Engineering Faculty Document No. 7-05
11 September 2006

To: Engineering Faculty
From: Global Engineering Programs Team and Cooperative Engineering Education Committee
Date: September 11, 2006
Subject: Creation of a College-wide Certification Program in Global Engineering Competency

The faculty of the Global Engineering Programs Team and the Cooperative Engineering Education Committee have approved the creation of a certificate granting program in Global Engineering Competency that is detailed in the following document. This certificate program is based upon the undergraduate GEARE (Global Engineering Alliance for Research and Education) Program that is now open to all Engineering students. This action is now submitted to the Engineering Faculty with a recommendation for approval.

_____ 11 September 2006	_____11 September 2006
E. Daniel Hirleman, Ph.D. Professor and William E. and Florence E. Perry Head School of Mechanical Engineering and Interim Director, Global Engineering Programs Team	Robert M. Stwalley III, Ph.D., P.E. Director Office of Professional Practice and Chairman Cooperative Engineering Education Committee

CERTIFICATE PROGRAM IN GLOBAL ENGINEERING COMPETENCY

To handle the issue of registration and certificate progress within the new Global Engineering Competency Program, it is recommended that the faculty approve the following courses:

PPE 261 GEC Domestic Work Experience
SS. Cr. (0)
For Global Engineering Competency Program Students Only.
May be repeated.
Domestic professional practice with strategic global industry partners.

PPE 362 Cultural Orientation Seminar for GEC Students
Sem. 1. Cr. (0)
For Global Engineering Competency Program Students Only.
Must have sophomore or junior standing. May be repeated.
Cultural orientation for professional engineering education and practice at strategic global university and industry partners.

PPE 363 GEC Study Abroad Experience
Sem. 2, and SS. Cr. (0)
For Global Engineering Competency Program Students Only.
Must be preceded by PPE 362.
Professional engineering education at strategic global university partners.

PPE 364 GEC International Work Experience
Sem. 2, and SS. Cr. (0)
For Global Engineering Competency Program Students Only.
Must be preceded by PPE 362.
International professional practice with strategic global industry partners.

Rationale:

There is growing recognition amongst professional educators in higher education that international experience for engineers is becoming an imperative. The Certificate Program in Global Engineering Competency is designed to recognize those students who have supplemented their standard engineering education such that they are significantly better prepared to function immediately in the global workplace. The undergraduate education component is a unique 24-month program that integrates: an orientation program at Purdue University, including language and culture using faculty advisors from both foreign language and engineering departments; one domestic internship at a global company; one subsequent international internship at the same company (each internship lasting nominally 3 months); one semester of study abroad with fully transferable engineering course credits; a two-semester face-to-face, multinational design team project (one semester abroad and one semester at the home university) with design teams that include students from international partner universities working on an industry-inspired project. The GEC program is operated on an exchange basis, so there is nominally an equal number of students from international partner universities who make up a global cohort.

The Purdue University School of Mechanical Engineering has conducted a successful pilot program for the last four years. The Global Engineering Programs Team in collaboration with the Cooperative Engineering Education Committee now proposes that this experience be offered college-wide under

academic oversight of the Global Engineering Programs Team in collaboration with the Office of Professional Practice, and that a Certificate be awarded to those who complete the program successfully.

Implementation:

This program is designed to be a faculty and Board of Trustees approved, certificate granting program. The Global Engineering Programs Team will qualify overseas academic institutions, internship programs for the various interested employers, and coordinate student recruitment procedures. Students will be recruited and selected for the program during the spring semester of their freshman year and fall semester of their sophomore year. They will spend all of their sophomore year and the fall semester of their junior year preparing to go abroad. This will include program elements concentrating on cultural orientation, language skills improvement, and a domestic internship with a strategic global industrial partner during the summer between the sophomore and junior years. The students will relocate abroad during the spring semester and the following summer of their junior year for a total of about 7.5 months. During this time period, students will complete one semester of study abroad at a strategic global university partner and a nominal 3-month internship with a strategic global industrial partner in the same country. The study abroad semester and work abroad internship can be completed in either order. Typically, students will work for the same employer in both the domestic and international internships. Students will then return to Purdue to complete their senior year. During their semester of study abroad, students will be teamed up with an equal number of students from the strategic global university partner and conduct a co-located design team project. In most cases, students from the strategic global university partner will conduct a reciprocal program that includes an internship in the U.S. and one semester of study abroad at Purdue University. During the semester while the partner students are at Purdue University, the student teams will conduct the second semester of the global design team project. The domestic and abroad semesters of the design team project can be completed in either order. Table 1 illustrates the proposed schedule for students participating in the program. Global Engineering Competency students will complete the following requirements:

- Successful completion (average GPA of 3.0 or higher) of 12 credit-hours in one foreign language program. The 12 credit-hours include credits established through test-outs. The 12 credit-hours have to be completed before the student participates in the study and work abroad period.
- One semester of study abroad at a strategic global university partner. These institutions are currently identified as University of Karlsruhe, Germany, Shanghai Jiao Tong University, China, IIT Bombay, India, and Tec de Monterrey, Monterrey campus, Mexico. Other universities may be added in the future through an approval process of the Global Engineering Program Team.
- One three-month domestic internship at a strategic global industry partner. These are currently identified as Cummins, John Deere, Ford, GM, Shell, Siemens, and United Technologies Corp. Other industries may be added in the future through an approval process of the Cooperative Engineering Education Committee. All domestic internships shall be paid experiences.
- One subsequent three-month international internship typically, but not necessarily, with the same strategic global industry partner.
- Successful participation (grade of B or higher) in two-semesters of co-located global design team projects. One semester conducted at a strategic university partner, and one semester conducted at Purdue University.
- A cumulative GPA of 3.0 or higher. Students who fall below a 3.0 cumulative GPA will be notified that they are on GEC probation and will have one semester to show academic improvement. The Faculty Coordinator shall make the determination as to whether the improvement shown merits allowing the student to continue with the program. Students that fail to show improvement shall be dropped from the program. To receive a certificate upon graduation a student must have an index of 3.0 or higher.

Upon completion of the requirements of the program, a “Certificate in Global Engineering Competence” will be issued with the Bachelors degree. The certificate will be transcript recorded. Comprehensive work experience reports, including student and employer evaluations, will be administered by the Faculty Coordinators as appropriate.

Local departmental faculty coordinators, such as the faculty representatives on the Global Engineering Programs Team or the departmental Faculty Co-Op Coordinators, will select students to participate in the program and will handle the academic advising of the participating students. Individual Faculty Coordinators will advise students regarding the choice of potential strategic global partner and schedule within their particular discipline. Individual Faculty Coordinators shall have the authority to make exceptions to the recommended schedules for compelling academic reasons. Student applications to the certificate program shall contain:

- Application form
- Resume
- Transcript
- Statement of interest
- Two letters of reference
- A GPA of 3.0 or higher
- Signed GEC Student Agreement

Table 1: Proposed Schedule for Students Participating in Global Engineering Competency Program

<table>
<tr><th>1st Sem.</th><th>2nd Sem.</th><th>1st Sum.</th><th>3rd Sem.</th><th>4th Sem.</th><th>2nd Sum.</th><th>5th Sem.</th><th>6th Sem.</th><th>3rd Sum.</th><th>7th Sem.</th><th>8th Sem.</th></tr>
<tr><td>Regular Fresh-man Sem.</td><td>Regular Fresh-man Sem.

Student Selection</td><td>Free

Foreign Lang. 1</td><td>Regular Sopho-more Sem.

Foreign Lang. 2</td><td>Regular Sopho-more Sem.

Foreign Lang. 3</td><td>Domestic Intern-ship with Strategic Global Industry Partner</td><td>Regular Junior Sem.

Foreign Lang. 4

Cultural Orienta-tion</td><td colspan="2" rowspan="2">International Internship with Strategic Global Industry Partner

Study Abroad Semester at Strategic Global University Partner

1st Semester of Global Design Team Project</td><td>Regular Senior Sem.</td><td>Regular Senior Sem.</td></tr>
<tr><td colspan="2">2nd Semester of Global Design Team Project</td></tr>
</table>

Since students participating in the program will incur extraordinary costs, such as airplane travel, overseas housing, and minimal overseas work compensation, it is recommended that they shall pay no fees during the domestic internship and be subject to only the regular tuition and fees during their study and work abroad terms as regulated by Purdue's Study Abroad Office.