CLIMATE CHANGE
FACULTY RETREAT AGENDA ~ June 11, 2010

ENGINEERING DIVERSITY: Setting Directions for the Future

9:30 – 10:00  Welcome, Overview, and Abbreviated State of the School  -Frieder Seible
10:00 – 10:45  Panel of Alumni  -Michael Alston, Michelle Poindexter Baeza Victor Reyes, Alejandra Vasquez
10:45 – 11:15  Industry Perspective: Northrop Grumman’s Commitment to Diversity  -Michelle Bailey
11:15 – 12:00  Panel of Students  -Espoir Kyubwa, Becca Kasl, Hared Ochoa
12:00 – 12:30  Center for Excellence in Engineering & Diversity  -Rick Ainsworth
12:30 – 1:15  Lunch by assigned Topic Groups  -Jeanne Ferrante
1:15 – 2:00  How can we Increase, Retain and Support Student Diversity?
(Breakout Groups)  How can we Increase and Support Faculty Diversity?
How could a Center help us achieve our Diversity Goals?
How can we make our JSOE Climate more welcoming and inclusive?
How can a JSOE Diversity Advisory Council change our climate?
2:00 – 2:30  Group Feedback Summaries (5 min ea)
2:30 – 3:00  Setting Direction for the Future, Wrap-up  -Frieder Seible

2010 JSOE Faculty Retreat Climate Change
Jacobs School New Undergraduate Engineering Enrollment

2010 JSOE Faculty Retreat Climate Change
Engineering Building Unit IV

http://smeb-bldg.ucsd.edu/view/viewer_index.shtml?id=593

- Home for NanoEngineering, Structural Engineering, Visual Arts Studios
- Serving: 1180 students; 50 faculty
- Construction expected to be completed 2012/2013
- Architects: Muller/ Hull and Safdie Rabines Architects

2010 JSOE Faculty Retreat Climate Change
Spring 2010 Projects

An innovative community and global engagement program in which multi-disciplinary teams of students solve engineering and technology problems for non-profit organizations in San Diego and around the world.

Community Client: Gawad Kalinga
ONE VILLAGE PHILIPPINES PROJECT: Design and build a sustainable community housing 30 families in the Philippines.

Community Client: Save Our Children’s Sight
DIGITAL VISION SCREENING: Design and update a non-invasive, digital vision screening system that identifies children with potential eye problems and will lead to more comprehensive vision care for low-income preschoolers.

Community Client: National Federation for the Blind
GROCERY SHOPPING ASSISTANT FOR THE BLIND: Design a system to help the blind shop for groceries independently through the use of an innovative handheld device.

Community Client: Town & Country Learning Center
COMMUNITY CONTENT AND DISPLAY SYSTEM: Build a high-resolution display and content visualization system to monitor and improve several measures of “community well-being” for a learning center in an inner-city housing development.

Community Client: JSG/Habitat for Humanity
SOLAR ARRAY/GREEN HOME: Collaborate with students from San Diego State and the NewSchool of Architecture to design and build a solar array for a warehouse as well as a “green” home for Habitat for Humanity.

Community Client: Engineers Without Borders
SOLAR POWER PROJECT-KENYA: Design and build a prototype for a solar electric installation for a computer training center in Mbita, Kenya.

Community Client: San Diego Teachers & Students
MIDDLE SCHOOL ENGINEERING & ENVIRONMENTAL EDUCATION: Develop an environmental sensor network to bring an interactive, hands-on engineering and environmental education curriculum to middle school classrooms.

Community Client: UCSD Student-Run Free Clinic
DIGITAL RECORD SYSTEM: Develop a digital record system to provide check-in, clinic visit, pharmacy and other modules for the clinicians of a free community clinic.

Community Client: UCSD Triathlon Team
GREEN TRAINER: Design and build a durable, stationary trainer that harvests the energy generated by the triathletes in training and feeds it back to the UCSD grid.

UCSD Jacobs School of Engineering

2010 JSOE Faculty Retreat Climate Change
Team Internship Program Summer 2010   preview

<table>
<thead>
<tr>
<th>Team Internship Program</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>*2010</th>
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<tbody>
<tr>
<td>Students</td>
<td>3</td>
<td>18</td>
<td>35</td>
<td>50</td>
<td>61</td>
<td>72</td>
<td>93</td>
<td>120</td>
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<tr>
<td>Teams</td>
<td>1</td>
<td>5</td>
<td>9</td>
<td>18</td>
<td>20</td>
<td>29</td>
<td>37</td>
<td>52</td>
</tr>
<tr>
<td>Companies</td>
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<td>5</td>
<td>8</td>
<td>14</td>
<td>15</td>
<td>14</td>
<td>16</td>
<td>39</td>
</tr>
<tr>
<td>New sponsors</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>8</td>
<td>4</td>
<td>3</td>
<td>6</td>
<td>23</td>
</tr>
<tr>
<td>Returning sponsors</td>
<td>3</td>
<td>1</td>
<td>3</td>
<td>6</td>
<td>11</td>
<td>11</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Multiple teams</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>International teams</td>
<td>1</td>
<td>2</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* In progress

* In progress
Team Internship Program Summer 2010
52 Teams, 39 Companies; 6 International Teams

Schaan, Liechtenstein
Beijing, China
Osaka, Japan

Guangzhou, China
Shenzhen, China
Seoul, Korea

2010 JSOE Faculty Retreat Climate Change
# Operations Budget (in $1000)

<table>
<thead>
<tr>
<th>Start 09/10</th>
<th>$10,244</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reductions</strong></td>
<td></td>
</tr>
<tr>
<td>09/10</td>
<td>-$600</td>
</tr>
<tr>
<td>10/11 (estimated)</td>
<td>-$1,514</td>
</tr>
<tr>
<td></td>
<td>-$2,114</td>
</tr>
<tr>
<td><strong>Actions to Date</strong></td>
<td></td>
</tr>
<tr>
<td>Reduce Dean/Central Office</td>
<td>$442</td>
</tr>
<tr>
<td>IT Consolidation</td>
<td>$583</td>
</tr>
<tr>
<td></td>
<td>$1,025</td>
</tr>
<tr>
<td><strong>Still to be Done</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$1,089</td>
</tr>
</tbody>
</table>
Inaugural NanoEngineering Class

Starts Fall 2010:
- 13 students already enrolled
- BS, MS, and PhD

Objectives:

- Provide grounding in nanoscale science and engineering, with understanding of materials at the atomic and nanometer scales, including the relationship between the scale and the properties of materials.

- Educate a new generation of engineers who can seed high-technology companies as nanotechnology results in a new industrial revolution.

- Form strong multidisciplinary educational links through joint team projects that cross the traditional areas of science and engineering.
Master of Advanced Studies Degree Program

- Finish in 2 years (9 courses, 36 units), team project
- Targeted to professional engineers: convenient course times
- Lectures available online

Approved (Pending UC Presidential Signature)
Architecture-Based Enterprise Systems Engineering (Computer Science/Mechanical and Aerospace Engineering)

Submitted for Approval
- Wireless Embedded Systems (Electrical and Computer Engineering/Computer Science Engineering)
- Medical Devices (Mechanical Engineering/Bioengineering)
- Simulation Based Engineering (Structural/Mechanical and Aerospace Engineering)
- Structural Health Monitoring (Structural/Electrical and Computer Science/Mechanical and Aerospace Engineering)
Faculty Proposed Recruitment In Our Focus Areas

1. Applied Algorithms (software/graphics)
2. Excellence FTE (diversity leadership)
3. Biochemical, Bioelectronics/optics OR Neuroengineering
4. Aviation safety of composite structures
5. Environmental engineering (modeling)
6. Excellence FTE (visiting)

Requests for Future Hiring
- Embedded systems (healthcare systems)
- Nanotechnology (energy/environment)
- Electronic devices and materials
- Chemical engineering
- Structural safety/blast mitigation
- Mechanics/design

2010 JSOE Faculty Retreat Climate Change
Female Faculty Recruitments 2004-2010

- Tajana Simunic Rosing
  CSE, Hired 2004

- Tara Javidi
  ECE, Hired 2004

- Sonia Martinez Diaz
  MAE, Hired 2005

- Elizabeth Simon
  CSE, Hired 2005

- Tara Hutchinson
  SE, Hired 2006

- Melissa Micou
  BE, Hired 2006

- Karen Christman
  BE, Hired 2007

- Shyni Varghese
  BE, Hired 2007

- Alison Marsden
  MAE, Hired 2007

- Jennifer Cha
  NE, Hired 2008

- Lelli Van Den Einde
  SE, Hired 2008

- Yy Zhou
  CSE, Hired 2008

- Andrea Tao
  NE, Hired 2009

- Shirley Meng
  NE, Hired 2009

- Kamalika Chaudhuri
  CSE, Hired 2010
Diversity Recruitment Initiative
Implemented in 2004

Female Faculty as percentage of total Jacobs School Faculty

2010 JSOE Faculty Retreat Climate Change
Successful Diversity Recruitment Strategies

✓ **Stated Priority:** departments share best practices

✓ **General Discipline Faculty FTE’s:** Rather than focused too narrowly

✓ **Opportunity FTE:** Set aside for excellent candidates across departments

✓ **Personal Statement:** includes leadership contributions to diversity

✓ **Partner Hiring:** Departments share cost of FTE

✓ **UC Presidential Post-Doctoral Fellows:**

  For outstanding women and underrepresented minorities  
  (UC Ph.D. alumni)

  If another UC campus hires Fellow, program pays  
  5 years of Faculty Salary
# Student Enrollment

*Does Not Reflect State Demographics*

## State population vs UC/UCSD Undergraduate Engineering Enrollment Fall 2009

<table>
<thead>
<tr>
<th></th>
<th>African American</th>
<th>Asian American</th>
<th>Chicano/Latino</th>
<th>White</th>
<th>Foreign &amp; Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>CA Population (2000 Census)</td>
<td>7%</td>
<td>13%</td>
<td>37%</td>
<td>42%</td>
<td>2%</td>
</tr>
<tr>
<td>UC Engineering #</td>
<td>315</td>
<td>7711</td>
<td>1963</td>
<td>4891</td>
<td>1,782</td>
</tr>
<tr>
<td>UC Engineering %</td>
<td>2%</td>
<td>46%</td>
<td>12%</td>
<td>29%</td>
<td>11%</td>
</tr>
<tr>
<td>UCSD Engineering #</td>
<td>41</td>
<td>1850</td>
<td>449</td>
<td>1060</td>
<td>453</td>
</tr>
<tr>
<td>UCSD Engineering %</td>
<td>1%</td>
<td>48%</td>
<td>12%</td>
<td>27%</td>
<td>12%</td>
</tr>
</tbody>
</table>
African American Undergraduate Engineering Enrollment Fall 2004-2009
African American Graduate Engineering Enrollment Fall 2004-2009

UCSD African American Grads
UCB African American Grads
UCLA African American Grads

2010 JSOE Faculty Retreat Climate Change
Chicano/ Latino Undergraduate Engineering Enrollment Fall 2004-2009

- UCSD Chicano/Latino Undergrads
- UCB Chicano/Latino Undergrads
- UCLA Chicano/Latino Undergrads

2010 JSOE Faculty Retreat Climate Change
Female Undergraduate Engineering Enrollment Fall 2004-2009

- UCSD Female Undergrads
- UCB Female Undergrads
- UCLA Female Undergrads

2010 JSOE Faculty Retreat Climate Change
Female Graduate Engineering Enrollment Fall 2004-2009

2010 JSOE Faculty Retreat Climate Change
# The Leaky Pipeline:
Freshman-to-Graduation Retention Rate Lower for Underrepresented Students

## Fall 2000-Fall 2004 new UCSD undergraduate engineering students completing Engineering degree by June 2009

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>African American</th>
<th>Asian American</th>
<th>Chicano/ Latino</th>
<th>White</th>
<th>Foreign &amp; Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshmen Receiving</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree</td>
<td>2,259</td>
<td>13</td>
<td>1,164</td>
<td>137</td>
<td>674</td>
<td>271</td>
</tr>
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<td>Eng Degree</td>
<td></td>
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<td></td>
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<tr>
<td>Total</td>
<td>4,111</td>
<td>41</td>
<td>1,987</td>
<td>375</td>
<td>1,242</td>
<td>466</td>
</tr>
<tr>
<td>Degree %</td>
<td>55%</td>
<td>32%</td>
<td>59%</td>
<td>37%</td>
<td>54%</td>
<td>58%</td>
</tr>
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</table>

*2010 JSOE Faculty Retreat Climate Change*
Possible Model: UCLA Center for Excellence in Engineering and Diversity (CEED)

CEED URM Freshman Cohort
Graduation, Retention & Attrition
(1983–2008)

% CEED students leaving UCLA
% CEED URM students graduating w/ Engr Degree
% CEED URM students graduating w/ L & S Degree

55%
21%
24%

Note:
76% CEED students earn a degree from UCLA (HSSEAS Assoc. Dean SEI 2005 from analysis of 1996–2002 HSSEAS freshman cohort)
76% URM HSSEAS students graduate with engineering degree; 88% earn degree from UCLA (HSSEAS Assoc. Dean SEI 2005 from analysis done on 2005 HSSEAS freshman cohort)
30.0% URM graduation rate in engineering (July 2003 electronic article “Walk the Talk in Retention-to-Graduation: Institutional Production of Minority Engineers:ANACME Analysis” by Daryl Chubin and Eleanor Bafico, as of 2001 the national retention of underrepresented engineering students (URES)

2010 JSOE Faculty Retreat Climate Change
## Fall 2010 UCSD Engineering Accepts

### Undergrad Freshmen engineering admissions

<table>
<thead>
<tr>
<th></th>
<th>Admits</th>
<th>%</th>
<th>Accepts</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>41</td>
<td>1.2%</td>
<td>7</td>
<td>0.9%</td>
</tr>
<tr>
<td>Asian American</td>
<td>1,615</td>
<td>47.1%</td>
<td>420</td>
<td>51.8%</td>
</tr>
<tr>
<td>Chicano/Latino</td>
<td>421</td>
<td>12.3%</td>
<td>135</td>
<td>16.6%</td>
</tr>
<tr>
<td>White</td>
<td>828</td>
<td>24.2%</td>
<td>156</td>
<td>19.2%</td>
</tr>
<tr>
<td>Foreign &amp; Other</td>
<td>522</td>
<td>15.2%</td>
<td>93</td>
<td>11.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>3,427</td>
<td></td>
<td>811</td>
<td></td>
</tr>
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</table>

### Undergrad Transfer engineering admissions

<table>
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<th>Admits</th>
<th>%</th>
<th>Accepts</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>African American</td>
<td>21</td>
<td>2.4%</td>
<td>14</td>
<td>3.7%</td>
</tr>
<tr>
<td>Asian American</td>
<td>286</td>
<td>33.0%</td>
<td>114</td>
<td>29.8%</td>
</tr>
<tr>
<td>Chicano/Latino</td>
<td>97</td>
<td>11.2%</td>
<td>57</td>
<td>14.9%</td>
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<tr>
<td>White</td>
<td>248</td>
<td>28.6%</td>
<td>125</td>
<td>32.7%</td>
</tr>
<tr>
<td>Foreign &amp; Other</td>
<td>214</td>
<td>24.7%</td>
<td>72</td>
<td>18.8%</td>
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<tr>
<td><strong>Total</strong></td>
<td>866</td>
<td></td>
<td>382</td>
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### Graduate engineering admissions

<table>
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<th>%</th>
<th>Accepts</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>African American</td>
<td>9</td>
<td>0.7%</td>
<td>3</td>
<td>0.7%</td>
</tr>
<tr>
<td>Asian American</td>
<td>273</td>
<td>22.0%</td>
<td>108</td>
<td>23.8%</td>
</tr>
<tr>
<td>Chicano/Latino</td>
<td>41</td>
<td>3.3%</td>
<td>13</td>
<td>2.9%</td>
</tr>
<tr>
<td>White</td>
<td>326</td>
<td>26.3%</td>
<td>117</td>
<td>25.8%</td>
</tr>
<tr>
<td>Foreign &amp; Other</td>
<td>563</td>
<td>16.4%</td>
<td>207</td>
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<td><strong>Total</strong></td>
<td>1,241</td>
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As of 6/8/2010

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2010 JSEOE Faculty Retreat Climate Change
Possible Strategies to Improve Recruiting and Retention of Underrepresented Students

- Jacobs School Diversity Advisory Council (DAC)

- Role Models and Mentoring for Retention
  - Faculty Recruitment
  - Visiting Faculty and Scholars
  - Alumni Connection
  - Peer Tutoring Program
  - Workshops and seminars

- Scholarships/ Fellowships for Recruiting

- Industry Partnerships
  (e.g. Northrop Grumman)

- Center to Focus Efforts

  *Ideas and support from faculty, students, staff, alumni and industry partners are needed and welcome!*

2010 JSOE Faculty Retreat Climate Change
Patrice Lumumba

Patrice Émery Lumumba (2 July 1925–17 January 1961) was a Congolese independence leader and the first legally elected Prime Minister of the Republic of the Congo after he helped win its independence from Belgium in June 1960. Only ten weeks later, Lumumba's government was deposed in a coup during the Congo Crisis. He was subsequently imprisoned and murdered in circumstances suggesting the support and complicity of the governments of Belgium and the United States.

From Wikipedia, the free encyclopedia
Emiliano Zapata

Emiliano Zapata Salazar
(August 8, 1879 – April 10, 1919) was a leading figure in the Mexican Revolution, which broke out in 1910, and which was initially directed against the president Porfirio Diaz. He formed and commanded an important revolutionary force, the Liberation Army of the South, during the Mexican Revolution.

From Wikipedia, the free encyclopedia
“Despite the Chicano rebellions in the South-west and the Black Revolts in the cities, the University of California, San Diego, which is part of the oppressive system, has not changed its institutional role. The puny reforms made so far are aimed at pacifying the revolts and sapping our strength.”
CLIMATE CHANGE
Jacobs School of Engineering
Faculty Retreat
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