

# UNIVERSITY - UNIVERSITY PARTNERSHIP

## Senior Projects Center

### Worcester Polytechnic Institute

Professor Yiming (Kevin) Rong  
Program Director

#### OBJECTIVE

To improve students' technical skills while exposing them to Asian culture, thus increasing their ability to compete in the global economy.

### Huazhong University of Science and Technology

Professor Liang Gao  
Program Co-Director

#### OBJECTIVE

To expose students to Western culture and a broader, more creative real world problem solving experience than is typically available in Chinese universities.

#### MISSION

To complement students' technical engineering skills with business knowledge skills in the critical areas of globalization, innovation, entrepreneurship, and supply chaining.

#### PROGRAM

This program involves student exchanges between engineering seniors at Worcester Polytechnic Institute (WPI) in the U.S. and Huazhong University of Science and Technology (HUST) in China. After several weeks of working together remotely in preparation, the students travel to their host university to work in bi-cultural teams to solve real-world engineering problems posed by corporate sponsors. More than just an engineering training program, the program also provides a cultural immersion experience that benefits students personally as well as professionally.

Just this year, the program expanded to include students from Kyungpook National University (KNU) in Korea.

**Location:** Worcester, Massachusetts, USA; Wuhan, Hubei, China; and other industrial locations in China and the U.S.

**Cross Border:** Yes

**Student Nationality:** American, Chinese, and Korean

#### HISTORY

**2005** Four WPI seniors went to HUST to work with 5 HUST students on two robot design projects designed by HUST professors.

**2006** HUST students began traveling to WPI in addition to the WPI students traveling to HUST. The projects were now "real world" projects sponsored by corporate partners.

**2007** Both 2006 U.S. corporate sponsors returned and another was added; 3 Chinese companies also joined as project sponsors. The number of students participating on both sides increased again.

**2008** The project continued to grow with more students and corporate sponsors. The project was also expanded to Korea with 4 WPI students traveling to KNU and 2 KNU students traveling to WPI.

#### FUNDING

**Sources:** Funding for each team's in-country travel and lodging is provided by the corporate sponsor that developed the project that team is working on. The students' international airfare is covered by an NSF grant. Students cover other expenses on their own, including meals, spending money, and tuition at their home institutions.

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**Cost:** Sponsorship costs corporate partners up to USD \$1,500 in travel and lodging costs per project per year, plus the cost of developing the project the students work on.

**Future Funding:** May be from new grants from NSF or Department of Education, project fees from the corporate sponsors, or an endowment resource. Corporate sponsors decide year-to-year whether to remain involved in the program. Most current sponsors are repeat sponsors.

## STRUCTURE

**Current Partners:** Worcester Polytechnic Institute (WPI), Huazhong University of Science and Technology (HUST), and Kyungpook National University (KNU).

**Current Sponsors:** There were seven corporate sponsors in 2008 sponsoring 3 projects completed at WPI, 6 completed at HUST, and 2 at KNU. Sponsors include Massachusetts companies Nypro, Saint Gobain Abrasives, Stanlok/REM, and New Age Technologies.

**Sunset Date:** None

**Intellectual Property:** Any IP developed is owned by the corporation sponsoring that project.

**Success Criteria:** Repeat and new corporate project sponsors being attracted to the program, students producing quality work that meets sponsor expectations; elevated number of student participants continuing their education in graduate school.

## PEOPLE

**Professors/Instructors:** Currently 3 professors at WPI, 3 from HUST, and 2 from KNU are directly involved in the program.

**Students:** In 2008, 14 WPI students, 30 HUST students, and 6 KNU students participated. The number of participants has grown every year the program has been in existence.

## ACCOMPLISHMENTS/MILESTONES

- All the corporate-sponsored projects have resulted in solutions that the companies have applied to their businesses to different extents.
- Students report that their experience working in China has been an advantage when job hunting. For at least 4 WPI students, the experience has led them to China-related career opportunities.
- Students have the opportunity to travel throughout their host country during their exchange and learn a great deal about the host nation and its culture—an experience that yields rich rewards both personally and professionally.
- Students participating in the program are significantly more likely to continue their engineering education with graduate studies. One third of the WPI participants go on to grad school while only approximately 25% of engineering students do so nationally. One goal of the program is to maintain or even increase this percentage.
- Students develop several critical skills and capabilities, such as project management, relationship management, responsive and quick decision-making, communication and coordination skills, and learn to deal with uncertainties, regional differences, and logistical difficulties.

## SUMMARY

This unique program allows senior engineering students from the U.S., China, and Korea an opportunity to immerse themselves in a foreign culture while working as a team to develop real-world engineering solutions. Each year since 2005, several engineering students have participated in exchanges between WPI and HUST to spend seven weeks working in bi-cultural teams to solve engineering challenges. The program was expanded in 2008 to include student exchanges with Kyungpook National University (KNU) in Korea.

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The challenges addressed by the teams are not merely academic exercises, however, as corporate sponsors work with WPI professor and program director Yiming (Kevin) Rong to develop a project that address a real-world challenge facing the company. The projects have been highly successful and have yielded solutions the companies have been able to put into practice.

While the partnership is highly educational, it is far more than just an engineering talent development partnership, as the international exchange aspect gives students an opportunity to experience a foreign culture. In addition to learning to work as part of a multi-cultural team, the students often have opportunities to travel in their host country after their project work is completed—often accompanied by their local project partners. This combination of technical and cultural education truly makes this program a standout.

Learning to work closely with colleagues from another culture is an invaluable asset in the modern workplace. While language is not a barrier in this particular project (all students selected must be fluent in English), the students learn a great deal about respecting another culture, understanding different ways of thinking, and communicating across cultures. Said one HUST student, “I learned how to represent myself, my idea, the work we have done, the results and conclusion of the project, and more importantly, the person I am.”

The program is also notable for the enthusiasm it has created both for engineering and for working in a multi-cultural environment. Both American and Asian alums of the program are significantly more likely to pursue graduate engineering studies, and many have parlayed their experience into international careers that likely would not have been accessible to them before—at least 4 WPI students have accepted jobs that will require them to work closely with colleagues in China and a number of HUST students have taken jobs with Western-invested companies in China.

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