

***Integrating International Study into
Science and Business/Management
Programs – Fundamental Curricular
Reform and Renewal***

AIEA Conference

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Academic Affairs

University of California, San Diego



UC San Diego
Academic Affairs



Campus Perspective from Academic Affairs

- Goal is to facilitate interaction between the International Center and the academic departments.
- All departments/programs have a faculty vice chair in charge of undergraduate education.
- Two of our six colleges, and many majors require a second language; and some of our fastest growing majors are international in focus.





Chemistry & Biochemistry Department Perspective

- Nearly all of the 23,000 campus undergrads take a chemistry course
- 1300 Chem & Biochem majors
- Many faculty raised and educated outside the U.S.
- Vice chair approves all courses students wish to transfer from another institution.





Chemistry & Biochemistry Department Perspective

- More than 50 C&B students/year study abroad.
- 89% received major course credit
- The summer programs are as popular as the academic year programs.
- Most popular destinations for C&B students
 - UC/EAP: UK, Japan, Korea, Hong Kong
 - OAP or Summer Session: China, Costa Rica, Brazil, UK





Issues from the Faculty Perspective

- Science and engineering are hierarchical fields, so courses must be taken lock-step.





Issues from the Faculty Perspective

- Science and engineering are hierarchical fields, so courses must be taken lock-step.
- Organic chemistry is organic chemistry ... The science is the same.
- With planning, students can stay on track at the home institution.





Issues from the Faculty Perspective

- Study abroad doesn't fit into an already crammed four-year schedule.





Issues from the Faculty Perspective

- Study abroad doesn't fit into an already crammed four-year schedule.
- UCSD data show that the average student who studies abroad graduates faster than one who doesn't study abroad. Planning is the key.





Issues from the Faculty Perspective

- We want our majors to be involved with our faculty in undergraduate research



Issues from the Faculty Perspective

- We want our majors to be involved with our faculty in undergraduate research
- Students have the opportunity to participate in research while abroad. Summer programs are a particularly good time for this sort of concentrated effort.



Issues from the Faculty Perspective

- Why send students somewhere else when we have plenty of excellent facilities and options for them at home?



Issues from the Faculty Perspective

- Why send students somewhere else when we have plenty of excellent facilities and options for them at home?
- Yes, we have fine facilities, but so do many other institutions around the world. There are also many unique opportunities that the U.S. can't provide, that are based on locale.





Issues from the Faculty Perspective

- Do employers and graduate schools really value this experience?



Issues from the Faculty Perspective

- Do employers and graduate schools really value this experience?
- Industry approval is obvious in this global world of business.
- Professional organizations encourage study abroad.
- Can be a boost to graduate admissions.



Education

Educational Resources

Educators & Faculty

Students

[High School](#)

[Undergraduate](#)

[Graduate](#)

Standards & Guidelines

Explore Chemistry

Community Outreach

Publications

Study Abroad Programs for Undergraduate Chemistry Students

Why Study Abroad?

Studying abroad is a fun, fulfilling, exciting experience. If you've never contemplated studying abroad as an undergraduate chemical science major, consider the following:

- Studying abroad can make you more attractive to graduate schools, particularly if you conduct research or learn another language while overseas
- Conducting research in a new environment will enhance your laboratory skills and allow you to learn the chemical sciences from an international perspective
- Science and technology are becoming increasingly global, and there is a growing demand for scientists and engineers who can work effectively in an international setting

Don't miss out on account of your major. Investigate the resources listed below to find out how studying abroad can broaden your undergraduate experience.

Study Abroad Programs

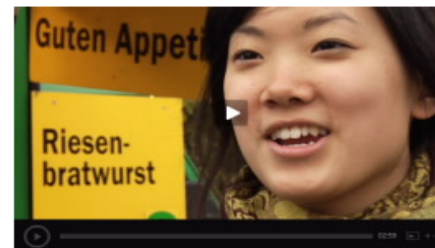
[Boston University International Programs](#)

Boston University offers two study abroad programs for science students:

- [Dresden Science Program](#) (download [PDF](#))
A fall semester program taught at the Technische Universität Dresden combining science coursework with German language and culture studies.
- [Grenoble Science Program](#) (download [PDF](#))
A fall semester program taught at the Université de Grenoble combining science coursework with French language study at all levels.

[Research Internships in Science and Engineering \(RISE\)](#)

Biology, chemistry, engineering, geology, and physics students spend a summer working on challenging research projects with German doctoral students. Doctoral students act as personal and professional mentors, helping undergraduates integrate directly into lab work.



Dresden Science Program

Boston University



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- [Find an accredited program](#)
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- [2011 ABET Symposium](#)
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ABET, Inc., is the recognized accreditor for college and university programs in applied science, computing, engineering, and technology. Among the most respected accreditation organizations in the U.S., ABET has provided leadership and quality assurance in higher education for over 75 years.

ABET accredits over 3,100 programs at more than 600 colleges and universities worldwide.

Quicklinks

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News and Announcements

Requests for Evaluation Due January 31

If your program is seeking an accreditation visit during the 2011-12 accreditation cycle, your Request for Evaluation (RFE) is due Monday, January 31. [Forms for requesting evaluations are available here.](#)

NEW! Regional Faculty Workshops!

ABET is reducing the travel and hotel costs of attending the Faculty Workshop on Sustainable Assessment Processes. Workshops will be offered at three regional sites beginning in February 2011. [Register now for the February Workshops:](#)

- Saturday, February 12, 2011 - Tampa, Fla.
- Saturday, February 12, 2011 - Santa Ana, Calif.
- Saturday, February 19, 2011 - Dallas, Texas

Events

[Faculty Workshop on Sustainable Assessment Processes \(Texas\)](#)
February 19, 2011

[ABET Symposium](#)
April 14 - 16, 2011

[ABET Member Society Calendar](#)

[...more](#)

Latest News

[Dr. Ashley Ater Kranov Joins ABET as Managing Director of Professional Services](#)

[Accreditation Criteria and Self-Study Questionnaires for the 2011 - 2012 Review Cycle Now Available](#)

[ABET Installs the 2010 - 2011 Officers on Board of Directors](#)

[Allen I. Ormsbee, Ph.D. Accepts the Linton E. Grinter Distinguished Service Award](#)

[ABET Announces 2010 Fellows](#)

[ABET Announces the 2010 Diversity Award Winners](#)

[Congratulations to ABET's Distinguished Volunteers](#)

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considering graduate school (at the beginning of the *Assistantships and Graduate Fellowships* book)

- [NSF Graduate Research Fellowships](#) support individuals in the early years of a Ph.D. program.
- [The National Physical Science Consortium](#) offers graduate fellowships in the physical sciences, with special emphasis toward the recruitment of underrepresented minority and female physical science and engineering students.
- [The Department of Homeland Security](#) has initiated an undergraduate and graduate fellowship program in science and technology.
- [PhDs.org](#) Science, Math and Engineering Career Resources contains advice and data about graduate programs in mathematics.
- [Postbaccalaureate Program](#), Smith College, is for women with bachelor's degrees who did not major in mathematics or whose mathematics major was light.
- [The Council on Undergraduate Research](#) hosts a registry of Undergraduate Researchers. The purpose of this registry is to facilitate matchmaking between undergraduates who have research experience and a desire to pursue an advanced degree, with graduate schools seeking high quality students who are well prepared for research.

Calendar

[2011 AMS Spring
Sectional Meetings](#)

March 12-13: Georgia
Southern University,
Statesboro

March 18-20: University
of Iowa, Iowa City

April 9-10: College of the
Holy Cross, Worcester,
MA

April 30-May 1: University
of Nevada, Las Vegas

[AMS at Mathematics,
Scientific and Publishing
Meetings](#)

Summer Programs

- [Research Experience for Undergraduates \(Summer REU Programs\)](#)
- [NSF-Sponsored REU Summer Programs List](#)
- [Internships List](#)
- [Mentoring through Critical Transition Points](#)

Semester Programs

- [Mathematics Advanced Study Semester \(MASS\)](#) at Penn State
- [The Junior Program of the Center for Women in Mathematics](#) at Smith College
- [Article on various semester programs from November 2003 Notices](#)
- [Math in Moscow](#), semester-long program in English
- [Budapest Semesters in Mathematics](#), semester-long program in English



Issues from the Faculty Perspective

- How can we judge what the students are learning in another system?





Issues from the Faculty Perspective

- How can we judge what the students are learning in another system?
- Base the judgment on outcomes, not on teaching method.





Issues from the Faculty Perspective

- Should we encourage a student to study abroad outside the major field?



Issues from the Faculty Perspective

- Should we encourage a student to study abroad outside the major field?
- YES! Students are well served by developing multiple skills.
- Good use of summer programs.





How can we smooth the way for students?

- By talking directly with the science and engineering faculty, and making them aware of the data of success.
- By making special efforts to include our own international faculty in the conversation, and those who have special international experience or connections.
- By letting our own successful study abroad students recruit their peers and talk with the faculty.



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UC San Diego
International Center



International Center



Programs Abroad, International Students and Programs, International Scholars, Internationalization at Home

Our goal is to ensure that all students have the knowledge, skills, and sensitivities they need to engage “mind, hand, and heart” in our local, national, and international communities and to support UCSD’s international education initiatives.



Rankings and Achievements

- With 2,400 international scholars, UCSD ranks 7th in the nation for the number of scholars; two-thirds of UCSD post-docs are internationals
- UCSD ranks in the top 5% nationally for the number of international students on campus
- UCSD ranks 10th in the nation for the number of students studying abroad for a full year
- 22% of UC San Diego undergraduates study abroad, compared to 3% nationally, goal is to send 50% abroad before graduation



Dispelling Myths

STEM students can participate in education abroad without delaying graduation.

STEM students can find courses abroad that keep them “in sequence” with their home school curriculum.

STEM students can take courses abroad in English (even in non-English speaking countries).

STEM students experience abroad is valued by employers, graduate schools, and professional schools.

The issues that STEM students will be addressing as professionals cut across national boundaries.

FACT: Must have vocal support of upper-level administrators.

Time-to-Graduation Data

- 98% of UCSD students who studied abroad graduated in 4.2 years. Only 78% of students who did not study abroad graduated in 4.2 years.
- Among Engineering majors, the numbers were 92% and 77%. Among Science and Math majors, 87% and 79%. Among BioSci majors, 94% and 77%.
- This holds true regardless of family income, anticipated first year GPA, ethnicity, first or second generation, home location, SAT scores, etc.

Academic Integration

- Collaborate with departmental faculty and advisors to identify strong curricular matches. See Departmental Sheets!
- Identify unique opportunities, environments, facilities, and approaches.
- Publicize opportunities, dispel myths, and provide encouragement for STEM students. These students are linear thinkers—give them concrete answers! See Major Advising Pages!
- PRIME program, undergrad summer research in Pacific Rim, NSF funded.
- Kenneth Wong, UCEAP program in Ghana, malaria research, won Forum on Education Abroad research award, now at Yale Medical School.
- As of fall 2010, UCSD began offering undergraduates a Global Health Minor, the first in the UC system, which requires an international or domestic field experience.





Value of Ed Abroad for STEM

- UCSD survey assessing alumni experiences and impact on careers and life:
 - 1,010 study abroad alumni responded (29% response rate)
 - 51.4% agreed or strongly agreed that study abroad influenced their choice of career
 - 39% agreed or strongly agreed that study abroad helped them obtain their first job after college
 - 93.7% agreed or strongly agreed that cross-cultural skills acquired abroad were professionally valuable
- Major employers highly value UCSD graduates: Microsoft, Life Technologies, SAIC, Sea World, Cubic, Gen-Probe, HP, Northrop Grumman, ViaSat, Qualcomm.
- 65% of US medical school deans said that study abroad enhances a student's chances of being accepted into medical school.

