

A Co-op Based International Engineering Minor Degree

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Introduction

In 1983, I had a student who opted to work his Co-op with his father's company in Japan. Midway through the experience, I wrote to his father, inquiring if per chance the arrangement had been of sufficient mutual benefit to warrant replacing his son after his Co-op with another student. Today, thirteen years later, that company has now had thirty-five of our Co-op students, most of whom did not speak any Japanese prior to the start of their Co-op placement. In 1985, I launched a similar chain of events with Siemens Company in Germany. The idea grew in its appeal with more students and companies. Concurrent with this trend, we began hearing more and more of such terms as 'global economy,' "cross-cultural sensitivity," "improved international relations," etc. in various professional engineering circles. So around 1993, it occurred to us that it might be helpful to provide some structured guidance for preparing students for these international Co-ops by making available a plan whereby students could take internationally-oriented courses prior to such a Co-op, and receive an "International Engineering Minor" degree upon such completion. This paper presents our formal published guidelines for this degree, discussing the various components in the order of their occurrence in the attached brochure.

Program Requirements

Bachelor Degree: Students must complete an engineering degree to qualify for the minor degree. Since none of the minor courses taken are actually directly related to engineering, the minor relies on the major requirements along with the Co-op experience discussed below to support its "engineering" content.

GPA: We require students to maintain a minimum grade point average of 2.5. This helps preserve the respectability of the program. It also helps us to assure prospective international employers that they can rely on our applicants. These employers are an extremely precious commodity, worthy of extra protection.

Co-op: Perhaps the most exciting component of the minor degree is a full-time Co-op placement in another country. The School of Engineering at the University of the Pacific requires all its students to complete twelve months of full-time Cooperative Education experience prior to their graduation. (Some exceptions exist.) After their sophomore year, students go out on the first of their two Co-ops, withdrawing from their classes and relocating for the position. At the end of

that semester, they return to the campus and resume their engineering courses for one year. They then go out on their second Co-op for a full semester before returning to campus to complete their final engineering courses. (One of the Co-ops extends through the summer for a full twelve-month complement.)

Virtually all of our students return from their Co-ops very appreciative of the experience. But the students who take their Co-ops in another country return to our office exceedingly pleased with the experience. They often bring us gifts just to show this appreciation. Their Co-ops were both a technical experience and a cross-cultural experience.

The unfortunate assumption of most students is that such an experience is not an option for them unless they speak the language of their host country. This is far from true. There are so many engineers in other countries who have a basic working knowledge of English, that with a little creative sign language, our students report that they get along fine. Most of them enroll in evening language programs, and one way or another, pick up much of the language while they are there. Many of the students become so fluent with the language (in this 5-7 month time) that they even converse with other people over the telephone (one of the more difficult feats for someone new to the given language). (It is ironically true that of the thirty-nine students we have sent to Germany, only one of them spoke German, and he has been the only student who had a relatively poor experience.)

Foreign Language: We do require our students to meet a minimum proficiency of two semesters of a foreign language. Although they do not have to do this with the language of their host Co-op country, we are advised by our Modern Language faculty that when one learns a new foreign language, such is helpful to the student in learning subsequent foreign languages. Students can satisfy this requirement by taking (or passing the equivalent exam for) two foreign language courses, or by virtue of speaking English as a second language.

Internationally-Oriented Courses: We require the students to complete about four internationally-oriented courses for a letter grade. We were surprised to look carefully through our University catalog and discover a tremendous offering of such courses. Most fall in one of the following areas: business, cross-cultural training, economics, and political science. Desiring some depth in the degree, we do require at least one course to be an upper-division course from one of these departments. The **good news** for students is that if they plan their courses carefully, three of the four courses can double-count toward their general education requirements, preventing the need for students to delay their graduation for the degree.

Conclusion

It's becoming trite but true that our world, including our engineering world, is becoming more and more global. The International Engineering Degree provides an academic incentive and structure for to become more prepared for the 21st century. The combination of foreign language studies, internationally-oriented courses, and actual international engineering experience lend to a more marketable and effective engineer.

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