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# A Combined Undergraduate Program in Engineering and German

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*A new program which combines the study of engineering and German has been established at the University of Rhode Island. The International Engineering Program is of 5 years duration and results in a Bachelor of Science degree in Engineering and a separate Bachelor of Arts degree in German. The program includes special technical German courses, a professional internship with a German company and an engineering course taught in the German language at the University of Rhode Island.*

## THE NEED

IN EUROPE, as in other parts of the world, it is not unusual to find a professional engineer with strong technical abilities and the ability to function well in his or her own first language as well as a strong capability in the English language. Such an engineer is a very attractive potential employee for a firm which has considerable business dealings with a country where English is commonly used. This bilingual capability has served Europe well. European engineers are often fluent in more than two languages and this fact gives the current effort towards the European Community a good probability of success.

From the corporate point of view, the multilingual engineer is a good asset and is particularly useful as a liaison person between two divisions of the same company in different countries. The multilingual engineer can co-ordinate problems and solutions in different settings and assure that through communication similar problems need to be solved only once.

One might expect that for any bilingual situation an engineer capable in those two languages would be satisfactory. However, not only is language important, but also the cultural perspective. That is, to achieve the best result, the bilingual engineers should come from both sides of the relationship, not just one. International companies are very aware of this need and have been very supportive of this effort to produce the mirror image of the European engineer discussed above, the American engineer with a strong capability and experience in the German language.

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## THE INTERNATIONAL ENGINEERING PROGRAM

In order to fulfill the need for American engineers with strong German experience, the structure of engineering education and German language education in the U.S. was examined. Within the classical constraints of the 4-year engineering program, it was clearly not possible to add enough language study to sufficiently prepare the students. The best solution for a high quality program appeared to be the lengthening of the traditional 4-year program to allow for enough language and culture classes to prepare the student to work in a German-speaking country. It was also considered to be very desirable for the students to have actual experience in that country before the end of their formal education.

The resulting International Engineering Program has the following features.

- 5-year program
- two separate degrees; BSc (Engineering), BA (German)
- regular engineering program—no reduction
- special German courses stressing application and the use of technical terms
- internship in a German-speaking country—6 months during the fourth year.
- engineering course taught on the University of Rhode Island campus but in the German language.

The International Engineering Program has been very well received. In order to create the new classes required and to recruit the corporate support for the internships, a grant of $145,000 was received from the Fund for the Improvement of Post Secondary Education (FIPSE) of the U.S. Department of Education. The new German

courses include technical German words and phrases, and often study of technical German publications as well as German literature. Engineering faculty members with an ability in German are often present in the language class to provide support and a technical view of the language.

## ORIGIN OF THE IEP

The beginnings of the International Engineering Program lie in conversations between the authors over a period of several years. These conversations were driven by a mutual interest in the German language and culture. With the success of the FIPSE proposal and the resulting financial support, the funds were available to start the sequence of German courses.

It was clear that if such a program were to be successful, the University of Rhode Island had the necessary ingredients. In addition to strong programs in engineering and German, the University is also the home of the German Summer School of the Atlantic (Deutsche Sommerschule am Atlantik), a total immersion language program held on the URI campus each summer. In addition to providing a good climate for German language, the existence of the total immersion program means that an academic year of German language instruction may be compressed into a very short time (6 weeks) during the summer. Therefore, it is possible to recruit students into the program who are engineering sophomores and have not yet taken any German language instruction. These students can make up a missing year of instruction during the summer and thus the progress towards their BA (German) degree will catch up to the status of the BSc (engineering) degree. Most members of the first group of engineering interns in Germany have used the advantage of the German Summer School and the program will produce its first group of graduates in June 1991, a full year ahead of schedule.

Another fact contributing to the success of the IEP at the University of Rhode Island concerns the support of the Engineering College faculty for the German language instruction. About half a dozen engineering faculty members are fluent in German. These faculty members have participated in some of the German language instruction and will teach the fifth year technical courses to be taught in German.

## THE INTERNSHIPS

The first group of five interns arrived in Germany in January 1990. They are located in a variety of corporations: Stiefelmayer KG, Esslingen; Siemens AG, München; Hoechst AG, Frankfurt; Schroff GmbH, Straubenhardt; Siemens AG, Erlangen.

It is interesting to note that these five interns all joined the program as engineering sophomores. Four earned a year of language credit through the German Summer School. The fifth student already had a sufficient background in German to make this unnecessary.

A very considerable number of additional companies have expressed a willingness to participate in the program. It is anticipated that in the future interns will be located with the following companies: IBM, Sindelfingen, Digital Equipment, München, Zahnradfabrink, AG Friechrichshaven; INDOX, Bad Oeynhausen, Lufthansa, Hamburg; UVEX, Fürth, Vorwerk, Wuppertal.

A very important feature of the internships is the fact that the students are compensated for their labor. The students are expected to pay for their own transportation to Europe. However, once they arrive at the internship sponsor's facility, it is expected that their compensation is sufficient that they will not need to subsidize their living. The companies have been generous both in the level of financial support and in their assistance to the student to find housing.

The internship method seems to work best when the student works first with an American division of the European company during summers prior to the internship. This allows the student to learn about the company's products and operations in the U.S. and prepares the student for the overseas assignment. The company benefits because the student is more valuable upon arrival in Europe and contributes at an earlier period in the internship. As a result, the student will know the operation on both sides of the Atlantic and be a valuable potential employee.

## THE ADVISORY BOARD

A key element of the success of the IEP has been the existence of a group of external advisors who supplied critical feedback on the project, contacts with German–American industry, and financial and moral support. The current members of the IEP Advisory Board and their affiliations are: Mr Henry Fazzano, Director, RI Department of Economic Development; Mr James K. Feeney, President, Windmoeller and Hoelscher Corporation; Mr Darrell Nordeen, Vice President, Hoechst Celanese Corporation; Mrs Heidi Kirk, North Kingstown, RI; Dr S. Johannes Trommer, Deputy Consul General, Federal Republic of Germany; Mr Donald A. Roach, President, Brown and Sharpe Manufacturing Company; Mr Udo O. Schroff, Vice President, Schroff Incorporated; Mr Wilfred Buss, Lufthansa German Airlines; Mr Ronald H. Beaudoin, Vice President, Inoex Incorporated.

## CONCLUSION

The International Engineering Program is successfully under way. Under stable operation, it is expected that enrollment in the program will

approach 100 students. The internship in Europe will probably stabilize at about 10 students per year. The fraction of students who finish the program compared to those who start is expected to be about one-third. The program is difficult, time-consuming and long. The students who start the program are among the best in the school. The students who finish the program have a perspective of engineering and the world which far exceeds that of their colleagues.

Best of all, in the words of one of the students, they did not need to make a choice between pursuing engineering or the liberal arts. They could do both.