Let’s START!

- We warmly welcome you to the OSU School of Chemical, Biological and Environmental Engineering! For simplicity, it is called the School of CBEE.
- In these fields of study, you will learn how to apply chemistry, math and economics to the process of converting raw materials or chemicals into more useful and valuable forms.
- We will help you learn how to apply science & engineering to improve the quality of our water, air and land.
CHE/BIOE/ENVE Curriculum

- Students generally earn their B.S. degree in 4 or 5 years. There are many reasons that the program may take longer than 4 years. For example, the CHE/BIOE/ENVE programs require 192 credits, and other programs on campus require only 180 credits. Some students may start out in the Academic English program, which adds a few terms to the completion of the degree. Students might study abroad or do an internship, which may extend the degree completion date.

- Baccalaureate Core courses (highlighted in yellow in following slides) are required for each program at OSU, in addition to courses in major.

- Courses highlighted in gray are required for admission to professional school (300/400 level courses in the major). The programs in CBEE are “capacity restricted” and the minimum required combined GPA for these courses was 2.9 in 2012.

- AP and IB credits are accepted as detailed on the OSU admissions website.

- All three programs are accredited by the Accreditation Board for Engineering and Technology (ABET).
# Chemical Engineering (192 Credits)

<table>
<thead>
<tr>
<th>Cr.</th>
<th>First Year = 47 credits</th>
<th>Second Year = 50 credits</th>
<th>Third Year = 47 credits</th>
<th>Fourth Year = 48 credits</th>
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### Notes:

a. Only Persp, Syn, HHP 231, and FREE can be taken on S/U grading (# of S/U credits are limited to 3X # of terms at OSU, up to 36 max).

b. "Shaded" courses = required for admission to professional program and contribute to "core" GPA used for admission (also 80 credits minimum completed).

c. Must satisfy the OSU-BACC "Biological Science (with lab)" requirement - see list of acceptable courses in current Schedule of Classes.

d. CHE 320 satisfies the department Ethics Requirement.
# Bioengineering (192 Credits)

## First Year (48 credits)

<table>
<thead>
<tr>
<th>Fall</th>
<th>Winter</th>
<th>Spring</th>
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<tbody>
<tr>
<td><em>Differential calculus</em> MTH 251 (4)</td>
<td><em>Integral calculus</em> MTH 252 (4)</td>
<td>Lifetime fitness HHS 231/24X (3)</td>
</tr>
<tr>
<td>General chemistry CH 231 (4) CH Lab 261 (1)</td>
<td>General chemistry CH 232 (4) CH Lab 262 (1)</td>
<td>General chemistry CH 331 (4)</td>
</tr>
<tr>
<td><em>Material balances</em> CBEE 211 (3)</td>
<td><em>Energy balances</em> CBEE 212 (3)</td>
<td><em>Statics</em> ENGR 211 (3)</td>
</tr>
<tr>
<td>Anatomy &amp; Physiology Z 331 (3)</td>
<td><em>Speech communications</em> COMM 111/114 (3)</td>
<td>Thermodynamics CHE 311 (3)</td>
</tr>
<tr>
<td>Anatomy &amp; Physiology Z 333 (3)</td>
<td><em>English composition</em> WR 121 (3)</td>
<td>Social ethics in engineering BIOE 420 (3)</td>
</tr>
<tr>
<td>Technical writing WR 327 (3)</td>
<td><em>Biological writing</em> COMM 217 (3)</td>
<td>Transport Lab CHE 334 (3)</td>
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## Second Year (49 credits)

<table>
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<tr>
<th>Fall</th>
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<tbody>
<tr>
<td><em>Integral calculus</em> MTH 254 (4)</td>
<td><em>Vector calculus</em> MTH 256 (4)</td>
<td><em>Applied diff equations</em> MTH 250 (4)</td>
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<tr>
<td>Biochemistry lab BB 450 (4)</td>
<td>Biochemistry lab BB 451 (3)</td>
<td>Biomedical Engr Principles BIOE 340 (3)</td>
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<tr>
<td>Biochemistry lab BB 494 (3)</td>
<td>Biochemistry lab BB 493 (3)</td>
<td>Synthesis (3)</td>
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<tr>
<td><em>Statics</em> ENGR 211 (3)</td>
<td>Transport I CHE 331 (4)</td>
<td>Transport II CHE 332 (3)</td>
</tr>
<tr>
<td><em>Electrical eng fundamentals</em> ENGR 201 (3)</td>
<td>Thermodynamics CHE 311 (3)</td>
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<td><em>English composition</em> WR 121 (3)</td>
<td><em>Speech communications</em> COMM 111/114 (3)</td>
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<tr>
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<td><em>Speech communications</em> COMM 111/114 (3)</td>
<td>Transport Lab CHE 334 (3)</td>
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<tr>
<td>Anatomy &amp; Physiology Z 333 (3)</td>
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<tr>
<td>Technical writing WR 327 (3)</td>
<td>Engineering selection (3)</td>
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### Credits
- First Year: 48 credits
- Second Year: 49 credits
- Third Year: 48 credits
- Fourth Year: 47 credits

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* indicates required course.
## Environmental Engineering (192 Credits)

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<th>Cr.</th>
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<td>CH 261 (1)</td>
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<td>Dynamics *ENGR 212 (3FWS)</td>
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<td>Integral Calculus *MTH 252 (4FWS)</td>
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<td>CH Lab 263 (1)</td>
<td>Matrix Power Series</td>
</tr>
</tbody>
</table>

* WIC  
W,S = Multiple terms in which same course is offered  
* course required for entrance to professional school (and used for pre-GPA calculation)
STUDENT CLUBS AND ACTIVITIES

CBEE CLUB

OSU EWB-ers Build Meaningful Partnerships

Sustainable Energy Initiative (SEI)

AMBASSADORS

Chemical, Biological & Environmental Engineering
STUDY ABROAD

CBEE Students have recently studied at:
- Danish Technical University
- University of Nottingham
- Tecnologico de Monterrey
- Yonsei University
- University of Queensland (Australia)
- University de Cantabria
- University of Auckland
- Dun Laoghaire Institute (Dublin)
- Your choice!

“I feel it has been one of the most significant attributes to my undergraduate career and personal growth during the last few years.”

Nikhil Prem, Chemical Engineering, Santander, Spain
CBEE SCHOLARSHIPS

MANY SCHOLARSHIPS FOR STUDENTS

• ARCO Scholarship
• Skye Balkwill Memorial
• Belknap Scholarship
• Frank & Cynthia Biasca Endowment
• Chevron Scholarship
• Dorsey & Aurelia Edwards Endowment
• Georgia Pacific Scholarship
• Richard E. Hatchard Endowment
• James & Billie Jean Hickman Endowment
• Mark Holcom Memorial
• David Jackson Memorial
• Pete & Rosalie Johnson Scholarships
• Milan Knezevich
• Shirley Kuse Fellowship
• Victor W. Laine Memorial
• Ralph McCugh Scholarship
• Susan Stutz-McDonald Fellowship
• James & Vivian McEwen Scholarship
• Robert V. Mrazek Memorial
• Erik Muehlenkamp Memorial
• Gayle Nichols Memorial
• Herbert Nierman Memorial
• PBS Scholarship
• Don C. Phillips Memorial
• PIMA Scholarship
• Proctor Chevron Scholarship

$75,500 in 2014
CHE/BIOE/ENVE Undergraduate Internships and Research

• MULTIPLE ENGINEERING COOPERATIVE PROGRAM (MECOP), TWO 6-MONTH INTERNSHIPS IN INDUSTRY (CHE & ENVE)
• SUMMER INTERNSHIPS (ON CAMPUS AND OFF-SITE)
• JOHNSON SUMMER INTERNSHIP
• SENIOR LAB AND DESIGN CLASSES
Chemical Engineering
Is...

- A branch of engineering that focuses on *chemical processes*
- A *broad profession* that allows people to do many different things throughout their careers
- A path to *opportunities to help* society by:
  - Developing new products and technologies
  - Supplying society with thousands of chemical for economic well-being
EMPLOYMENT OPPORTUNITIES: CHE

The chemical engineering curriculum provides students with a background of fundamental knowledge that prepares them for positions in research and development, design, technical service, plant operation, technical sales, and management.

A few of the employers of OSU CHE Alumni are:

- Battelle
- Bechtel
- Boeing
- Bend Research
- Boise Cascade
- Chevron USA
- CH2M Hill
- Dow Chemical
- Exxon
- Fort James Corp.
- Frito-Lay
- Gallo Winery
- Georgia Pacific – Toledo
- Hercules Chemicals
- Hewlett Packard
- Longview Fibre
- Louisiana Pacific Co.
- LSI Logic
- 3M Company
- Merck
- Mitsubishi Silicon
- NYPRO OREGON
- ON Semiconductor
- Cascade Pacific
- Proctor and Gamble
- Pyrotek
- Siltronic
- Teledyne Wah-Chang
- Tektronix
- Union Oil
- US Bureau of Mines
- Verdezyne
- Wafer-Tech
- Weyerhaeuser
Bioengineering is...

- A branch of engineering that focuses on the application of biological and chemical processes
- A broad profession that allows people to work in the medical, pharmaceutical and bio-production fields.
- A path to opportunities to help society by:
  - Developing new medical products and technologies
  - Advancing the biological production of new products and materials
EMPLOYMENT OPPORTUNITIES: BIOE

The biological engineering undergraduate program provides a solid background in biology (anatomy and physiology, biochemistry, molecular and cellular biology), chemistry, physics and math, in addition to the engineering sciences.

A few of the employers of OSU BIOE Alumni are:

Acumed
Acrymed
Amgen
Anheuser Busch
Bayer
Beaver Biodiesel
Bend Research
Berlex Laboratories
Biotronik
Boston Scientific
Dimera
Electrical Geodesics Inc.
Entek
Gallo Winery
Genentech
Hemcon
Hewlett Packard

Micro Systems Technologies
OHSU
Oregon Medical Laser Center
Sarepta (AVI BioPharma)
Siga
SolarWorld
Environmental Engineering
Is...

A branch of engineering that focuses on physical, chemical, and biological processes to limit environmental impacts

- A multidisciplinary profession that allows people to deal with a wide range of environmental problems
- A path to opportunities to help society by:
  - Developing new sustainable practices
  - Reduce impacts to air, water, and soil
  - Promoting reuse, recycling, reduction
EMPLOYMENT OPPORTUNITIES: ENVE

The environmental engineering program provides undergraduate students with the background necessary to study air, water, and subsurface environmental problems. Coursework includes analysis and design of water and wastewater treatment systems, sustainable water resources, and air pollution control technologies.

A few of the employers of OSU ENVE Alumni are:

- CH2M Hill
- CH2M Hill Hanford Group
- City of Troutdale
- Clean Water Services
- ET Technologies Inc.
- Geo Trans Inc.
- JE Dunn NW
- Professional Services Industries (PSI)
- SCS Engineers
- Shaw Environmental, Inc.
- US Department of the Navy
- US Forest Service
- US Public Health Service
- Wallis Engineering
- Washington River Protection Solutions
- Weber Elliott Engineering
- W & H Pacific
- WRG Design
CHE/BIOE/ENVE: IMPORTANT WEBSITES-1

Student On-line Services-Registration, Student Records
Register for classes, Use MyDegrees, View and Order Transcripts
http://oregonstate.edu/main/online-services

Catalogs & Schedules
course catalog-major and baccalaureate core courses listed by section
http://catalog.oregonstate.edu

CBEE Advising Page
Advisors (Who is my advisor? 1st year students-Dr. Skip, Transfer students-Kristin Rorrer)
Make Advising Appointments On-line:
http://cbee.oregonstate.edu/undergraduate-advising

Kristin Rorrer
Head Advisor, School of CBEE
Kristin.Rorrer@oregonstate.edu

Blackboard
Class lecture notes, syllabus, calendar, other information from instructor
https://my.oregonstate.edu
Registration dates and deadlines (add/drop/withdrawal)
Deadline to drop a class: 11:55 p.m. Friday of 2nd week
Deadline to withdraw from a class or change to S/U grading: Friday of 7th week
Full time student status is 12 credits!
See all important dates at this site:
http://oregonstate.edu/services/registration/academic-calendar.htm

ONID student e-mail account and file storage
http://onid.oregonstate.edu/

Engineering TEACH login (create engineering account, receive newsletter, computing service)
http://engineering.oregonstate.edu/my-coe

Admissions-transfer credits
http://oregonstate.edu/admissions/transfer-credit

Degree Partnership Program (application)
http://oregonstate.edu/partnerships/application-deadlines

Kristin Rorrer
Head Advisor, School of CBEE
Kristin.Rorrer@oregonstate.edu