Study Abroad Program
IIT Hyderabad, India

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January 22, 2013

1 Introduction

The purpose of this document is to present a new Faculty-led Study Abroad program under the auspices of the UT Study Abroad International Office and the International Engineering Education (IEE) program in the Cockrell School of Engineering. I am proposing to study-abroad program involving UT students taking a 10-week summer course (EE319K) in Hyderabad India that is combined with a Special problems class where students will participate in Industry projects and University research lab work. The proposed course is a required course in the EE and BME curriculum with annual enrollment exceeding five hundred students. The proposed version could potentially be a better experience for our UT student, as they will be teamed with a IIT, Hyderabad student on all labs. Currently, IEE offers eight long-term (Fall/Spring semester) programs and eight Summer (mostly Maymester) program for students who seek to study abroad in an international learning environment with exposure to both academic life and culture in a foreign country. ECE students at this time have mostly chosen the Spring semester program in South Korea at Sungkyunkwan University (SSKU), where they take classes along with other Korean students in English. Besides getting credit for these classes the most compelling component of the program is that these students are given an opportunity to pursue a eight-week summer internship at Samsung Electronics. Other programs offered by IEE are faculty-led programs, where a UT faculty teaches an in curriculum course at a foreign university with students from UT taking the class and the foreign university (in some cases together with students at the host campus). The benefit of these programs is that the quality of the class is in conformance with UT’s curriculum. The proposed program incorporates the best features of the other programs into a compelling course that in my opinion can become very popular with students and our industry partners. Specifically, (i) the relevance of the location, Hyderabad is one of the first cities in India that companies like Microsoft and Google setup shop, (ii) the host university is part the IIT system, a reputed Indian academic institution, (iii) the class will have equal representation of students for UT and IIT Hyderabad making the exchange invaluable, and (iv) the special problems component of the class will expose our students to the work environment at Indian high-tech companies and to research at a top class Indian university.

In the following, I will discuss the crux of the proposed study-abroad program, the parties involved in the proposal process, what each party is responsible for, the details of the course I am proposing to teach and the location that the course will be taught.
2 Background

Broadly speaking these are the goals of the Study-abroad programs within the Cockrell School of Engineering:

1. To have at least one faculty-led study abroad program in each engineering department. Currently, only Mechanical, Aerospace, Bio-medical and Civil Engineering departments have such programs.

2. To introduce a program in India in one of the high-tech centers like Hyderabad. Most of the current faculty-led programs are in the EU and one in Turkey.

3. To widen the programs reach, so students in multiple Engineering departments can take them.

4. To spread the value of exposure to a global academic learning environment and workplace in todays world. Companies like Intel, TI, Arm, and AMD have often sent their employees to other emerging high-tech markets in Asia to gain valuable exposure to work environments and culture. These same companies are now placing great value on incoming engineers with such prior experience.

5. To get students who opt to take a study-abroad class to do so early in their degree. It is the IEE’s opinion that the experience has the greatest value when taken as freshman or sophomore semesters.

After learning about Study abroad programs interests and discussing the prospects with her, I decided it would be worthwhile to narrow down the proposal to India and the topic to a core subject that has a wide technological appeal.

3 The Proposal

I am proposing to teach a summer class in Embedded Systems (EE319K) in India. EE319K is a required second-semester freshman class that both EE and BME students take, with an enrollment of approximately 400 EE and 140 BME students. The plan is to offer the course as a ten-week class at the Indian Institute of Technology (IIT) Hyderabad. The enrollment in the class will be limited to 30 to 40 students, with half of them being UT students and the other half from the host campus. I visited the host campus over the winter break and met with the chair of the EE department, Dr. Zafar Ali Khan and Dr. Amit Acharya who teaches a similar class there. I presented the proposal to them and got their approval and promise of support for the program in the following form:

- The EE department at IIT, Hyderabad will screen 15 students for participating in the program. As the equivalent pre-requisite class for EE319K is covered in their curriculum only in the Sophomore year, the chosen students will have completed their sophomore year.

- IIT Hyderabad will provide classroom and computer lab space for the class. Also, since all students will be required to own a laptop for the class, they will have the flexibility to work in the lab or in their dormitory room.

- IIT Hyderabad will provide room and boarding on campus with CIEE managing the logistics.
Dr. Acharya will teach supplementary material beyond the syllabus with other faculty providing guest lectures.

In return, IIT Hyderabad expects that UT provide a certificate acknowledging the fact that their students have taken the class taught by an UT faculty for the 10-week summer semester on their campus. As the IIT students are unlikely to get academic credit for the class, such an acknowledgement will be valuable to their resume and/or further studies in the US.

The course will be the full 319K class as taught in the long-semester here in the ECE department as can be seen in the syllabus accompanying this proposal. The syllabus shows both the EE319K course and the Special problems component. All students will be placed in an Industry sponsored project or a research lab. The industry projects will be conducted on the IIT campus with periodic visits to the sponsoring company for updates and demonstrations. EE319K class meets three days a week and the student works on the Special problems component for the other two days. We could switch the emphasis in the second half of the semester, so the class meets two days a week and Special problems component is for three days. This will allow the student to focus on building a useful skill set through coursework early on so they can be increase their productivity at their Special problems component in the second half. A complete syllabus is attached at the end of the proposal.

4 Tech Companies Identified

The following companies have been identified for industry projects for the Special problems component:

1. **Xilinx**: Has an office in Hyderabad. Faculty at IIT Hyderabad work with them.

2. **Tata Consultancy Services**: Is one of the largest IT companies in Hyderabad with over 17,500 professionals.

3. **Infosys**: Their current campus in Hyderabad has over 10,000 professionals with a new extension targeted to reach over 25,000.

4. **Qualcomm**: The Hyderabad facility is the Global IT Center with focus on the following technologies: wireless modem and multimedia software, DSP and embedded applications.

5. **Microsoft**: Hyderabad has the largest Microsoft R&D centers outside of Redmond. More than 1000 people work there on several Microsoft technologies.

6. **Google**: Google’s Indian headquarters is in Hyderabad where global products like Gmail, Calendar, Docs and Chrome are the focus of more than 800 professionals.

7. **ARM**: Does not have a presence in Hyderabad but has collaboration with IIT Hyderabad.

We are approaching these companies for projects and hope to get eight to ten projects that can be worked in teams of two UT students.
5 Student Interest

We currently offer the class in summer, which is mostly taken by transfer students and those repeating it. Knowing that the class has a summer offering, many regular semester students may opt to take it in summer. This has been the experience of the IEE when new classes were offered. I took a preliminary poll of students currently enrolled in EE306 (Introduction to Computing) to gauge the interest in such a course. The specific question was worded as follows:

*If you attended class today, you heard me talk about a possible study-abroad program involving taking EE319K as a 10-week summer course in India. The essence of the program is, you would be taking the class with students at a host campus (IIT Hyderabad) with all labs performed by a 2-person team comprising of you and a student from the host campus. Also, there would be a Special problems component which involves working on an industry project or in a research lab at IIT for the 10 week period, overlapping with the course. The proposal is currently under review and if approved will be put in place for Summer of 2014. As such this may not be an option for you but I want to get your input on how likely would you have considered taking the summer study-abroad version of EE319K in place of taking it in Spring as you currently will do. If this was an option will you take it?*

Here is the summary of the poll results: As the poll shows 60% of the students said they would take the class and 30% were unsure and only 10% said they would not take it. These are very encouraging numbers that clearly show that it ought not to be difficult to get enough students to enroll in the program.

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6 Parties and Responsibilities

Besides the students and the instructor (myself) the responsible parties in the proposal are IEE in Cockrell School, the Study-abroad program at UT, the ECE department and the EE and CSE departments at IIT Hyderabad. The study-abroad program at UT is the organization that the proposal is submitted to and the final approval rests with them.

6.1 IEE Role

As with programs of this nature, IEE will be responsible for the following.

1. Bear the expenses for the flight tickets for Faculty and TA.
2. Bear the expenses for room and boarding for Faculty and TA.
3. Bear other travel allowances in the foreign country for Faculty and TA.
4. Provide insurance coverage for Faculty and TA.
5. Visa services.

6. Be the liaison and work out all the logistics of administering the program at the remote location.

6.2 ECE department

The ECE department has

1. Approved the course as proposed.
2. Agreed to communicate/advertise this program to the students as an option during the first year advising.
3. Agreed to pay the Instructor and TA salary.
4. Committed to offering of the class at the remote location for two years, Summer 2014 and Summer 2016.

6.3 IIT Hyderabad

I met with the EE department to get their input and identify their roles in the program. For now I see their role as follows:

1. Provide classroom and lab space for the course.
2. Advertise the class and screen applicants.
3. Help with Industry projects.
4. Provide resources for room and board.

6.4 CIEE Hyderabad

I attended an orientation given to the Spring semester study-abroad students at Hyderabad Central University. For now I see their role as follows:

1. Provide logistical support for travel, visa, health and safety advice.
2. Coordinate the room and board facilities provided by IIT Hyderabad.
3. Organize and execute day-trips and one longer excursion.
4. Do a through initial orientation to acclimatize our students to the city, its people, culture, language and other nuances.
7 Other Logistics

7.1 Timeline/Milestones

• ✓ Present the preliminary proposal to the curriculum committee for their review and approval. (Approved)

• ✓ Visited IIT Hyderabad (28th December) to work out the details with them so their input is incorporated in the proposal.

• ✓ Did the Spring 2013 orientation with CIEE Hyderabad (2nd January) to learn about the services they provide and how they currently manage their study-abroad program at Hyderabad Central University.

• The proposal to the University is due January 25, 2013.

• If approved, visit IIT Hyderabad in Summer of 2013 to work out the course logistics with CIEE Hyderabad.

• If approved the proposed class will be offered for the summer of 2014.

7.2 Course Material

• Mouser will ship ARM boards (595-EDU-VALVANO-K) to India.

• Keil uVision can be downloaded in India

• Amazon India currently does not print Valvano’s book, so we will have to buy and ship them ourselves.