

Summer International Experience for First Year Students

Dan Budny and Teresa Larkin

University of Pittsburgh / American University

Abstract – The Plus 3 Program is an optional three-credit study abroad opportunity offered jointly by the school of business and engineering as a follow-up to the freshman year. The course consists of a field study trips to a number of locations including: Brazil, Chile, China, Czech Republic, France; or Germany. The course involves lectures at the local universities, company visits and sightseeing. It culminates in a group research paper and a presentation focused on one of the visited companies, as well as in the national and global industry in which it operates. The groups consist of both business and engineering students, thus their view points are considered in the paper and in the presentation. This paper will outline this award winning course layout and how it fits into the School's ABET and other student learning goals.

Index Terms –Study Abroad, Global Issues.

Program Overview:

Plus3 is a University of Pittsburgh study abroad program jointly developed and led by faculty from the College of Business Administration (CBA) and the School of Engineering. The program is designed as a three credit (hence the name) optional add-on to both the CBA's required freshman course "Managing in Complex Environments" (MCE) and the School of Engineering's required freshman course "Engineering 12" (ENGR12). *Plus3* includes a two-week international research trip taken by the business and engineering students at the end of their freshmen year. The program targets rising sophomores with little or no international experience. Its purpose is to induce interest in both language and further study abroad, while providing an opportunity for students to participate in a serious, multi-discipline team experience as they study and compare international and US companies within an industry. The program fully integrates faculty and students from engineering and business. The program builds on natural synergies between business and engineering and allows programs to run that would lack critical mass for either school on its own.

The program makes study abroad more accessible to professional engineering students, as the discipline has traditionally been less well-represented due to time constraints imposed by strict curriculum requirements. The Plus3 model has been so successful that the University of Pittsburgh has adopted it to create "Integrated Field Trips Abroad", now a component of courses across the university curriculum.

In 2004, the Plus3 program included seventy student participants from four university administrative units, as well as four partner institutions, including the University of Augsburg in

Germany, the Czech Management Center in the Czech Republic, University of Santa Maria in Chile, and University of Nanjing in China. Two trips were led by engineering faculty and two by business faculty; a staff member accompanied each trip to help deal with logistical problems.

Coordination was one of the greatest program challenges, particularly as the common syllabus must work for all participating faculty members and administrators, independent of their countries and disciplines. Coordination was best accomplished with a final syllabus that includes a "common set of work products", which was adapted by each group to suit the local environments in the countries of destination.

The course consists of three parts:

- A pre-departure component (25% of the course grade) consisting of four mandatory three hour Sunday afternoon seminars in March and April. These sessions incorporate material on the historical, cultural, economic, and social environments of the country/region of the field study. In addition, students take part in both engineering and business lectures that prepare them for their research projects and provide them with the analysis tools for the student project; a crash course in language; and advice on traveling in each country. There are also assigned reading materials. Students are also advised in December, that it would be to their advantage if they take an elective course during the spring semester that is related to one of the Plus 3 countries. The pre-departure component concludes with a student report and oral presentation on what they think they will see in their country.
- A field study component (40% of the course grade) to one of the Plus 3 countries during the first two weeks of May. The field study includes company visits, sightseeing, and lectures at the local universities. While in country, the students attend lectures (by their Pitt faculty leader or local experts) on the country's history, language, and culture, in addition to lectures on cross-cultural management and the industries that the groups are researching. They also participate in four to six company site visits that form the basis for the team projects. Students from the University of Pittsburgh also interact with local students at the various sites.
- A post departure component (35% of the course grade), that involves the writing and presentation of a research paper focused on one of the companies visited by the group), and the culture of the country visited. Both business and engineering viewpoints related to the national and global industry in which it operates must be considered in the company visit component of the paper and in the presentation.

Project Evaluation

Student evaluation in the *Plus3* program occurs via participation, a journal, and a project. When assessing participation, students are expected to attend and actively participate in all components of the course, including the pre-departure workshops and seminars, the in country company visits, cultural visits, lectures, and planned social activities and the post-trip meetings and presentation.

The difficult part for the faculty in this process, is assessing the in-country participation. We understand that each student is an adult and as so has the right to spend their free time in the country as they wish. However, all students are told they must also understand that while they

are on the site visits and also while they are on their own time, they are representing the University of Pittsburgh. Thus, their actions directly reflect on the university's image and the image of the United States. Thus, failure to maintain acceptable behavior results in failure of the participation component and can be grounds for failing the course and being sent home. Acceptable and unacceptable actions are described in the pre-departure sessions. To date, we have not had the need to send anyone home, but these students are 19 years old and in all the countries we visit the age of drinking and other social activities is very different from the United States, and thus causes many opportunities to discuss social issues.

During the two week in-country component of the course, each student is responsible for keeping a daily professional journal of their reflections on various professional issues and concerns that are encountered during the trip. This is a professional journal, which means that it must include descriptive comments about what they saw or did and it must make connections between the daily experiences and how they help in the student development as an engineering or business professional. The journal is intended to compel students to make direct connections between what they are observing and experiencing on the trip and the types of issues and concerns they will face as professionals. These observations can be comparative (how the country is the same or different from the U.S.) and can include comments on day-to-day life, anecdotes, language, geography, stores, social life, the popular culture of the country, etc., but should have a connection on how this impacts their professional development. As part of this journal, each student must also include a description of how the program of study and life of an engineering or business student (whichever they are) is the same as and different from that of a comparable student in the U.S.

Shortly after each company visit, students also write a journal entry on one of the following topics.

- Global/National Environment: What interesting political, economic, social or technological factors affect the firm that you visited today? Why are these factors of interest to a professional in business or engineering?
- Industry Analysis: Describe the industry of the firm that you visited today. What are the major product categories in this industry and who are the firm's major competitors? What unique challenges or opportunities exist for firms in this industry? Why is this industry of interest to a professional in business or engineering?
- Firm Analysis: What interesting strengths or weaknesses were discussed (or are apparent) in the firm that you visited today? Does this firm face any interesting opportunities or threats from the external environment? Why is this firm of interest to a professional in business or engineering?

In addition to the company visits, students must also address topics on professional development in at least 10 of their journal entries. At least two (2) of the ten (10) entries must be selected from the following list of five areas of professional development:

1. Ethical Issues in My Profession:
Give an understanding of professional and ethical responsibility of the global industry.
How does this affect life and business in the United States?

2. Educational Breadth as Professional Development:
Describe the need for a broad education necessary to understand the impact of engineering/business solutions in a global and societal context. Explain what future courses you should take to prepare you for a global economy.
3. Lifelong Learning, Continuing Education as Professional Development:
Give a recognition of the need for, and an ability to engage in life-long learning and explain how this is needed to compete in the future.
4. The Social Environment of Professional Life:
Explain why it is important to have a knowledge of contemporary issues related to the global economy. What political, social, economic and diversity issues are involved within engineering/business that are involved within your industry? How does this affect life and business in the United States?
5. Functioning on Multi-Disciplinary Teams:
It is important for professionals to be able to function and communicate effectively as a member of a team of individuals from diverse backgrounds. How do you work when you are a member of such a team (for example – you are either an engineering student who is traveling with business students, or vice-versa)? What are some the challenges involved in establishing and maintaining effective communication on this type of cross-functional team?

This journal is updated daily and an edited electronic version are submitted to the trip web site. Students are told to bring digital or standard cameras to document their trip and include photos with your journal if possible.

The main product that the students produce is a written report that discusses an industry in general and a company analysis of the site that was visited. Logistics of student team breakdowns are based on the number of students that visit each country the number of companies visited and the breakdown of engineering and business students in each country. This, typically results in students groups of 3 to 5 students with at least one business student. This group must prepare a written and oral report. Faculty evaluate both the 20 page written report (8000 words) and the 15 minute oral report to students, faculty, and university administrators. The project is designed to build on skills and concepts learned in both MCE and ENGR12 but applied to an international context. Consequently, students consider issues such as the industry structure, global supply chain, and competitive dynamics as well as firm issues such as performance, core competencies, R&D, design, logistics, sustainability, worker safety, marketing and even environmental issues. In this manner, students are able to introduce both business and engineering concepts into their work on the projects.

The paper has four major sections. I) Introduction and Overview of the group's company, II) Description of the company visited including an Industry Analysis, III) Description of how the company fits into the global economy, and IV) Evaluation of the impact the global industry has on business and engineering and how it is changing these professions in the United States today and in the future.

Section I is approximately 500 – 1000 words and discusses how and why does the company have a competitive edge, with respect to factors such as: Why is the company located here? What is

the fit with its national environment? What is the fit within its industry? What is the appropriateness and success of its competitive strategy.

Section II is approximately 1500 – 2000 words and discusses the conditions the firm faces in its broad social environment at the Global/National level. This requires the students to perform a P.E.S.T. analysis and answer questions such as: What national and global Political, Economic, Social and Technological factors affect the company that was visited? An Industry Analysis that describes the industry and includes information about the product categories produced, the manufacturing process or industry operations, who are the major world players and what are their market shares, where are the major production locations and major market locations in the world is also part of this section. Finally the students must also include a Firm Analysis that describes a SWOT Analysis of the visited company. In this analysis the students discuss what specific environmental factors their company faces, that are internal to the company based on the company location, and is this a Strength or Weaknesses of the company? And what external environmental factors does their company face based on the company location, and is this a Opportunities or Threat to the future of the company?

Section III is approximately 3000 – 3500 words and discusses how their company is responsive to the various conditions that it faces? Specifically, Who owns it? How long has it been in business? Where are its headquarters? What products does it produce? What geographic markets does it serve? How many employees does it have or appear to have? What percentage of the work force are professionals (engineers and/or business)? What type(s) of engineering and business is (are) used in the manufacturing? What differences exist between the company in the visited country and a similar one in the United States? Does your firm have any comparative advantages with respect to other global competitors because of its fit with the conditions (P.E.S.T.) of the country/region in which it operates? What is your firm's position within its industry with respect to cost leadership, differentiation or focus?

The final section, is approximately 1500 – 2000 words and evaluates the firm's level of innovation and suggests areas in which it can maintain or improve its position. The students are asked to discuss: What are the main things (fit within global/national environment) that your firm is doing well in order to be innovative and compete successfully? Which areas (fit within global/national environment) are not fully developed in your firm, or, are not being addressed adequately? What can your firm do to continue and even further its competitive advantage? What should your firm do to address its competitive weaknesses?

Participation

In spring 2004, a total of 70 students participated across all four program destinations. This total included 37 Engineering students and 33 Business students. Two of the faculty leaders were Business faculty and two were Engineering faculty. All four programs used a common syllabus and while the country visits were tailored to take advantage of the local business and engineering environments in the four destinations, the faculty team followed a common template in order to make the experience comparable for all students, irrespective of destination.

Support

Plus3 is financially supported by student tuition (\$1565), faculty and scholarship support from the CBA and the School of Engineering, scholarship and incidental expenditures from the International Business Center (the University of Pittsburgh CIBER), and (for Germany) travel grants from the DAAD. Staff support is provided by the University Center for International Studies' Study Abroad Office, the International Business Center, the Katz Graduate School of Business and the School of Engineering.

Impact

Plus3 participants regularly describe the program as their best experience in college. However, in addition to enhancing the academic experience of individual students, the program has had a major impact in three different areas:

- Plus3 has increased participation in study abroad by professional students who traditionally often do not or cannot participate in such programs. This impact has been direct in that these students have had this experience, and indirect by whetting their appetite for longer experiences later on. For example, three students from the 2002 Plus3 program began serious language study upon their return and subsequently did internships abroad in 2004: two in Germany and one in Chile. The Chilean internship was with the stock exchange in Valpariso and the Germany internships were with a brewery and with an engineering firm manufacturing CT scanners. All involved use of either Spanish or German language skills, with the two students in Germany only beginning German study after the Plus3 trip two years before. Other students from the program have participated in further study abroad or Semester at Sea programs.
- The collaboration with the Schools of Business and Engineering that began with this program has been the seed for additional collaboration, for example in offering of professional language (currently, Professional Chinese and German), and in the development of special programs for business and engineering students on Semester at Sea. Plus3 has demonstrated the importance of this collaboration in building on the natural linkages between the schools and in facilitating the offering of programs that, because of the lack of critical mass, would not have been offered by the units acting alone.
- The program has been adopted by the University of Pittsburgh as a model for Integrated Field Trip Abroads (IFTA) across the entire university. In IFTAs, a regular course in the curriculum, typically taught in the spring term, has an optional faculty-led international add-on component.
- The highly effective Plus3 program has already produced lasting results as students with little or no international experience before the trip have been inspired to continue their study abroad experiences through additional programs. Because of this success, the National Institute of International Education (IIE) awarded the Plus 3 Program the 2004 **Andrew Heiskell Award For Innovation in International Education.**

Conclusions

The above discussion describes the detailed course layout. A review of the course requirements shows that the course outline allows us to concentrate on many of the ABET item 3 a-k issues such as: function on multi-disciplinary teams, appreciate an understanding of professional and ethical responsibilities, appreciate the broad education necessary to understand the impact of engineering solutions in a global societal context, address the need to improve their written and oral communication skills, and recognize the need for an ability to engage in life long learning that is impossible in the typical freshman curriculum.

The importance of internationalizing schools of engineering and business cannot be overemphasized. In recent years the United States has witnessed increasing global competition from countries such as India and China for highly skilled professional jobs in many areas. To be successful in this more global professional labor market, our students need the global awareness, interest, and experience that allows them to compete for these global jobs and to work in cooperative teams that cross national boundaries. The Plus 3 program allows us to begin this education process at the freshman level. We believe the course is unique and allows us to engage the students in both an international experience and enhance their engineering education.

At the present all student evaluations are very positive, however, we need a few more years to measure the long term impact of these courses on the undergraduate education. However, after just a few years of offering these courses to the engineering students, it is quite apparent that the students are very excited about the opportunity to study abroad and it is giving them at least a first view of how people do things in different parts of the world.