Go Abroad in Chemical, Biological, and Environmental Engineering

Chemical, Biological, and Environmental Engineering are increasingly global fields. An international experience can provide you with necessary skills to work effectively with people from around the world and give you the opportunity to gain an international perspective of engineering. Employers in engineering, academia, non-profits, local, state, federal and international agencies value the skills and experiences gained by students who go abroad. Engineering involves an extremely structured set of courses, but with careful planning, there is an international experience that will work for every CBEE student.

Why Go Abroad?
Studying abroad is an opportunity to not only explore another place in the world, but also to gain many skills that will significantly enhance your studies and career. Some of the potential benefits of going abroad include:

- Gain an international perspective of engineering
- Experience another culture, and a change of pace
- Challenge yourself, and become more self-confident and independent
- Meet expectations of employers who request globally competent applicants
- Expand your cross-cultural communication and problem-solving skills
- Improve your language skills
- Clarify your goals via self-discovery
- Gain a competitive edge for any resume, or graduate/professional application
- Network internationally
- Learn outside the classroom
- Seek adventure

What types of international experiences are available?
The three general international opportunities for CBEE students at OSU include:

Study abroad:
- CBEE majors can study abroad at a variety of international English-speaking schools where they can focus on their major requirements and interests. Students can also elect to study...
abroad for intensive terms to work on a foreign language, although this may extend graduation dates. Students abroad are able to:
• Take engineering classes in English
• Take engineering classes in another language (if proficient)
• Take baccalaureate core courses

IE3 Global Internships:
• Global Internships: CBEE majors can participate in internships around the world! IE3 Global Internships facilitates international internships for all OSU students in such locations as Nicaragua, Germany, Australia, and Italy. Students can generally do IE3 internships starting in their junior year, and most financial aid and scholarships can be used to pay for these internships. With IE3 Global Internships, CBEE students can:
  • Individually design internships
  • Get a hands-on experience in engineering
  • Meet and network with people from all over the world

For more information, contact the International Programs office and check out http://ie3global.ous.edu/for full program descriptions.

International Degree:
• Students planning to study a foreign language while in CBEE may want to consider the prestigious OSU International Degree. The International Degree (ID) is a unique undergraduate major obtainable only as a second degree. In addition to the CBEE major requirements, the ID candidate must: (1) take an additional 32 credits; (2) demonstrate proficiency in a foreign language equal to the completion of the fourth year; (3) spend a minimum of one ten-week term abroad on an approved program (international internships, study abroad, or independent research projects can count for this), and (4) complete a senior thesis. The ID affords a student the opportunity to develop a global perspective within the context of their CBEE major by completing a research project; International Degree students can also get special funding for their research abroad.

For information, contact the International Degree at International.Degree@oregonstate.edu.

Can I afford an international experience?

Yes! If going abroad is a priority, there is generally a way to make it affordable. Early planning for international experiences helps students make cost-effective program decisions, and it also helps them prepare their finances through savings, scholarships, and financial aid. There is a great deal of variation in costs between programs, and students should carefully consider all of their options before making a decision. Students can apply for financial aid and scholarships to approved international programs and, in some cases, financial aid eligibility will increase to cover additional expenses in certain locations.

When comparing the cost of programs abroad, be sure to look at the estimated costs of attending OSU for living and tuition. In many cases the cost of an international opportunity can be comparable or not much more than attending OSU, and the difference can be made up with scholarships or financial aid. Programs that operate on a direct student exchange often times only require students to pay OSU tuition and fees, whereas programs operated by an outside agency (through OSU) require various participation costs. The latest estimates for attending OSU can be found at: http://oregonstate.edu/admin/finaid/COA.html. It is also recommended that students research costs of living in the country they’re most interested in. Other considerations include airfare, and extra travel expenses for various sight-seeing opportunities.

How will going abroad count toward my major? Will it take me longer to graduate if I go abroad?

With planning, students in CBEE can complete an undergraduate degree in a realistic timeframe even if they spend a term or more studying, researching, or working internationally. Students must complete 192 credits and all of their degree requirements to graduate from OSU. Students who study abroad can take courses that will count for their CBEE major and baccalaureate core courses.

When should I do an international experience?

• Students who wish to study abroad may go their sophomore year or later, depending on the chosen program. (Some programs request that only upper level students participate.)
• Students who plan to do an international internship may go abroad in their sophomore year but most go in their junior or senior year during the summer.
• Students planning to participate in the MECOP/CECOP Internship Program are advised to go abroad sophomore year. However, with proper planning it is possible to go abroad junior or senior year and participate in MECOP/CECOP.
• Students who have sequence courses remaining in their CBEE major should go abroad for a full year so they can take them abroad or complete them here during summer school.
• Students who plan to go abroad for one semester should go at a time when they will miss only one OSU quarter (often during OSU’s Summer and Fall Terms). However, if students obtain enough credits during their time abroad, missing winter and spring terms can be feasible. In any case, students should be sure to check academic dates for their program of interest.
• Students interested in studying abroad during the summer may go after their freshman, sophomore, or junior year. Note that not all programs offer summer classes; this should be researched. Some students choose to go abroad during the summer after their senior year.
Students can participate in IE3 internships during the summer after their junior, or senior year. Students can still attend commencement in the spring as long as they complete their course work for graduation over the summer. Note that IE3 internships can also take place during the school year, if desired.

If a student is able to stay at OSU for an extra term or year, planning an international experience is much easier. If not, advanced planning and research will allow any engineering student participation in an international program.

### How do I select an international program?

Consider your academic interests and goals. You will need to work with your academic advisors and the staff in the Office of International Degree and Education Abroad to help you identify the program that is right for you.

- **Start planning now.** Give yourself time to research programs and talk to advisors and students who have gone abroad to the site(s) you are interested in. It is never too early to start planning; in many cases, the students who plan early have an easier time developing an appropriate experience to meet various course requirements.

- **Set goals.** There is not one program best suited for CBEE students - the best one for each student depends on what they want. If a student plans to study abroad, they’ll need to think about the following factors:
  - **Courses offered** – Are you planning on taking baccalaureate core, engineering, or language intensive courses? Note that it is possible to take engineering courses in another language, if proficiency is proven ahead of time. (Each program has different language requirements.)
  - **Size and location of the university, and program specifics** – Does the program/university sound like a good fit?
  - **Important dates** – Check the start and end dates of each program of interest. Do they match up well with OSU’s academic dates? Will you need to select a different term and/or program? What are the application deadlines?

- **Costs involved** – Each program has varying expense levels. Talk to the international programs office, and past participants for an idea of what to expect. Scholarships are available to assist in funding. Early planning increases the likelihood of finding a suitable means for financial support.

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### STUDENTS WHO CHOOSE TO GO ABROAD MAY BE ELIGIBLE FOR ADDITIONAL SCHOLARSHIPS:

<table>
<thead>
<tr>
<th>Department</th>
<th>Criteria</th>
<th>Amount</th>
<th>Information/Website</th>
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<tbody>
<tr>
<td>Office of International Degree and Education Abroad</td>
<td>OSU Students; international degree students; various other specifics depending on scholarship</td>
<td>$500-1,000 $3,000-20,000 for various competitive national awards</td>
<td><a href="http://oregonstate.edu/international/studyabroad/finances/scholarships">Website</a></td>
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<tr>
<td>College of Engineering and CBEE Department</td>
<td>CBEE engineering students</td>
<td>$500-10,000</td>
<td><a href="http://cbee.oregonstate.edu/students/prospective/scholarships/applying.html">Website</a></td>
</tr>
<tr>
<td>OSU Research Office - URISC (Undergraduate Research, Innovation, Scholarship, &amp; Creativity) grants</td>
<td>Supports undergraduate research abroad</td>
<td>$1,000 for 1 term; $1,800 for 2 terms; and $2,300 for the full academic year</td>
<td><a href="http://oregonstate.edu/research/incentive/urisc.htm">Website</a></td>
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“Studying abroad in Denmark was easily the highlight of my college career. Considering all that I learned, all the friends I made, and all the amazing experiences, I’d do it again in a heartbeat!”

Keely Heintz, Biological Engineering, Denmark

“Spending a year at DTU was one of the best decisions I have ever made. I experienced something new and exciting every day, and met people from all over the world! It was an adventure not to be missed.”

Amanda Grill, Chemical Engineering, Denmark
Prioritize your goals. Consider your long-term academic and professional goals, as well as your on-campus degree requirements. Study abroad courses may count toward courses in your major, while internships give you a valuable professional experience.

Prepare academically. You may need to take language or other prerequisite courses for your chosen program. You should also talk to your academic advisor about the timing of when you take sequences or single-term courses related to progress in your major. Using a spreadsheet to organize your various options is often a good idea!

STUDY ABROAD FIRST STEPS

1. Research programs
   - Check the list of study abroad options in this document
   - Research programs you are interested in at the International Education Website: http://oregonstate.edu/international/ and/or the Study Abroad Resource Center–4th Floor Snell Hall.

2. Attend a First Steps meeting on the 4th floor of Snell Hall. Meeting occur M-F, at noon and 4pm. Attending a First Steps meeting is required in order to speak with a study abroad advisor.

3. Schedule an appointment with an advisor. Depending on the program, students will need to contact either International Programs or the College of Engineering (refer to program descriptions for appropriate contact information) for more program information.

4. Course Selection and Academic Planning
   - Meet with Kristin Rorrer, CBEE’s head academic advisor, to discuss various engineering requirements, and academic planning
   - Determine which classes are still needed in order to graduate from OSU (Engineering and Baccalaureate Core) using your CBEE curriculum block diagram
   - Attain a copy of the course database from Kristin Rorrer (listing of pre-approved international courses, and courses previously taken by past students) to help you plan accordingly. Research additional courses if not already approved and listed in the course database; ask Kristin about the course approval process.

5. Application
   - Applications typically include recommendation forms, essays, course planning sheets, and college transcripts. Plan to start your application at least three months before it is due. A brief interview may also be required.
   - Take note of application deadlines. A general OSU study abroad application (http://oregonstate.edu/international/studyabroad/apply) is required of all students; a program specific application follows.

What are my first steps towards an international experience?

Prioritize your goals. Consider your long-term academic and professional goals, as well as your on-campus degree requirements. Study abroad courses may count toward courses in your major, while internships give you a valuable professional experience.

Prepare academically. You may need to take language or other prerequisite courses for your chosen program. You should also talk to your academic advisor about the timing of when you take sequences or single-term courses related to progress in your major. Using a spreadsheet to organize your various options is often a good idea!

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“Studying abroad definitely adds some spice to the undergraduate engineering experience. 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, Spain
Study Abroad Opportunities for CBEE Majors

There are many study abroad programs that work well for CBEE majors; a few options are listed below. All universities listed have engineering programs, and offer classes that can transfer for direct engineering credits at OSU. Students can focus on studying engineering (lower and/or upper division coursework), satisfying baccalaureate core requirements, developing language skills, and sometimes all of the above! If you are looking for a professional or hands-on experience, then an international internship or field-based program may be better for you. Please note that this is not an extensive list, and that many other options exist if a student doesn’t plan on taking engineering courses while abroad. Refer to the College of Engineering International Study website for a complete list of universities with approved engineering course options. http://enr.oregonstate.edu/students/international/. If you have a specific location in mind and you do not see it on the website, e-mail coe.study-abroad@oregonstate.edu to schedule an appointment to discuss further options.

Visit the OSU Study Abroad Website for a complete list of international opportunities http://oregonstate.edu/international/

ENGLISH-SPEAKING STUDY ABROAD PROGRAMS

AUSTRALIA
James Cook University, Townsville & Cairns
James Cook University offers quality academics in a unique tropical environment. It is located in the North Queensland cities of Townsville and Cairns, with close access to the Great Barrier Reef and tropical rainforests. JCU is one of Australia’s leading teaching and research institutions. It is the second oldest university in Queensland and is consistently ranked with the world’s best universities. Available: Fall (July-November), Winter-Spring (February-June), or year-long. Requirement: minimum 2.8 GPA. Contact: International Programs. Engineering Courses Offered: Chemical and Environmental Engineering

KOREA
Yonsei University, Seoul
Today, Yonsei is often cited as one of the top three universities in South Korea. Yonsei’s student population consists of 29,000 students, of which 4,000 are international students. In addition to Korean language courses, most students take the majority of their courses in English from Yonsei’s Underwood International College, together with Korean and international students. With 15 research centers, and a new Engineering Research Complex, Yonsei is an excellent place to study engineering. Available: Fall, Winter-Spring, Summer, or year-long. Requirement: minimum 3.0 GPA. Contact: International Programs. Engineering Courses Offered: Chemical and Environmental Engineering, and various biological science courses

DENMARK
Danish Technical University, Lyngby (near Copenhagen)
DTU is a leading technical university in northern Europe and benchmarks with the best universities in the world. DTU has elite researchers in biotechnology, nanotechnology, and environmental technology. Lying only a few hours flight from the capitals of Sweden, Norway, Finland, the UK, Germany and the Baltic States, DTU lies at the heart of Scandinavia and Northern Europe and is just minutes from Denmark’s flourishing capital city, Copenhagen. The region boasts a thriving design and engineering culture, of which DTU plays an integral part. With its rich past full of historical buildings and ancient streets, its outstanding museums and galleries, the uniquely enchanting Tivoli Gardens and a resident monarchy that is the oldest in the world, Copenhagen has a host of attractions to suit all tastes. The Danish Capital is a vibrant, modern city whose fascinating past coexists with the very latest trends in architecture, design and fashion. Available: Fall term, Winter/Spring, or year-long. Requirement: 3.0 GPA, and junior/senior level standing. Contact: Engineering International Student Advisor. Engineering Courses Offered: Chemical, Environmental, and Biological Engineering

IRELAND
University College Cork
Cork is the second largest city in Ireland, but you won’t find any big-city snobbery here. The people of Cork are friendly, talkative, and incredibly welcoming. Their warmth and wit isn’t surprising, since the legendary Blarney Castle and the “stone of eloquence” are just five miles outside the city. Music is a fundamental part of the city’s culture, with international jazz and choral festivals taking place every year. Cork’s status as a commercial hub makes for great shopping and dining opportunities. UCC is Ireland’s leading university (named University of the Year for 2003-2004) with a very wide range of courses, both at undergraduate and postgraduate level, and an extensive programme for international students. Available: Fall, Winter-Spring, Summer, or year-long. Requirement: minimum 3.0 GPA. Contact: International Programs. Engineering Courses Offered: Chemical and Environmental Engineering, and various biological science courses

NEW ZEALAND
University of Auckland, Auckland
Auckland is a large and cosmopolitan city nestled between two harbors with easy access to outdoor adventures and thousands of acres of parkland. Study engineering and science courses at the University of Auckland, New Zealand’s primary engineering school. With 33,000 students, Auckland is an extremely comprehensive university with many outstanding disciplines. Available: Fall (July-November), Winter-Spring (February-June), or year-long. Requirement: minimum
3.0 GPA; junior or senior standing. Contact: International Programs. **Engineering Courses Offered:** Chemical, Environmental, and Biomedical Engineering

**TURKEY**
**Koc University, Istanbul**
Enroll directly in courses alongside local students at one of Turkey's premier private universities! Students study in a country that is a unique blend of East and West—rich in history and tradition yet undergoing rapid social transformation. Istanbul is an amazing multi-cultural city that spans two continents; students study on a beautiful campus overlooking the Black Sea and the Istanbul Strait. Turkish language courses are available at all levels as well as engineering classes in English. Current research topics in the chemical and biological engineering department include polymer science and engineering, and fuel cells and sustainable development. **Available:** Fall, Winter-Spring, or year-long. **Requirement:** 2.75 GPA. **Contact:** International Programs. **Engineering Courses Offered:** Chemical and Biological Engineering

**UNITED KINGDOM**
**University of Nottingham, Nottingham**
Nottingham is one of the most vibrant and international cities in Britain. With a population of about 270,000, it has much to offer from the world’s oldest pub and traditional markets to fashionable bars and designer boutiques. In recent surveys, Nottingham was voted the best English shopping center outside of London. In addition, the Nottingham area has more sports facilities per person than anywhere else in Europe. The city has a reputation for contemporary arts, with around 400 practicing artists-more per square foot than any other European city. The University of Nottingham has a large international student population, with a wide variety of engineering disciplines of which to choose coursework. **Available:** Year-long. **Requirement:** 3.0 GPA. **Contact:** International Programs. **Engineering Courses Offered:** Chemical, Environmental, and Biological Engineering

**ECUADOR**
**Universidad San Francisco de Quito, Cumbaya**
Nestled high in the Andes Mountains, Quito is the center of Ecuador’s political and cultural activity. The University is a dynamic institution and has garnered a reputation for academic quality, innovation, and diversity. Coursework is available for intensive Spanish study, as well as enrollment in engineering courses with other Ecuadorians. **Available:** Fall, Winter-Spring, or year-long. Language of instruction: Spanish and English. **Requirements:** minimum 2.75 GPA; 2 years college-level Spanish. **Contact:** International Programs. **Engineering Courses Offered:** Chemical Engineering

**FRANCE**
**Université Claude Bernard Lyon 1, Lyon**
For over twenty years, Oregon students have participated in this exchange program in the cosmopolitan city of Lyon. Nestled in the Rhône-Alps region of southeastern France, Lyon is the nation’s third largest city. With a population exceeding one million and in close proximity to Switzerland and Italy, Lyon holds the status of a major European cultural, research, and trade center. Experience the historic and contemporary vibrancy of a city filled with museums, theaters, monuments, and restaurants. **Available:** Fall or year-long. Language of instruction: French. **Requirements:** minimum 3.0 GPA; 2-3 years college-level French. **Contact:** International Programs. **Engineering Courses Offered:** Chemical Engineering

**GERMANY**
**Universität Stuttgart and Universität Karlsruhe**
The University of Stuttgart and the University of Karlsruhe are two of 13 universities located in the beautiful and diverse state of Baden-Württemberg, Germany. Both universities are mainly technically focused and leading research institutions within the country. This exchange program between the State of Oregon and the State of Baden-Württemberg has been in existence for 40 years. **Available:** Fall, Winter-Spring, or year-long. Language of instruction: German and English. **Requirements:** minimum 2.75 GPA; 1-2 years college-level German. **Contact:** International Programs. **Engineering Courses Offered:** Chemical Engineering

**MEXICO**
**Tecnologico De Monterrey (ITESM), Nuevo Leon**
The ITESM comprises Mexico’s largest and most diversified private university system, with over 96,000 students on 33 different campuses. The Monterrey campus offers Spanish language coursework from basic to advanced levels, chemical engineering courses in English, and regular university courses in a wide range of disciplines for those with sufficient Spanish language proficiency. Mexico’s third most populous region, the greater Monterrey metropolitan region is home to a large and diverse manufacturing and financial enterprises. **Available:** Fall, Winter-Spring. Language of instruction: Spanish and English. **Requirements:** minimum 2.75 GPA; 2 years college-level Spanish or equivalent. **Contact:** International Programs. **Engineering Courses Offered:** Chemical and Environmental Engineering

**SPAIN**
**Universidad de Cantabria, Santander, Cantabria**
The University of Cantabria is located in the city of Santander, a port and resort town on the northern coast of Spain. It is the capital of the Autonomous Region of Cantabria, one of Spain’s “green” provinces, nestled in the Basque Country. Cantabria is well connected by all means of transportation to the rest of Spain and Europe. With wide course offerings in both chemical and environmental engineering, Cantabria is an excellent option for an engineer seeking a language-intensive experience. **Available:** Fall, Winter-Spring. Language of instruction: Spanish and English. **Requirements:** minimum 3.0 GPA; 3 years college-level Spanish; junior standing. **Contact:** International Programs. **Engineering Courses Offered:** Chemical Engineering and Environmental Science