

## **AC 2008-2950: A JOINT EDUCATIONAL FEEDER PROGRAM**

**Mean-Shang Chen, Central Michigan University**

**Albert Peng, Central Michigan University**

**Yanjia Sun, Central Michigan University**

# A Joint Educational Feeder Program

## Abstract

In 2005, a joint undergraduate educational program, the SIT-CMU Joint Program, was established on the campus of Shanghai Institute of Technology (SIT) in China. It serves as a feeder program for the Central Michigan University (CMU) in the U.S. Participating students of this joint educational program are encouraged to continue their studies at CMU. They can transfer to CMU to complete a bachelor's degree program if they have successfully completed the first two years of coursework at the program site. This paper discusses the curriculum, faculty recruitment, program management, transfer options, and the commitment required from both schools for this joint program.

## Introduction

Central Michigan University (CMU) in the U.S. and Shanghai Institute of Technology (SIT) in China executed a Memorandum of Understanding in 2000 to promote international undergraduate and graduate educations and to strengthen academic exchanges and cooperation between the two universities. After extensive communication and discussion between the two schools, they entered a Memorandum of Agreement in 2002 to expand their relationship. Under this agreement, a joint four-year undergraduate educational program, named the SIT-CMU Joint Program, was established in 2005. As the main program site, SIT is responsible for recruiting 80 high school graduates into a cohort program of Automation and Mechanical Design & Manufacturing every other year. Each institution provides instruction for the joint program; however, all teaching activities are carried out on the main program site.

CMU is responsible for covering six engineering courses, whose curricula are determined and agreed to by both schools. These courses are spread over the last three years of the program and are taught in English. CMU has the option of offering either three courses each summer or six courses in one summer every other year. CMU-taught courses use the same textbooks, standards, expectations, and grading policy as those regularly used at CMU. SIT and CMU faculty members work together to provide laboratory and other assistance for courses.

The SIT-CMU Joint Program is considered as a feeder program for CMU in the U.S. instead of a CMU branch campus in China<sup>1,2</sup>. All participating students are eligible to transfer to CMU if they have successfully completed the first two years at SIT and meet the minimum GPA requirement. However, most students have decided not to transfer due to a mismatch in the General Education requirement of the two curricula. This issue of General Education must be worked out for the transfer process to be successful. As a result, most participating students will receive a bachelor's degree from SIT and a program completion certificate from CMU as part of the SIT-CMU Joint Program. Currently, both schools are working to explore other transfer options. One of these options is to allow students to complete their senior years at CMU if they plan to pursue a master's degree at CMU. These students will also receive a bachelor's degree from SIT, assuming they also met the SIT degree requirements. This paper discusses what could

make the transfer option a success (or a failure, as in most cases). It also explains what commitments are required for both schools to make such a relationship work.

### Curriculum

The following tables show the curriculum for the Automation program. Both the Automation and Mechanical Design & Manufacturing programs share the same requirements in General Education (single-asterisked), Science and Mathematics displayed in Table 1. Although the Mechanical Design & Manufacturing program has different Technical Fundamental and Technical Specialization requirements as compared to those for Automation in Tables 2 and 3, several courses in these two categories are identical. CMU offers a number of courses (double-asterisked) in Technical Fundamental and Technical Specialization. A grand total of 140 credit hours are required for both programs.

| Course                                  | Number of Credits |
|---|-------------------|
| Marxist Philosophy*                     | 2.5               |
| Introduction to Mao Zedong Thought*     | 2.5               |
| Introduction to Deng Xiaoping Theory*   | 2.5               |
| Marxist Political Economics*            | 2.5               |
| Morals and Ethics*                      | 1.5               |
| Fundamentals of Law*                    | 1.5               |
| Circumstances and Policy*               | 1                 |
| University English I & II*              | 12                |
| Advanced English*                       | 10.5              |
| Physical Education I, II, III & IV*     | 2                 |
| Advanced Mathematics I, II              | 10                |
| University Physics I & II               | 6                 |
| Physics Lab                             | 2                 |
| Computer Application and Network        | 5                 |
| Computer Languages                      | 4                 |
| Oral English I, II, III & IV            | 8                 |
| English Listening Comprehension, I & II | 3.5               |
| Sub-total                               | 77                |

Table 1. General Education, Science and Mathematics

| Course                          | Number of Credits |
|---------------------------------|-------------------|
| Engineering Drawing             | 2                 |
| Linear Algebra                  | 2                 |
| Complex Variables               | 2                 |
| Probability and Statistics      | 2.5               |
| Circuit                         | 5.5               |
| Circuit Lab                     | 0.5               |
| Digital Electronics**           | 2.5               |
| Analog Electronics**            | 2.5               |
| Principles of Automatic Control | 3.5               |

|                                    |     |
|------------------------------------|-----|
| Electrical Machinery and Drive     | 3.5 |
| Fundamental of Computer Software** | 2.5 |
| Principle of Microcomputer**       | 3.5 |
| Electronics Power Technology       | 3.5 |
| Computer Network and Communication | 3   |
| Detection Technology               | 3   |
| Signal Analysis and Processing     | 3   |
| Sub-total                          | 45  |

Table 2. Technical Fundamental

| Course                                      | Number of Credits |
|---|-------------------|
| Fluid Power**                               | 2.5               |
| Robotics**                                  | 2.5               |
| Industrial Automation                       | 2.5               |
| Signal Processor and Control                | 2.5               |
| Machine Design                              | 2.5               |
| Mechanical Design Problems                  | 2.5               |
| Application of Electrical Equipment and PLC | 3                 |
| Sub-total                                   | 18                |

Table 3. Technical Specialization

In general, about 17 total contact hours are required for a single credit hour. A typical CMU course for the joint program has a total of 42 contact hours over a seven-week period during the summer. SIT works with CMU professors to provide the laboratory equipment required for CMU-taught courses. CMU professors usually find the condition of classrooms and laboratories to be satisfactory. Figure 1 shows student-professor interaction at the end of a Robotics lecture, as Figure 2 shows a laboratory session on computer simulations. SIT appoints one of their faculty or graduate assistants to work with each CMU professor on assignments and laboratory activities.



Figure 1. Student-Professor Interaction



Figure 2. Computer Laboratory

Students, who have successfully completed their 4-year coursework in the SIT-CMU Joint Program and met SIT degree requirements, will receive a bachelor's degree from SIT and a program completion certificate from CMU as part of this program.

#### Faculty

CMU generally provides instruction through its own faculty. However, CMU also recruits qualified faculty from other U.S. universities to provide some of the instruction. SIT reserves the right to accept or reject these faculty members from other universities. Five CMU professors and two recruits have taught at SIT in the past three years. For each U.S. faculty teaching at SIT, SIT provides one free round trip airfare, a room in a nearby local hotel, and a financial compensation as stipulated in the Agreement. CMU faculty and recruits must have an oversea medical coverage from their own U.S. medical insurance plan.

Most SIT students, professors, and even merchants in Shanghai were quite fluent in English, and so communication did not pose a significant barrier. Although knowledge in Chinese language is not required, a faculty member is encouraged to learn as much as possible before the trip about language, culture, and the long history of China.

The program offers participating faculty members with a great opportunity to teach and work in a very different culture and environment. While on the SIT campus, they can visit SIT classes, various laboratories, libraries, and computer facilities. They can discuss with their SIT peers in a wide range of topics including teaching, research, culture, language, family, education, history, traditions, art, music, and so on. They can also work together on research collaboration. Without doubt, this program will greatly benefit CMU faculty with global experience.

Faculty members' feedback was very positive. They were very impressed with their experience in China. Shanghai proved to be an incredible city with a rich history. They feel that higher institutions around the world can no longer limit education by the margins of their campuses. To be a world-citizen should be the obligation of every well-educated. This program has presented them with a valuable experience in learning and understanding the Chinese cultures and customs, and knowing how a typical Chinese university operates.

We found that it was much easier to recruit a faculty member for this joint program if he or she had never visited China before. Many faculty members would commit to this program for the second (or even third) time, but are much less likely to return after the third time because they would have already gone through a “unique experience”, as the so-called “wow” factor no longer exists. We hope this challenge will diminish as CMU’s engineering program (new in 2004) continues to expand over the next few years. Newly recruited faculty members usually welcome such an opportunity.

To further enhance collaboration in teaching and research, SIT plans to send one or two professors to CMU for up to six months each year. SIT visiting professors will audit classes and assist supervising laboratories if needed. They will also seek collaboration with CMU faculty on research and publications. SIT will be responsible for the cost of airfare, medical insurance, and room and board for their faculty. CMU will arrange campus housing for duration of their stay, and give access to CMU laboratory facilities, computers and libraries. Both schools also agree to collaborate on developing a program where CMU faculty or graduate students will travel to SIT to teach oral English to SIT students.

### Program Management

An administrative committee with five members from SIT and two members from CMU was established as the governing body of the program. It oversees the program operation, determines its infrastructure and development, develops and revises curriculum, monitors and audits the budget, and recommends termination of the program if necessary. Before the end of every two-year period, both parties will decide if SIT will recruit new students the next year. The current agreement remains in force through August 2010.

Since the joint program is a nonprofit educational endeavor, the primary source of funding comes only from student tuition and fees. SIT is responsible for collecting these tuition and fees from students studying on their campus. Chinese accountants are commissioned to annually check and audit the budget and provide a written report to submit to the program committee.

SIT pays CMU a managerial fee each year for CMU’s effort in recruiting faculty members to deliver courses at SIT. This fee also covers other related matters, such as issuing visa-related documents to SIT faculty, airport pickups, orientations, etc. SIT reimburses CMU for the cost associated with sending the CMU Program Director to attend the Program Administrative Committee’s annual meeting.

Administrative supports from both universities are crucial to the success and operation of this program. Presidents, deans and other high-level officials from both schools have been working hard to support this program. Three SIT Presidents and several SIT Deans involved in the program have visited CMU. The CMU President visited SIT twice. To resolve some issues, strengthen the relationship, revise and extend the Agreement, both university Presidents visited his counterpart in 2007. The Deans of the CMU Science and Technology College have made series efforts and commitments to support the joint program. They also visited SIT and have been working closely with their SIT counterparts on this program.

## Transfer Arrangement

The purpose of this joint educational program is to encourage its participating students to continue their studies at CMU. They can transfer to CMU to complete a bachelor's degree program in either electrical or mechanical engineering if they have successfully completed the first two years of coursework at the program site (2+2 Option). They can be admitted to CMU for a master's degree program, if they have completed the undergraduate requirements at the program site.

The transfer should take place from the beginning of the third academic year for the students to complete their undergraduate engineering degree programs. The CMU Registrar Office determines the maximum number of credits to be transferred from the joint program after the program/course evaluation is done. The accepted credit number is transferred in block, and applies to all participating students in the joint program. Transfer students who have successfully completed their coursework at CMU and meet CMU's degree requirements receive a bachelor's degree from CMU. CMU promptly informs SIT if a student withdraws from CMU prior to the end of the program.

All joint program participating students who have a GPA of at least 2.5 on a 4.0 scale are eligible to transfer to CMU. Students with a TOEFL score of 550 or above are granted regular admission. Students with a score between 500 and 549 are granted conditional admission which requires a number of English language courses in addition to degree courses. Students with a score below 500 must complete all English language courses before taking any degree courses.

CMU offers some scholarships for international undergraduate students, and these scholarships are available to SIT students who transfer to CMU. Scholarships are granted to qualified applicants based on the application pool each semester. Students with a GPA of 3.0 and a TOEFL score of 550 or higher are eligible to apply for a Global Scholarship<sup>3</sup>. Students with a GPA of 2.9 and a TOEFL score of 550 are eligible to apply for a Continental Scholarship<sup>3</sup>.

SIT recommends top graduating seniors chosen from the joint program cohort to study at CMU for a master's degree. The selection process consists of an evaluation of the student's academic record, motivation, and potential to succeed in an international academic environment. However, CMU's College of Graduate Studies makes the final decision of whether or not to admit the student based on CMU's graduate admission requirements. CMU offer opportunities of graduate assistantship to qualified students from SIT. The requirements for both English language and financial aids that are applicable to undergraduate transfers also apply to graduate students attending CMU.

Four SIT students graduated from the first class of the joint program arrived at CMU as graduate students in fall 2007. Because they took CMU courses in English at SIT, they all had over two years' learning experience in an environment similar to that at CMU when they came. They were able to cruise right into our graduate programs from the beginning. Their initial transition periods were shorter and smoother comparing with other new Chinese graduate students on CMU campus. As a result, they are better off academically, personally and socially. Since they arrived,

they have been actively involved in several major cultural events on campus, such as International Night, The China Day, and The Chinese New Year celebrations. These events enable both CMU faculty and students to broaden their global experience.

### Alternative Transfer Options

As previously mentioned, all participating students are encouraged to continue their studies at CMU for a bachelor degree in either electrical or mechanical engineering. This transfer arrangement has a good potential to make a positive impact on the undergraduate engineering enrollment at CMU. However, because the General Education requirement at SIT (asterisked in Table 1) is quite different from the one at CMU, SIT students who transfer to CMU must make up almost a year of coursework in General Education which is usually completed before the end of sophomore year. To prevent this major roadblock from straining the 2+2 Option, the two schools are currently working on a number of alternative transfer options. They include:

- 2+1.5+0.5 Option: Undergraduate students will transfer to CMU for their junior and part of their senior years, but return to SIT to complete the graduation requirements. They will receive a bachelor's degree from SIT. This approach does not have to deal with the issue of General Education requirement, because the bachelor's degree is not going to be awarded by CMU.
- 3+2 Option: It allows transferred students from the joint program to complete their senior years at CMU, if they plan to pursue a master's degree at the same school. They will also receive a bachelor's degree from SIT if the SIT degree requirements were met.
- 5+1 Option: Students must complete their bachelor's degrees from the joint program plus some graduate work at SIT. CMU will accept up to 15 credits transferred from the joint program applying toward graduation requirement on a master's degree program at CMU.

According to initial evaluation and students' feedbacks, the 3+2 Option is most promising. Students who transfer from the joint program to CMU for their senior years can enter the Accelerated Master's Degree Program<sup>4</sup>. This AMDP program allows a reduction of the total number of credits up to 12 credits (at both 500 and 600 level courses) taken at CMU, because these credits can be applied toward the graduation requirements on both undergraduate and graduate degree programs.

### Conclusions

Both SIT and CMU have benefitted from the Joint Program. SIT has established on their campus an international program in undergraduate education, through which their students can take CMU courses in English and interact with CMU faculty members without coming to CMU. This program serves as a bridge to facilitate SIT students/faculty coming to CMU to study or work. Through the program, SIT has greatly improved its popularity among Shanghai residents, thus increased its overall enrollment. On the other hand, CMU is building a feeder program in Shanghai. There are about three-hundred students currently enrolled in the program. These



students and the program itself provide a constant representation for CMU in Shanghai. With a population of more than fifteen millions, this constant representation is very positive for CMU.

Other than the challenges in General Education and faculty recruitment as mentioned in the previous sections, we believe there is another major difficulty to be addressed in the next few years. This is the maintenance of such a partnership. As the partnership grows and becomes more intensive and complicated, each school wants to meet more of these people, to all of whom time is enormously precious<sup>5</sup>. The question is, however, how much longer are both schools able to keep up with all the long-distance traveling, despite the agreeability of a country or the comfort of an airline?

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### Bibliography

1. Associated Press, University of Washington Says No Branch Campus in China for Now, June 30, 2006. <http://www.kgw.com/sharedcontent//APStories/stories/D8INFJ00.html>
2. Jaschik, S., Overseas Outposts, *Inside Higher Education*, February 15, 2007. <http://www.insidehighered.com/layout/set/print/news/2007/02/15/branch>
3. Continental and Global Scholarships, [http://www.oie.cmich.edu/prostudents/finance\\_studies.asp](http://www.oie.cmich.edu/prostudents/finance_studies.asp)
4. Accelerated Master's Degree Program, <http://academicenate.cmich.edu/Policy/accelerated%20masters.pdf>
5. Jaschik, S., A Divorce in Singapore, *Inside Higher Education*, July 27, 2006, <http://www.insidehighered.com/news/2006/07/27/singapore>