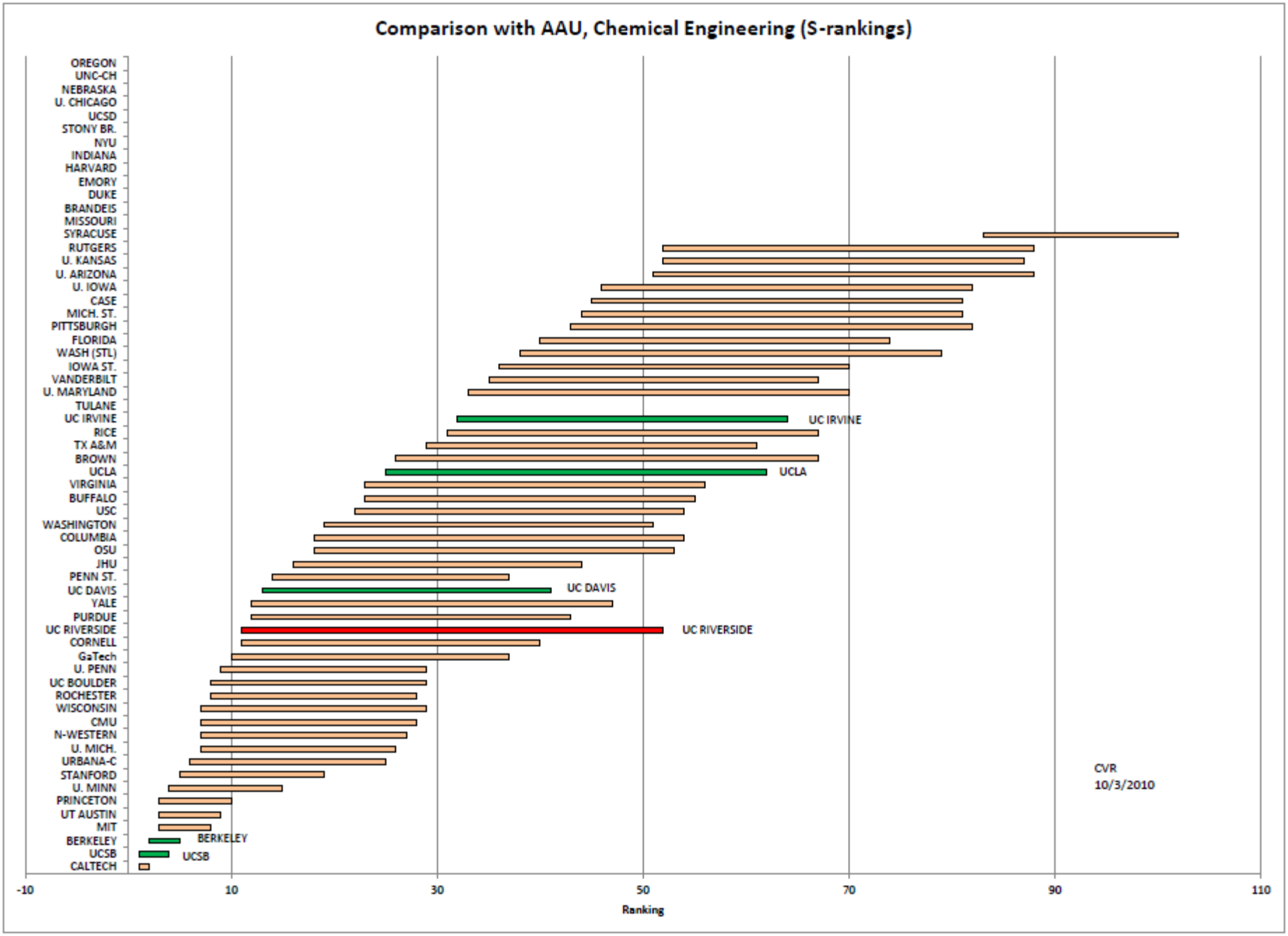
Rankings


Comparison with AAU, Chemical Engineering (S-rankings)
OREGON
UNC-CH
NEBRASKA
U. CHICAGO
UCSD
STONY BR.
NYU
INDIANA
HARVARD
EMORY
DUKE
BRANDEIS
MISSOURI
SYRACUSE
RUTGERS
U. KANSAS
U. ARIZONA
U. IOWA
CASE
MICH. ST.
PITTSBURGH
FLORIDA
WASH (STL)
IOWA ST.
VANDERBILT
U. MARYLAND
TULANE
UC IRVINE
RICE
TX A&M
BROWN
UCLA
VIRGINIA
BUFFALO
USC
WASHINGTON
COLUMBIA
OSU
JHU
PENN ST.
UC DAVIS
YALE
PURDUE
UC RIVERSIDE
CORNELL
GaTech
U. PENN
UC BOULDER
ROCHESTER
WISCONSIN
CMU
N-WESTERN
U. MICH.
URBANA-C
STANFORD
U. MINN
PRINCETON
UT AUSTIN
MIT
BERKELEY
UCSB
CALTECH
UC IRVINE
UCLA
UC DAVIS
UC RIVERSIDE
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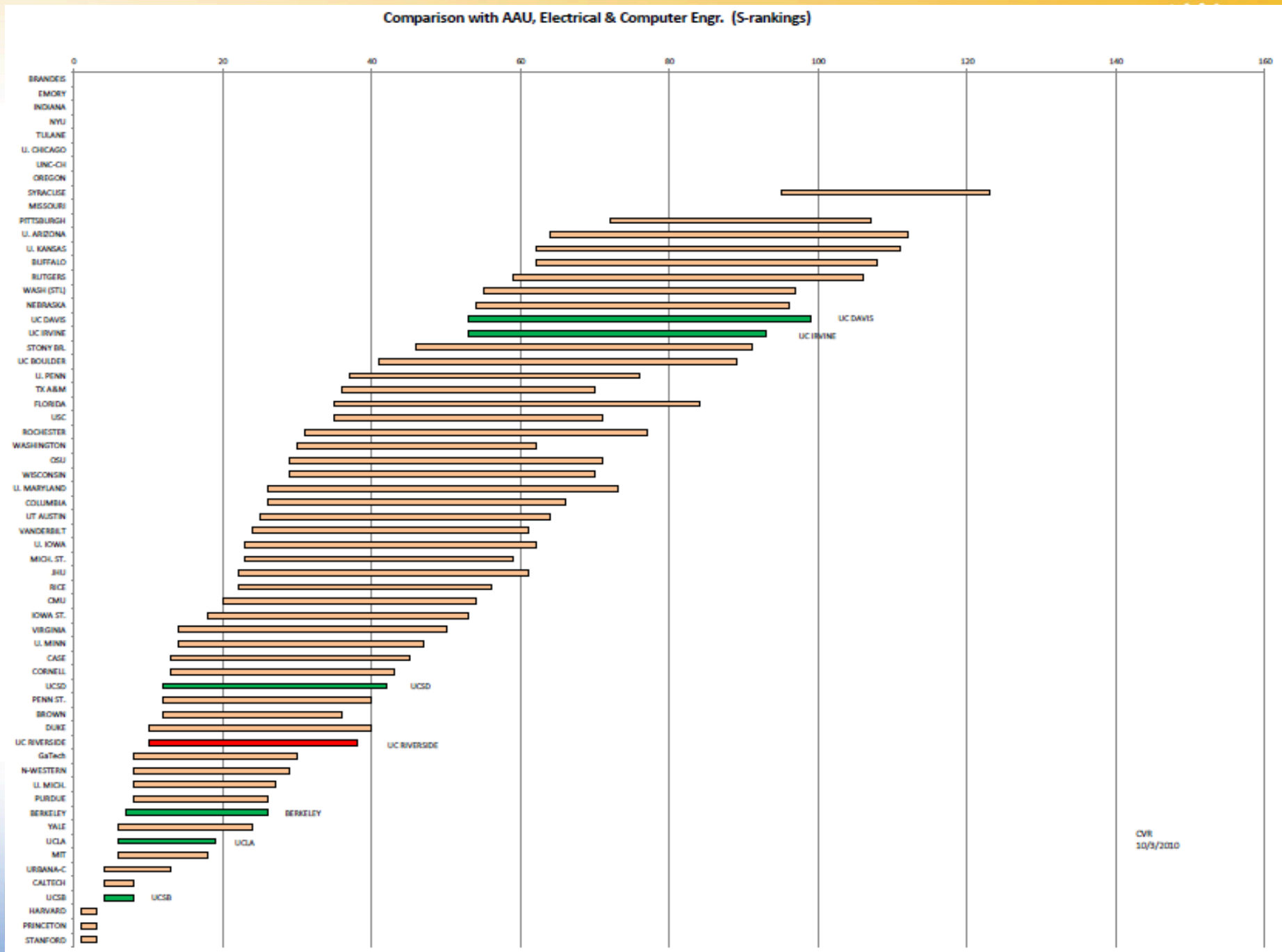
Ranking


Comparison with AAU, Electrical & Computer Engr. (S-rankings)
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UNC-CH
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SYRACUSE
MISSOURI
PITTSBURGH
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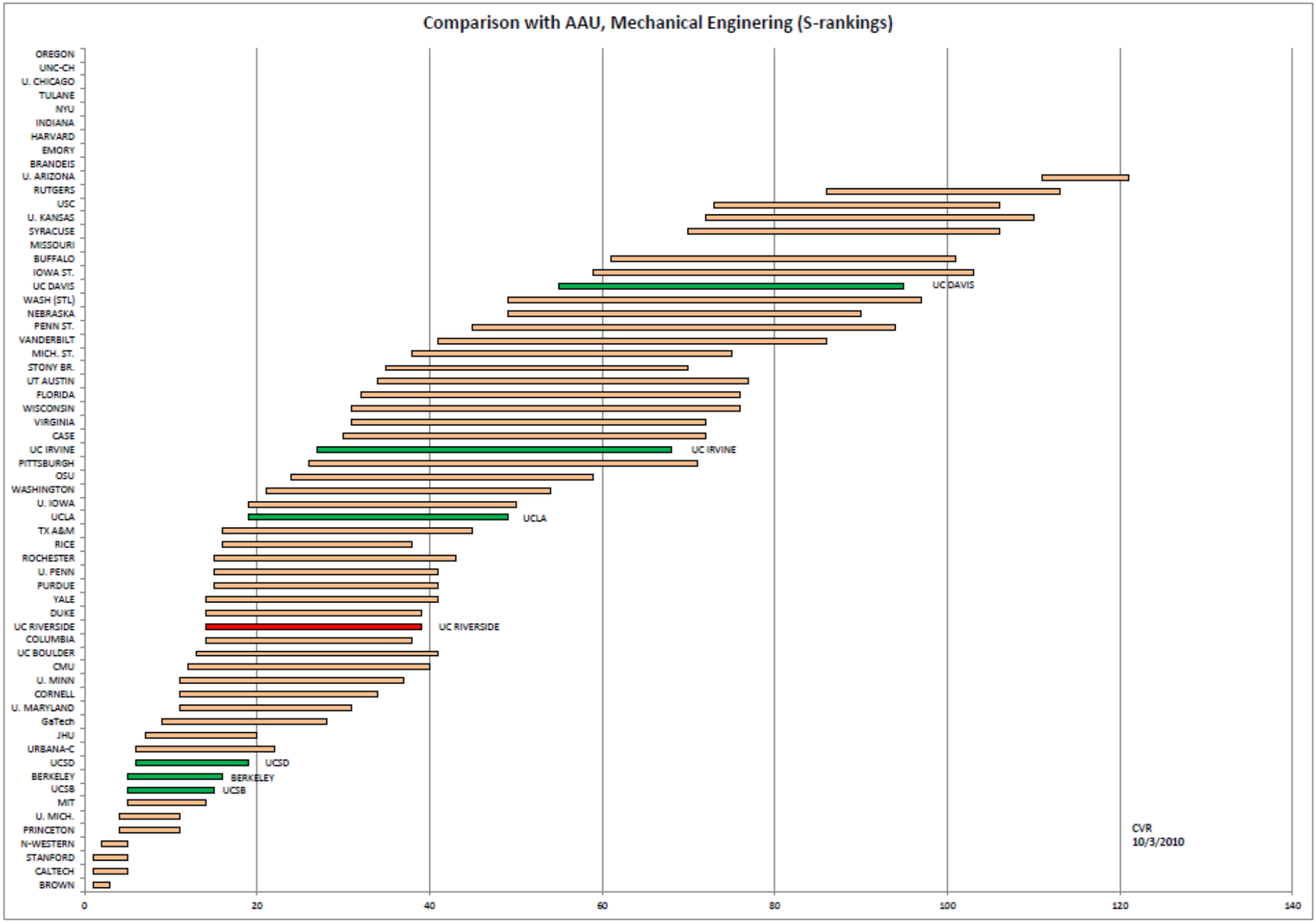
STANFORD
UC DAVIS
UC IRVINE
UCSD
UC RIVERSIDE
BERKELEY
UCLA
UCSB
CVR
10/3/2010


Comparison with AAU, Mechanical Enginering (S-rankings)
OREGON
UNC-CH
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NYU
INDIANA
HARVARD
EMORY
BRANDEIS
U. ARIZONA
RUTGERS
USC
U. KANSAS
SYRACUSE
MISSOURI
BUFFALO
IOWA ST.
UC DAVIS
WASH (STL)
NEBRASKA
PENN ST.
VANDERBILT
MICH. ST.
STONY BR.
UT AUSTIN
FLORIDA
WISCONSIN
VIRGINIA
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CALTECH
BROWN
UC DAVIS
UC IRVINE
UCLA
UC RIVERSIDE
UCSD
BERKELEY
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CVR
10/3/2010

Comparisons with Top 25 Engineering Colleges

	2010-11			2010-11
	US News 1 – 25*	US News 20 – 25*	UCB, UCSD, UCLA, UCSB *	BCOE
No. of Faculty	278	247	178 (BCOE Target: 140)	**79**
BS Degree/Faculty	3.5	3.1	3.3	**2.6**
BS Enroll/Faculty	18.5	17.2	17.2	**25.95**
MS Enroll/Faculty	2.6	2.1	2.6	**1.06**
PhD Enroll/Faculty	4.4	3.7	5.3	**5.05**
Research K$/Faculty	$598.1	$503.6	$734.1	**$432.1**

*Indicates averages were used.
NOTE: several institutions ranked 1-25 did not report research $$$.
Amounts reflected include only those institutions that reported data.

Comparisons with UCSB COE

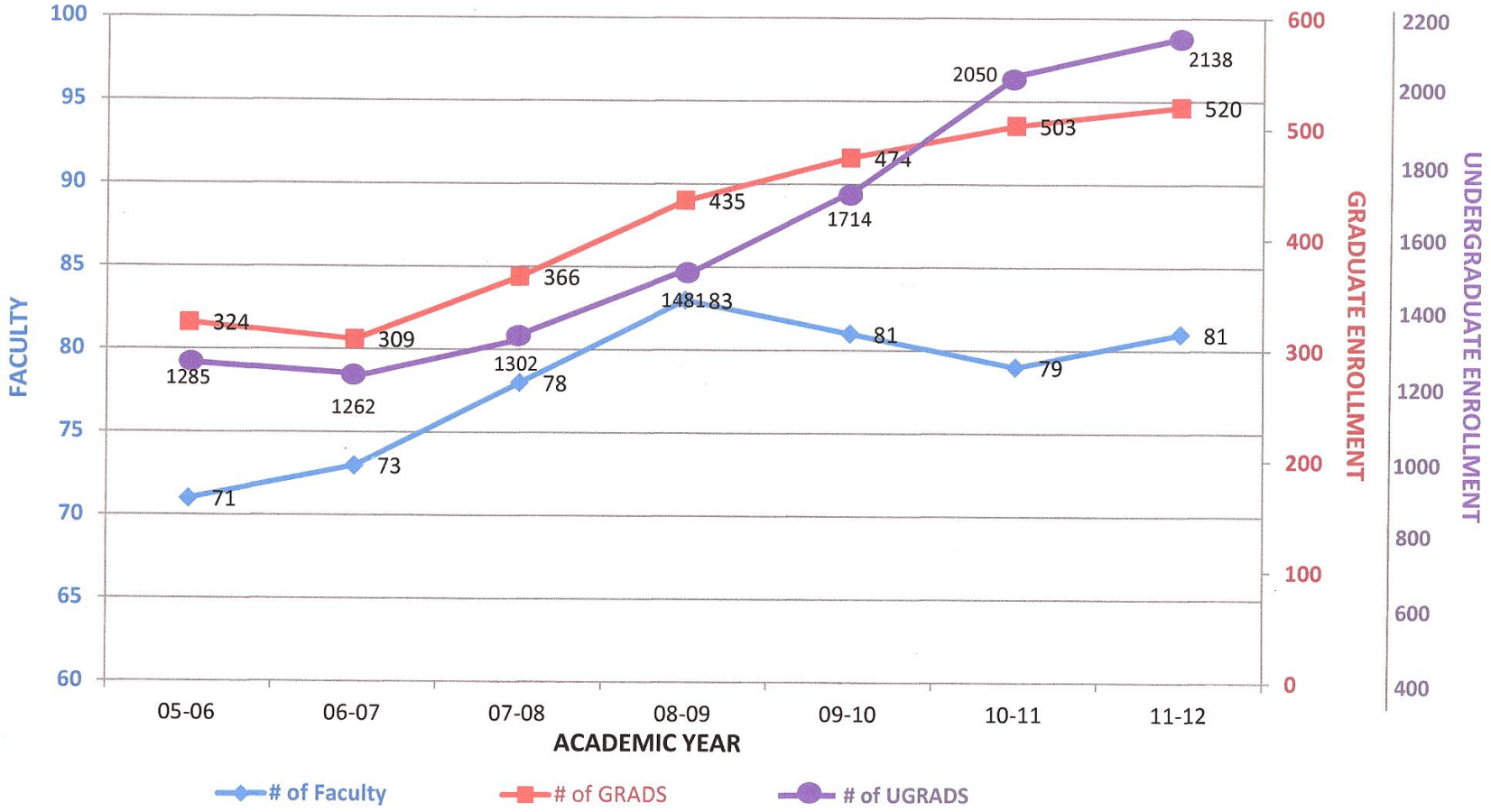
(UCSB data is from FY 08/09; BCOE data is latest available)

UCSB Model for Modified Student Workload = 1xLD+ 1.5xUD+ 2.5xG1+ 3.5XG2

METRIC	UCSB	UCR
Ladder Faculty Headcount	141	**79**
Undergraduates		
Total Undergraduates	1,090	**2,050**
Undergrads/Ladder Faculty Headcount	7.73	**25.95**
Graduate Students		
Total Grad Students		
MS	117	84
PhD	515	399
Grad Student/Ladder Faculty	4.48	**6.11**
Student Workload FTE/Faculty Headcount:		
Undergrad (Unweighted)	4.74	**10.61**
Undergrad (Weighted)*	6.41	**13.14**
Grad (Unweighted)	4.45	**5.62**
Grad (Weighted)*	12.59	**15.85**
Total Undergrad & Grad (Unweighted)	9.19	**16.23**
Total Undergrad & Grad (Weighted)*	19.00	**28.99**
Extramural Support		
Proposals Submitted/Faculty Headcount/yr	3.87	3.19
Average Proposal Dollars	$667,913	$219,224
Awards/Faculty Headcount/yr	2.37	2.49
Proposal Win Rate	61.17%	78.17%
Average Award Dollars/Faculty Headcount	$430,616	$444,440

Permanent Budget Comparison
UCSB COE vs. UCR BCOE

	2008-09 UCSB COE	2010-11 UCR BCOE
COE Permanent Budget	$28,642,506	$18,939,271
COE Ladder Faculty Headcount	141	79
COE Total Student Headcount	1,721	2,533
COE Permanent Budget:		
per Ladder Faculty Headcount	$203,138	$239,738
per Total Student Headcount	$16,643	$7,477
per Total Student Workload FTE (Unweighted)	$22,101	$14,773
Percent of Total University Budget	6.10%	4.00%
Campus-Wide		
Permanent Budget	$471,928,795	$469.769,058
Ladder Faculty Headcount	880	654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GRADUATE ENROLLMENT
2200
2000
1800
1600
1400
1200
1000
800
600
400
UNDERGRADUATE ENROLLMENT
05-06
06-07
07-08
08-09
09-10
10-11
11-12
ACADEMIC YEAR
324
309
366
435
474
503
520
1285
1262
1302
1714
2050
2138
71
73
78
1481 83
81
79
81
# of Faculty
# of GRADS
# of UGRADS

Distinguished Faculty

Our faculty are our greatest asset. They continue to distinguish themselves through research, teaching and service

- **Number of faculty: 83**
- **Goal for 2020: 140**
- **Searches underway: 10**
- **Fellows of professional societies: 69**
- **NSF CAREER and Young Investigator Awards: 25**
- **Members of NAE: 1+1**

Faculty Awards, examples

Career Award Winners

Harsha Madhyastha

Akua Asa-Awuku

Iulian Neamtiu

Vagelis Hristidis

UCR

Bourns College of Engineering

Professors David Kisailus (left) and Dimitrios Morikis (right) have been selected as this year's recipients of the Chancellor's Faculty Mentor Award for Excellence in Undergraduate Research and Creative Activity.

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Bourns College of Engineering

Gupta Earns 2012 Doctoral Dissertation Advisor / Mentor Award

Albert Wang Named President-Elect of IEEE Electron Devices Society

Assistant Professor of Bioengineering B. Hyle Park has been chosen to receive the Outstanding Engineering Educator Award

Alex Balandin Elected Fellow of the Institute of Physics & Fellow of the American Physical Society

UCR

Bourns College of Engineering

From Restoring Carousel Horses to Winning $300,000 Innovation Prize

Huinan Liu and Lorenzo Mangolini earn NSF BRIGE Awards

Congratulations to Assistant Professor of Electrical Engineering Anastasios Mourikis for being named a UC Riverside Hellman Fellow for 2011-12

UCR

Bourns College of Engineering

Srikanth Krishnamurthy Named Fellow of IEEE

Yingbo Hua Elected Fellow of AAAS

Congratulations to Professor of Mechanical Engineering Kambiz Vafai for receiving the Interpore Honorary Member Award 2011

Video Bioinformatics NSF IGERT Fellow Albert Cruz Wins NSF 2012 Video and Poster Competition (June 5. 2012)

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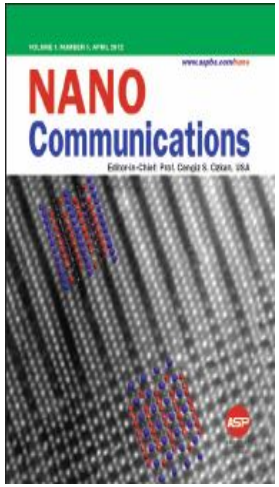
Bourns College of Engineering

Cengiz Ozkan , named editor-in-chief of the new international journal *Nano Communications*.



Jie Chen named 2011 International Federation of Automatic Control (IFAC) Fellow

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Bourns College of Engineering

Personal celebrations

Javier Garay wedding
May 19, 2012

Karleigh Ricks born March 20 to proud Momma Amy Ricks from CSE

Jennifer Parker UCR BS Biochemistry '03, PhD Cell, Molecular & Developmental Biology '08) graduated from Golden Gate Law School in San Francisco with a specialization in Intellectual Property Law.

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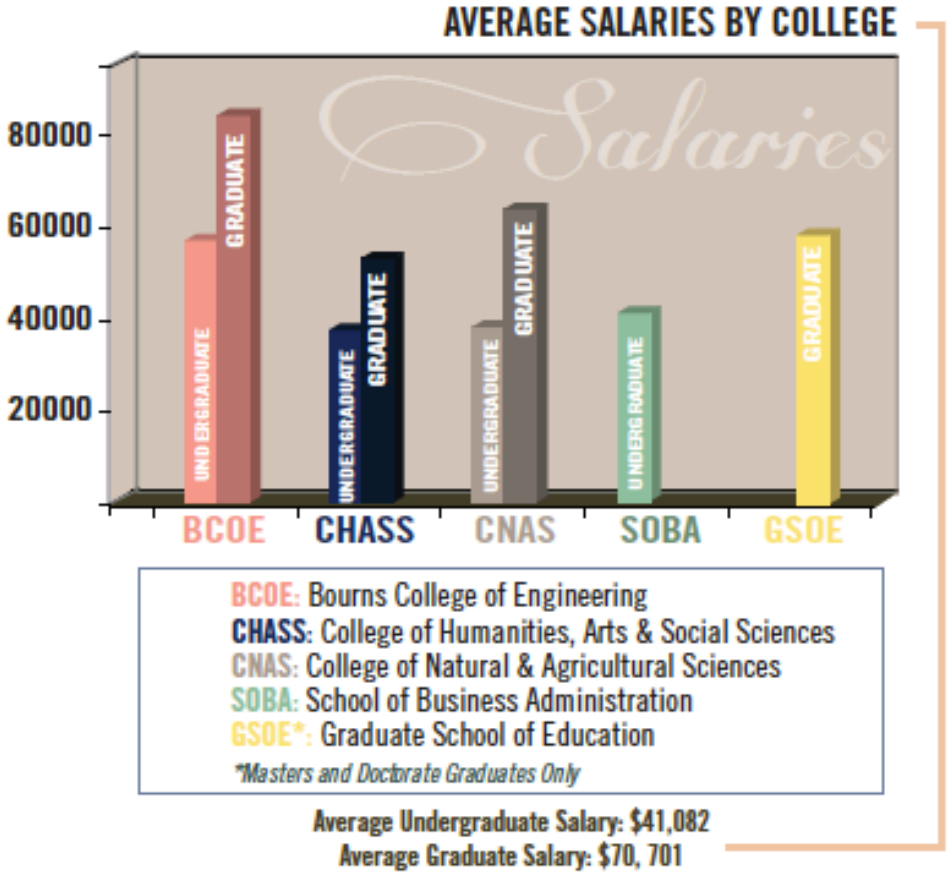
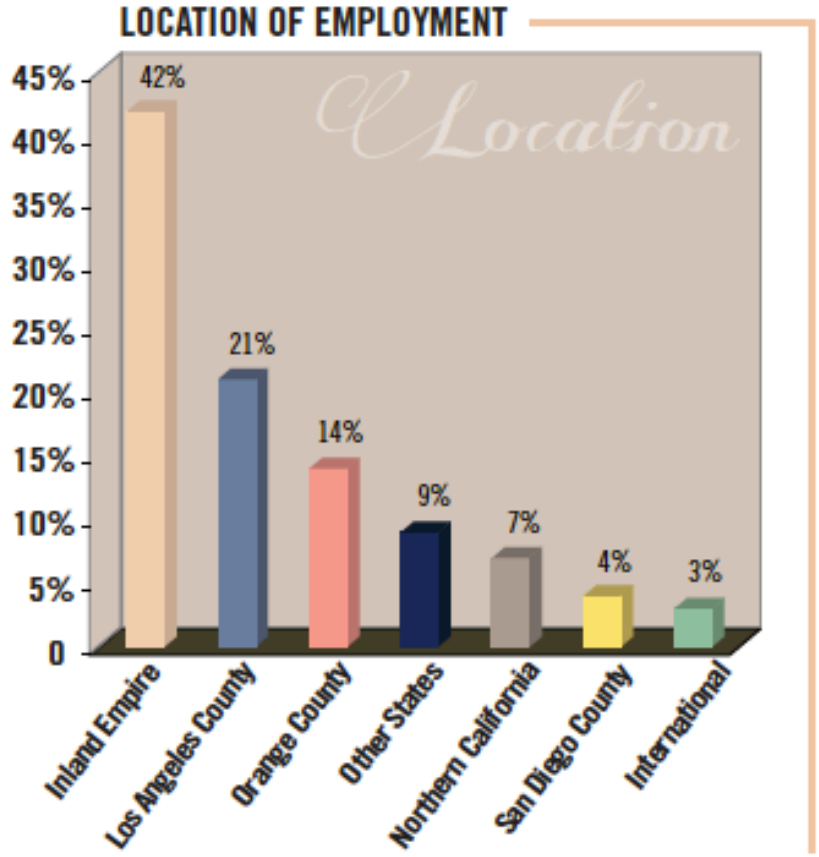
Bourns College of Engineering

Don Davidson won the 2012 Southern California Time Trial Series Championship (cycling) for ***his*** age group.

Regional Resource for a Highly Skilled Workforce

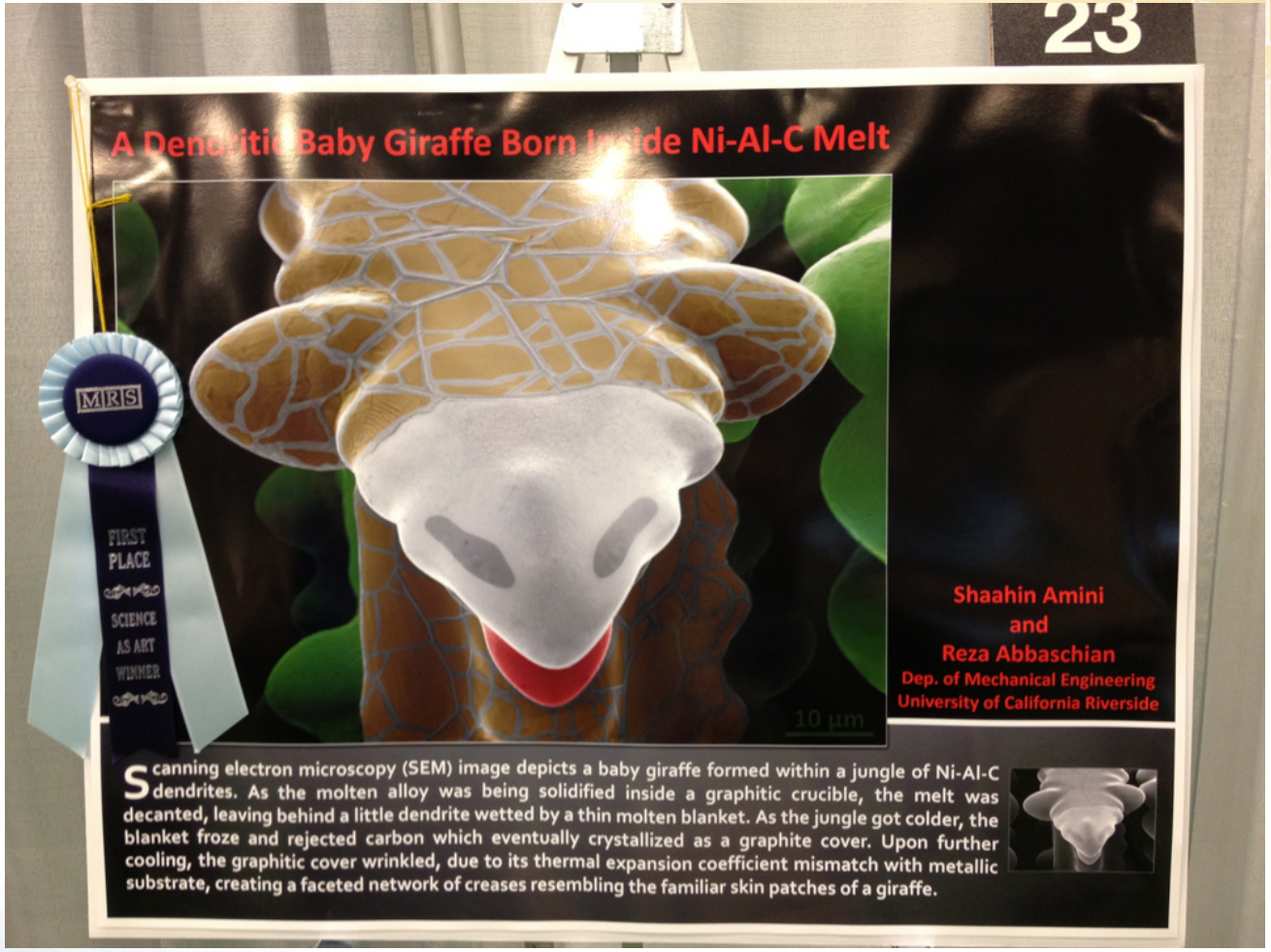




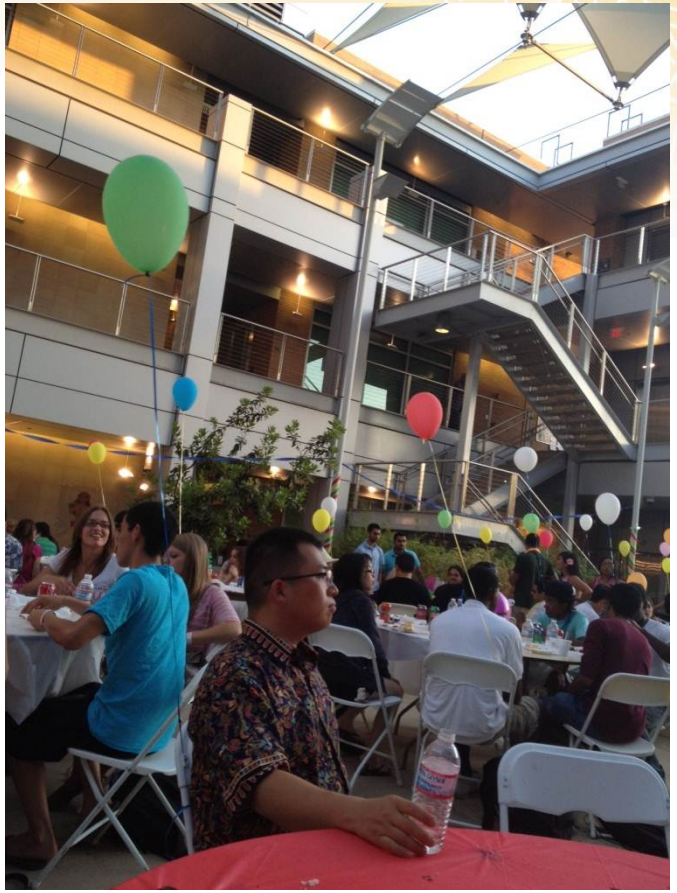
Student Achievements

- Five NSF graduate fellowships 2011
- First place at WERC International Environmental Design competition
- Finalists at EPA P3 competition
- Winners of Microsoft Imagine Cup programming competition
- Outstanding Engineering Student Award, Orange County Engineering Council

Scientific discoveries and creativity



End of the year celebration



The Dream Team

Community Outreach

The college engages in numerous ways with the local community, the region and world

- Bourns Space, Science and Engineering Day
- MESA Robotics Competition
- Engineers Without Borders - Guatemala
- Wind Turbine Competition for region's community colleges
- SPIRIT Program to engage local teachers in promoting math and science
- IEEE Boy Scout Merit Badge Day

Global Partnerships

The college has numerous research and collaborative agreements with organizations throughout the world

China:
- Jiao Tong University
- Nanjing University
- Tsinghua University

Japan:
- City of Sendai
- Josai International University
- Tohoku University

United States:
- Naval Surface Warfare Center
- …….
- …….

- Korea:
- Chungnam National University
- Hanbat University
- Hanyang University
- Korea Institute of Materials Science
- LG Innotek

Multi City-University Collaboration

UC RIVERSIDE UNIVERSITY OF CALIFORNIA
Bourns College of Engineering

BOURNS COLLEGE OF ENGINEERING
Engineering college with world-renowned faculty, growing and making research contributions to make a difference in our world.

CITY OF SENDAI
- The major commercial center for the North of Japan
- Sister city of Riverside, California for more than 50 years

TOHOKU UNIVERSITY
- Ranked as the best Asian multi-disciplinary university in 1999 (Asiaweek)
- Leader in the material science field in Japan
- Well-known for its science and engineering programs contributing to development of high-tech industry

CITY OF RIVERSIDE
- One of the fastest growing metropolitan areas in the U.S.
- Top Seven Intelligent Communities of the Year 2012
- Smart21 Intelligent Community of the Year 2012

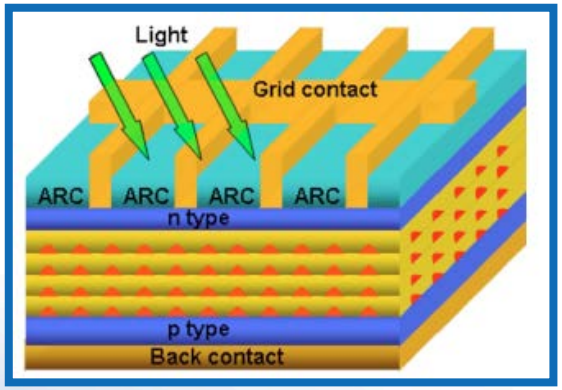
TOP Intelligent Communities of the Year

SMART 21 Intelligent Communities of the Year

UCR

Southern California Research Initiative in Solar Energy (SC-RISE)

- Collaboration with City of Riverside, Riverside Public Utilities and Tohoku University
- Fundamental Research in solar devices and solar-thermal technology
- Applied research
- Training and outreach



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Bourns College of Engineering

Global Partnerships

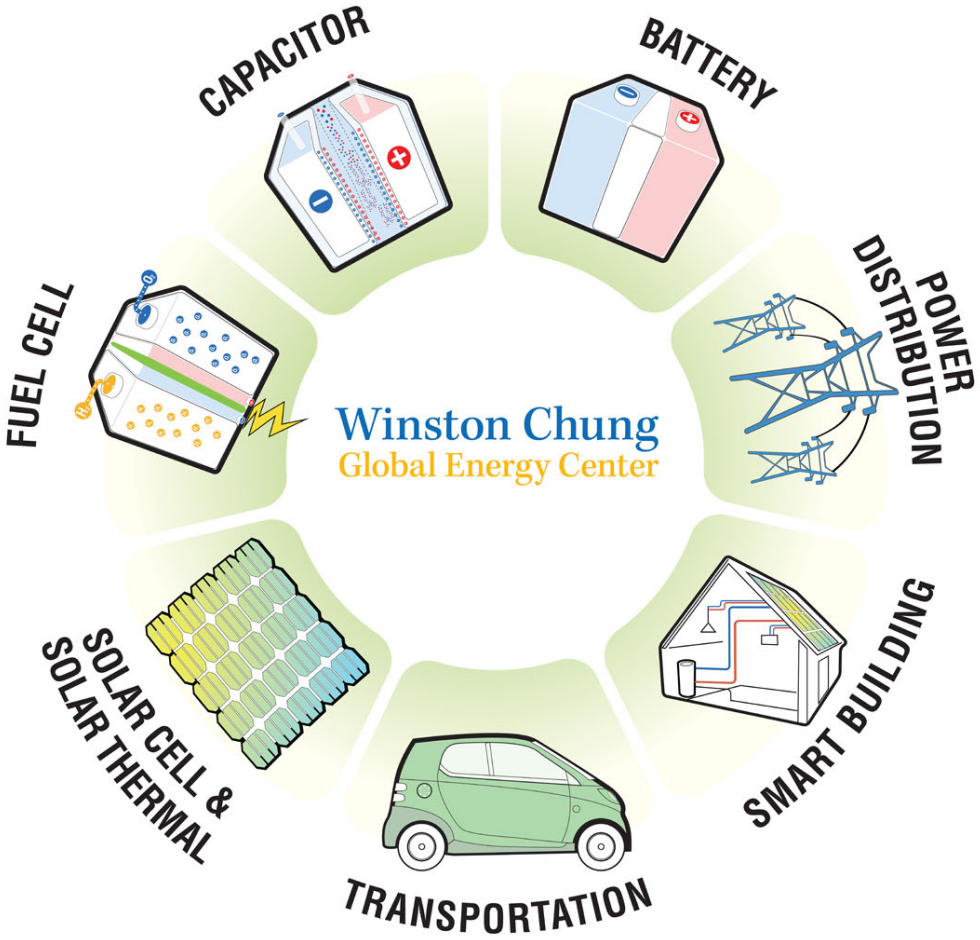
Chinese battery inventor and entrepreneur Winston Chung's $10 million gift to the college, the largest-ever individual donation to UCR.

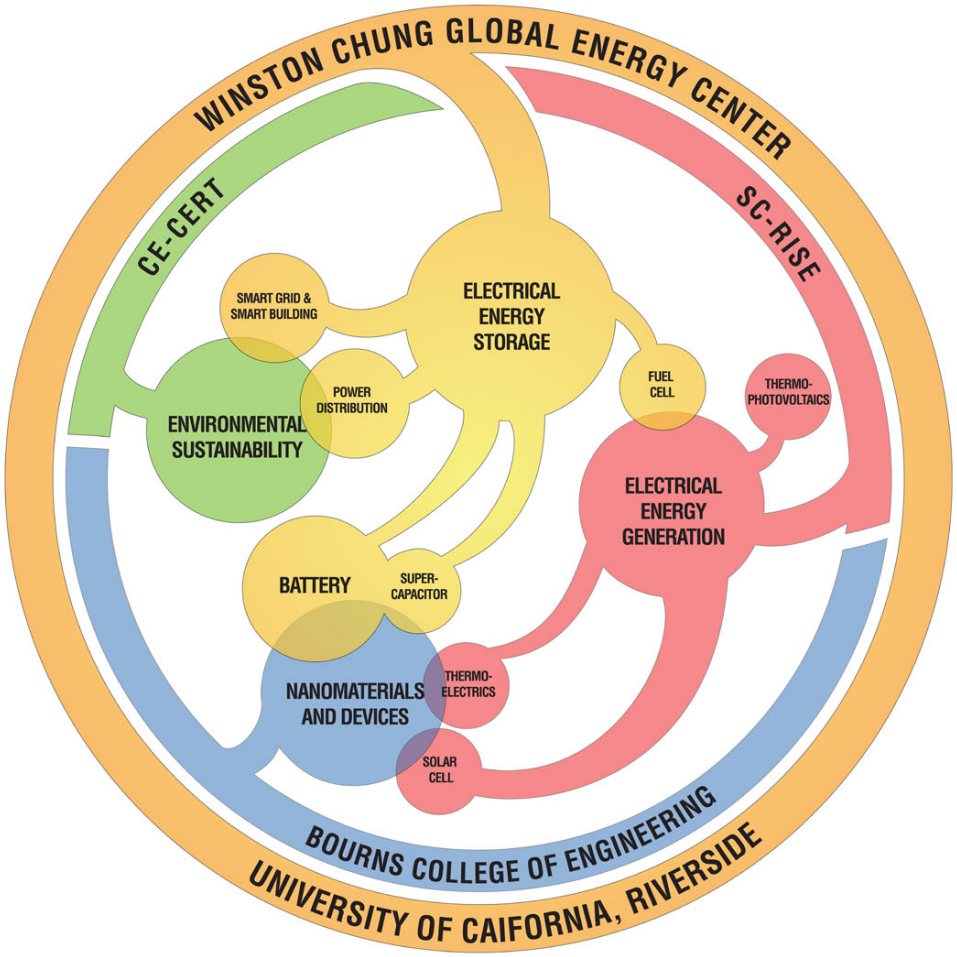
- Endowment established:
- Winston Chung Global Energy Center
- Winston Chung Endowed Professorship in Sustainability
- Winston Chung Endowed Professorship in Energy Innovation David Kasailus)
- New funding announced Novembe
- $2.5 million rare earth lithium-ion to power Winston Chung Hall
- $600,000 funding for energy storag research
- Upcoming AQMD, ~ $2.5 million
-

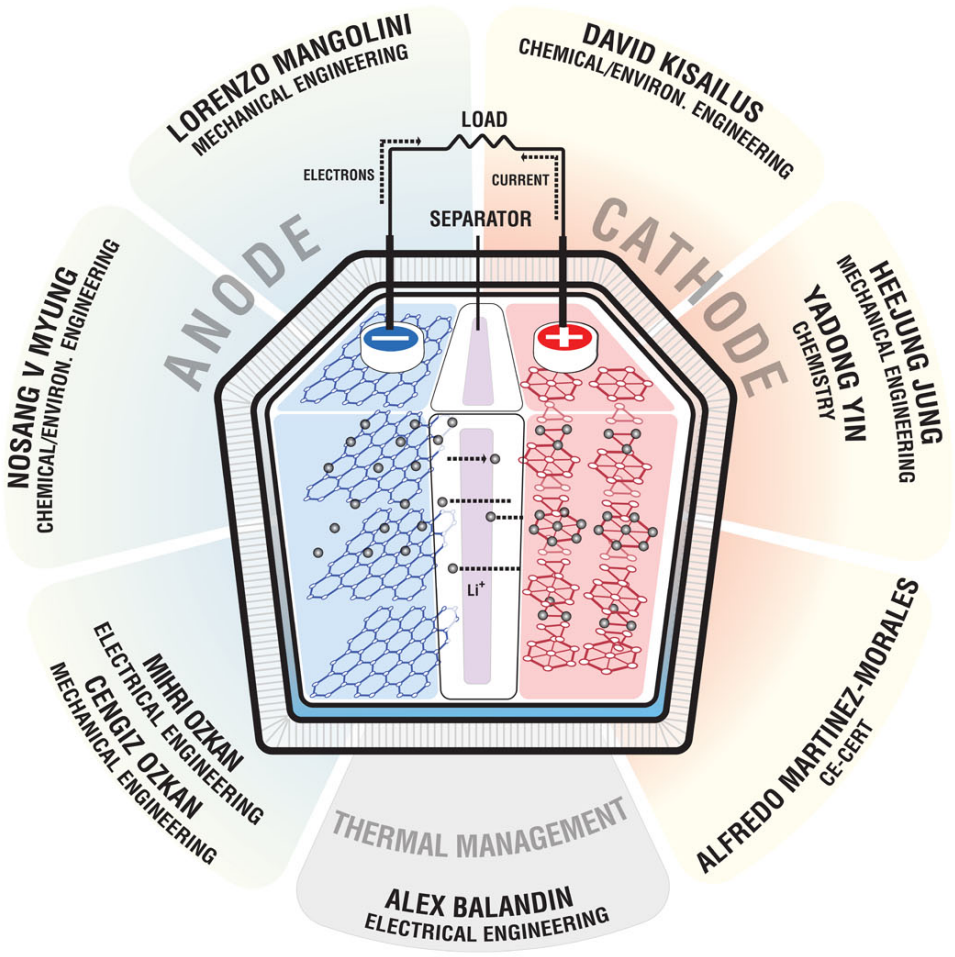
Winston Chung Hall

UCR

Bourns College of Engineering

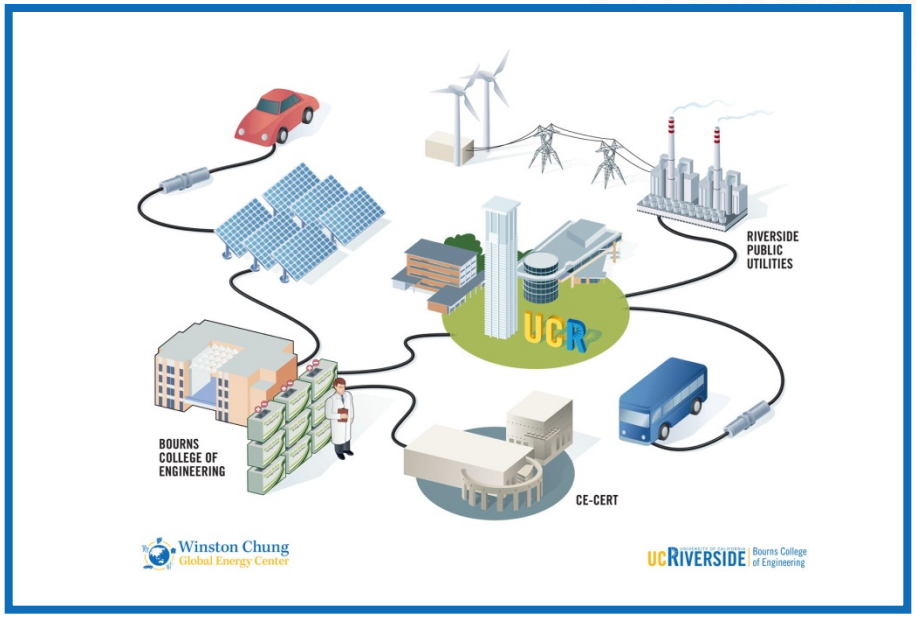

CAPACITOR
BATTERY
POWER DISTRIBUTION
SMART BUILDING
TRANSPORTATION
SOLAR CELL & SOLAR THERMAL
FUEL CELL
Winston Chung
Global Energy Center


WINSTON CHUNG GLOBAL ENERGY CENTER
CE-CERT
SC-RISE
SMART GRID & SMART BUILDING
ELECTRICAL ENERGY STORAGE
POWER DISTRIBUTION
ENVIRONMENTAL SUSTAINABILITY
FUEL CELL
THERMO-PHOTOVOLTAICS
ELECTRICAL ENERGY GENERATION
BATTERY
SUPER-CAPACITOR
NANOMATERIALS AND DEVICES
THERMO-ELECTRICS
SOLAR CELL
BOURNS COLLEGE OF ENGINEERING
UNIVERSITY OF CAIFORNIA, RIVERSIDE


LORENZO MANGOLINI
MECHANICAL ENGINEERING
DAVID KISAILUS
CHEMICAL/ENVIRON. ENGINEERING
LOAD
ELECTRONS
CURRENT
SEPARATOR
ANODE
CATHODE
NOSANG V MYUNG
CHEMICAL/ENVIRON. ENGINEERING
HEEJUNG JUNG
MECHANICAL ENGINEERING
YADONG YIN
CHEMISTRY
Li+
MIHRI OZKAN
ELECTRICAL ENGINEERING
CENGIZ OZKAN
MECHANICAL ENGINEERING
ALFREDO MARTINEZ-MORALES
CE-CERT
THERMAL MANAGEMENT
ALEX BALANDIN
ELECTRICAL ENGINEERING

$2-million AQMD Grant to Develop Renewable Transportation Solutions

- Project based at CE-CERT in collaboration with City of Riverside, Riverside Public Utilities, Riverside Transit Agency, and Bourns Inc.
- Will use Winston Batteries and technology developed by Balqon
- Solar energy will charge batteries, supplying power for facilities and charging stations for vehicles on campus and in the City of Riverside



UC Riverside's Bourns College of Engineering to Showcase Research at 26th International Electric Vehicle Symposium

UCR

Bourns College of Engineering

The Bourns College of Engineering Strategic Plan April 2011

We Engineer Excellence

- Undergraduate Education
- Undergraduate Research
- Graduate Education
- Faculty
- Research
- Community Engagement
- Advancement

Strategic Research Initiatives

BCOE has identified 11 additional areas of strength where investment of resources is likely to produce significant improvements in sponsored research activity, graduate enrollment, faculty recruitment, and overall campus prominence.

- Clean, Safe, and Sustainable Energy
- Computational Materials
- Cyber-Physical Systems
- Health Informatics
- High-Throughput Screening and Drug Design
- CenterS for Environmental Research and Technology
- Next-Generation Electronics
- Safety and Security
- Sensing, Communications, and Imaging
- Medical Devices
- Sustainable Water Quality and Quantity

Thank You

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Bourns College of Engineering