Campus Planning Committee
April 24, 2018

Rod Alferness
Richard A. Auhll Professor and Dean
College of Engineering
UC Santa Barbara’s College of Engineering Is…

1,487 Undergraduate Students

10:1 Student-to-faculty ratio
Combined 5-Year BS/MS Programs

6 Departments
- Chemical Engineering • Computer Engineering • Computer Science
- Electrical Engineering • Materials • Mechanical Engineering
- Technology Management Program

19,500+ Alumni

13,800 in California
350+ UCSB Spin-offs

766 Graduate Students

150+ Collaborative Faculty

20 Centers and Institutes

19,500+ Alumni

13,800 in California
350+ UCSB Spin-offs

20 Centers and Institutes
What Kind of Space?
We Teach in the Lab!

- Contiguous
- Configurable
- Educational
- Modern
- Specialized
Graduate Teaching is Space Intensive

- Sumita Pennathur: Mechanical Engineering
Over the last decade, Assistant Professors from UCSB have won more CAREER awards per capita than at any other university in the country. (MIT almost ties us.)
2018 Early-Career Accolades

Faculty Career Development Award
Tyler Susko, Mechanical Engineering
- Developing large collaborative grants in engineering education and rehabilitation technology

Regents' Junior Faculty Fellowship
Paolo Luzzatto-Fegiz, Mechanical Engineering
Innovative redesign of wind turbine arrays for optimal power extraction

Hellman Family Faculty Fellows
Huijia Lin, Computer Science
Cryptographically Enforced Partial Access to Private Data

Yon Visell, Media Arts & Technology/Electrical and Computer Engineering
Making Tactile Waves: Somatosensation as Elastic Wave Propagation
# 2016-17 Space Assessment Model
## Prior to BioEngineering Occupancy

<table>
<thead>
<tr>
<th>COE Departments</th>
<th>Calculated 2017/18 Need</th>
<th>Existing 2017/18 Space</th>
<th>Unmet Need</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Science</td>
<td>63,698</td>
<td>31,640</td>
<td>-32,058</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>47,645</td>
<td>39,198</td>
<td>-8,447</td>
</tr>
<tr>
<td>Materials</td>
<td>67,203</td>
<td>45,109</td>
<td>-22,091</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>73,154</td>
<td>33,260</td>
<td>-39,694</td>
</tr>
<tr>
<td>Interdisciplinary Activities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TMP, IEE, CE &amp; Engr. Sci.</td>
<td>64,465</td>
<td>10,205</td>
<td>-54,260</td>
</tr>
<tr>
<td>Engineering General*</td>
<td>14,235</td>
<td>14,235</td>
<td>0</td>
</tr>
<tr>
<td>Dean’s Office</td>
<td>10,035</td>
<td>8,824</td>
<td>-1,211</td>
</tr>
<tr>
<td>Existing Organized Research**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRL, Nanofabrication Facility, ICB</td>
<td>39,500</td>
<td>39,500</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>488,144</strong></td>
<td><strong>289,810</strong></td>
<td><strong>128,204</strong></td>
</tr>
</tbody>
</table>

* Engr. General space is general COE space that serves the entire College and in some cases the Campus community. It includes COE Machine Shop, COE General use conference rooms and computer infrastructure space.

** A space analysis was not performed for research centers or organized research activities. Their existing non-standard space is simply included ‘as-is’ with no projection for future need.

*** Does not account for borrowed research space 17,530 asf

CoE at approx. **59%** of its current assessed space need.
**COE Proactive Efforts to Increase Space**

*BioEngineering Building* construction completed Summer 2017. Providing approximately 35,000 assignable square feet of space for CoE and MLPS.

*Research Grant Funded*
BioEngineering Grand Opening 2017
COE Proactive Efforts to Increase Space

* BioEngineering Building construction is complete. Providing approximately 35,000 assignable square feet of space for CoE and MLPS

* MRL In-Fill enclosed an approximately 1,200 square feet of patio space at the MRL Building in order to create new laboratory space to house over $1M in research equipment for the Low Temperature Materials Characterization Lab. Project is complete.

* Research Grant Funded  * Donor and Industry Funded
MRL Infill
**SIX for SIX: Materials Research Laboratory Renewal**

### Areas of Research
- IRG-1: Magnetic Intermetallic Mesostructures
- IRG-2: Polymeric Ionic Liquids
- IRG 3: Resilient Multiphase Soft Materials
- Complex Fluids Design Consortium
- Seed Projects

### Shared Facilities
- Computing
- Energy Research Facility
- Microscopy and Microanalysis
- Polymer Characterization
- Spectroscopy
- TEMPO
- Terahertz
- X-Ray

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**Dow Materials Institute**

**Mitsubishi Chemical- Center for Advanced Materials**

**Materials Research Outreach Program**
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* Henley Hall Henley Hall/Institute for Energy Efficiency Lab Building is donor funded. Construction starts summer 2018. Will provide approximately 31,250 assignable square feet of space.
Henley Hall

- Henley Hall- Home of the Institute for Energy Efficiency; donor funded; 17 critically needed labs
- Will provide approximately 31,250 assignable square feet of Lab and office space.
- Construction starts Summer 2018
- Construction complete Summer 2020
Henley Hall:
Interdisciplinary Research Laboratory Space
and Home of IEE

Ground Breaking: Summer 2018
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* Engineering III is on the Campus’ 10 Year Capital Financial Plan. Currently in the early planning stages and working towards a completed DPP (Detailed Project Program.)

* Research Grant Funded  * Donor and Industry Funded  * Donor Funded  * Legislative Funded
A new Engineering III Building is on the 10 year Capital Plan.

Preliminary planning has begun for Engineering III, a 70-75,000 asf building.

Architect has been selected (Foster Partners).

Detailed Project Planning (DPP) currently in progress.
Location Constraints for Engineering III

Buildable Area: 45,000 SF

Site Constraints on Buildable Area:

1. Fault Line
2. Existing 12kV Ductbank
3. Bicycle Path
4. Major Pedestrian Axes
5. Existing Buildings
6. Phelps Hall Tower
7. Henley Hall Fire Access
8. Henley Hall Frontage
9. Mesa Road
10. Surface Parking
Site Preparation for Engineering III

West view from Mesa Road
Addressing Space Needs

- Prior to BioEngineering
  - COE at 59% of space need

- With BioEngineering Building
  - COE at 66% of current space needs

- Upon Completion of Henley Hall in 2020
  - COE will be at 73% of its current space needs

- Engineering III
  Currently on UCSB Capital Space Plan
  Even when Engineering III is built we will still have only 88% of current need.
Addressing Space Needs

- Prior to BioEngineering
  - COE at 59% of space need

- Upon Completion of Henley Hall in 2020
  - COE will be at 73% of its current space needs

- Engineering III
  Currently on UCSB Capital Space Plan
  Even when Engineering III is built we will still have only 88% of current need.

- With a modest 10% growth rate anticipated in LRDP and Undergraduate Growth

  We will still have only 80% of future need.
Growth Needs:

Undergraduate Teaching Lab Space

- Departments have been creative in working with vendors to give them discounts on equipment purchases.
- Projects are being spread out over several years to accommodate cash flow.
- Donors/foundations are giving with the expectation of cost sharing the expense with the campus.
- Undergraduate teaching laboratory space is the bottleneck to increasing undergraduate enrollment.
- Undergraduate teaching space is only 62% of current need.
Undergraduate Teaching Lab Spaces are Crowded and Outdated
Capstones Teaching is Space Intensive

Collaborate

Test

Fabricate
Addressing Space Needs

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  - COE at 59% of space need

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Thank You

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The convergence of research and innovation.