Bryan Huey, Materials Science & Engineering

- B.S. Degree from Stanford
- Ph.D. Degree from U. Penn

Atomic Force Microscopy allows nanoscale measurements by probing surfaces with a sharp tip.
World Class Faculty

- Wei Sun, Mechanical Engineering
  - Ph.D. Degree from Pittsburgh
- Percutaneous Transvenous Mitral Annuloplasty - Biology Meets Engineering

**In-vivo**

**Simulation**

**Prediction**

- Patient 1
- Patient 2
- Patient 3
Allison MacKay, Civil & Environmental Eng.
- B.S. Degree from U. of Toronto
- Ph.D. Degree from MIT
- Remediation of organic contaminants in the soil and water
Shengli Zhou, Electrical & Computer Engineering

- Ph.D. Degree from U. Minnesota

- Multicarrier acoustic modem, to enhance the performance and robustness via advanced channel coding
World Class Faculty

- Alex Russell, Computer Sci. & Eng.
  - Ph.D. Degree MIT
- Computational complexity of classical and quantum algorithms, cryptography and distributed computing
We Wrote The Book
Excellent Education – Exceptional Value
<table>
<thead>
<tr>
<th>Rank</th>
<th>Public University</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UC-Berkeley</td>
</tr>
<tr>
<td>2</td>
<td>UCLA, Virginia</td>
</tr>
<tr>
<td>4</td>
<td>Michigan</td>
</tr>
<tr>
<td>5</td>
<td>North Carolina</td>
</tr>
<tr>
<td>6</td>
<td>William &amp; Mary</td>
</tr>
<tr>
<td>7</td>
<td>Georgia Tech</td>
</tr>
<tr>
<td>8</td>
<td>UC-San Diego</td>
</tr>
<tr>
<td>9</td>
<td>UC-Davis</td>
</tr>
<tr>
<td>10</td>
<td>UCSB, Washington, Wisconsin</td>
</tr>
<tr>
<td>13</td>
<td>Penn State, UC-Irvine, Illinois, Texas</td>
</tr>
<tr>
<td>17</td>
<td>Ohio State, Maryland</td>
</tr>
<tr>
<td>19</td>
<td><strong>UCONN</strong>, Texas A&amp;M, Florida, Pitt</td>
</tr>
<tr>
<td>23</td>
<td>Purdue, Georgia</td>
</tr>
<tr>
<td>25</td>
<td>Clemson, Rutgers</td>
</tr>
<tr>
<td>28</td>
<td>Virginia Tech, Iowa, Michigan State</td>
</tr>
</tbody>
</table>
Unparalleled Investment
Excellent Education – Exceptional Value

- UConn: $21,198
- UMass: $33,327
- PSU: $36,168
- URI: $38,394
- Syracuse: $49,532
- NEU: $49,902
- RPI: $50,315
- BU: $52,384
Total Student to Faculty Ratio

- UConn
- Maryland
- RPI
- Purdue
- Penn State
- Syracuse
- NEU
High Demand for UConn Education

2011 Ave SAT: 1293
Designing under constraints using mathematical, physical, chemical, **environmental, biological, ethical and social-political** foundations

Successful designs will make systems that

- Save time
- Reduce cost
- Are faster
- Are easier to use
- Are safer and more reliable
- Are environmentally sustainable
21\textsuperscript{st} Century Opportunities

- Make solar energy economical
- Engineer better medicine
- Provide energy from fusion
- Reverse engineer the brain
- Develop CCS
- Prevent nuclear terror
- Provide clean water
- Secure cyberspace
- Restore infrastructure
- Advance health informatics

\textbf{20\textsuperscript{th} Century Emphasis}: Physics, Chemistry, Mathematics, Electronics, and High-Speed Communications and Transportation

\textbf{21\textsuperscript{st} Century Emphasis}: 20\textsuperscript{th} Century Emphasis + Biology, Computer Science, Energy, Water and Sustainability
<table>
<thead>
<tr>
<th>Discipline</th>
<th>Average Salary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Engineering</td>
<td>$65,000</td>
</tr>
<tr>
<td>CS/Electrical/Mechanical</td>
<td>$60,000</td>
</tr>
<tr>
<td>Accounting</td>
<td>$50,000</td>
</tr>
<tr>
<td>Nursing</td>
<td>$47,000</td>
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<tr>
<td>Business Management</td>
<td>$42,000</td>
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<tr>
<td>Secondary Education</td>
<td>$36,000</td>
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<tr>
<td>Chemistry</td>
<td>$35,000</td>
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<tr>
<td>Liberal Arts and Sciences (Gen)</td>
<td>$35,000</td>
</tr>
<tr>
<td>Communications</td>
<td>$32,700</td>
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</tbody>
</table>
## Top Traits of Engineers

<table>
<thead>
<tr>
<th>Rank</th>
<th>Characteristics</th>
<th>Rank</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Communications</td>
<td>11</td>
<td>Detail-oriented</td>
</tr>
<tr>
<td>2</td>
<td>Work Ethics</td>
<td>12</td>
<td>Organizational Skills</td>
</tr>
<tr>
<td>3</td>
<td>Teamwork</td>
<td>13</td>
<td>Leadership Skills</td>
</tr>
<tr>
<td>4</td>
<td>Initiative</td>
<td>14</td>
<td>Self Confidence</td>
</tr>
<tr>
<td>5</td>
<td>Interpersonal Skills</td>
<td>15</td>
<td>Friendliness</td>
</tr>
<tr>
<td>6</td>
<td>Problem-solving Skills</td>
<td>16</td>
<td>Tactfulness</td>
</tr>
<tr>
<td>7</td>
<td>Analytical Skills</td>
<td>17</td>
<td>Creativity</td>
</tr>
<tr>
<td>8</td>
<td>Flexibility</td>
<td>18</td>
<td>Strategic Planning Skills</td>
</tr>
<tr>
<td>9</td>
<td>Computer Skills</td>
<td>19</td>
<td>Entrepreneurial Skills</td>
</tr>
<tr>
<td>10</td>
<td>Technical Skills</td>
<td>20</td>
<td>Sense of Humor</td>
</tr>
</tbody>
</table>
Capstone Senior Design

- Over 100 experiential learning through real-world projects funded by industry
  - Space Vehicle Air Velocity Distribution
    - Hamilton Sundstrand
  - Alternative Energy Solutions
    - Florida Light and Power
  - Design of a Fuel Cell Power plant
    - UTC Power
Personalizing the UG Experience

- Minors
  - Nanotechnology
  - Engineering Management
  - Public Policy
- Undergraduate Research
  - Engagement with faculty
  - Preparation for graduate school
- Internships and Co-Ops
  - Professional development
  - Students with Co-Op experience in college are more likely to be promoted
What Employers Look For For

- 76% of employers emphasize relevant work experience in making hiring decisions
- 46% prefer experience to be gained through internships/co-ops
- 55% of employers offered signing bonuses for top applicants
- 73% of manufacturing employers screen applicants by GPA (3.0 cutoff)
As a BME, you’ll apply quantitative engineering solutions to medical problems. You’ll work with physicians and biologists to develop artificial organs, prosthetics, therapies and diagnostic tools.

Pharmaceutical companies (Boehringer, Merck, Eli Lilly), medical equipment manufacturers (GE, Siemens Medical Systems, Thermo Fisher Scientific) and biotechs (Genentech, Genzyme Corp.).
As a ChE, you’ll work with raw materials to produce valuable products, including pharmaceuticals, petro-chemicals and ‘green fuels’. Or you might work on ways to improve food production, water reclamation and tissue engineering.

Pharmaceuticals (Novartis, Pfizer), food (General Mills), chemicals (DuPont, Dow Chemical Co.), energy (Chevron, ConocoPhillips), and industrial and consumer manufacturing (3M, Lever, Proctor & Gamble).
As a CE, you’ll work on roads, bridges, dams and other key infrastructures. You might plan, design and supervise major construction projects. You might help build the railbeds for tomorrow’s MAGLEV and space pods.

Construction firms (CH2M Hill, Bechtel Corp., Arup), environmental specialists (Fuss & O’Neill), rail and ground transportation groups (CSX Corp.), and power generators (Southern Co.), state and federal agencies (CONNDOT, USDOT, US Army Corps of Engineers).

Civil Engineering
Computer scientists deal with all aspects of computing systems. You can specialize in steganography, encryption, motif searches, operating systems, networks, software or hardware. Computing is ubiquitous in all facets of our lives.

Manufacturers (Apple Inc., Canon, Hitachi, Hewlett-Packard); telecoms (Verizon, Qualcomm) supercomputer makers (IBM, Cray); software giants (Microsoft, Oracle); solar energy providers (SunEdison), and computer-game companies (Disney, Sony, Microsoft, and Electronic Arts).
As an EE or CompE, you’ll harness energy from turbines, fuel cells, hydroelectric plants, or solar panels and provide efficient distribution. You might also design the components that enable digital communication for computers, cell phones, satellites.

Power companies (Northeast Utilities, UI), microchip makers (Intel, AMD, ASML), defense (General Dynamics, Pratt & Whitney), fuel-cell manufacturers (UTC, FCE), CAD software makers (Dassault Systems, Autodesk), and consumer electronics companies (Sony, Samsung, Toshiba).
Environmental Engineering

The Earth faces major environmental problems, from global warming to water shortages. As an EnvE, you’ll work on water distribution, recycling methods, waste treatment, pollution prevention and other eco-friendly projects.

Engineering firms (Groundwater and Environmental Services, Roux Associates, Veolia Environmental), as well as construction companies (Turner, Bechtel), state and federal agencies (EPA, CONN-DEEP, Dept. of the Interior), environmental advocacy groups (WWF, Sierra Club).
Materials industry (Material Sciences Corp., Rogers, DuPont), pharmaceuticals (Pfizer, Merck); consumer goods (P&G, Unilever); paper (Kimberly Clark); aerospace (Hamilton-Sundstrand, Sikorsky, General Dynamics, GE Lockheed Martin); high-tech (Xerox, Intel, Texas Instruments).

As a MSE, you’ll develop plastics, metals, ceramics, and composites that are used to develop products that are smaller, lighter, more resilient under stress and heat. Applications range from new airfoils to biomedical implants to supercapacitors.
MEs specialize in designing and building systems ranging from micro-motors to nuclear submarines. Mechanical engineers can be found in a variety of fields including robotics, automotive, aerospace to biomedical.

Electronics (Motorola, Siemens), automotive (GM, BMW, BorgWarner), appliances (Bosch, Westinghouse), energy (Duke Power, Shell, GE), aerospace (Pratt & Whitney), medical devices (GE, Covidien, Siemens), and nanotechnology (Zyvex Corp.).