REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF A GRADUATE COURSE
(50000-80000 LEVEL)

RTMENT: School of Engineering Education
EFFECTIVE SESSION: Fall 2010 - Fall 2011

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

1. New course with supporting documents (complete proposal form)
2. Add existing course offered at another campus
3. Expiration of a course
4. Change in course number
5. Change in course title
6. Change in course credit/type
7. Change in course attributes
8. Change in instructional hours
9. Change in course description
10. Change in course requisites/restrictions
11. Change in semesters offered
12. Transfer from one department to another

PROPOSED:
Subject Abbreviation: ENE
Course Number: 55300
Long Title: Introduction to Globalization and Engineering
Short Title: Intro to Global and Engr

EXISTING:
Subject Abbreviation:
Course Number:
Long Title:
Short Title:
Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

CREDIT TYPE
1. Fixed Credit: Cr. Hrs.
2. Variable Credit Range:
   Minimum Cr. Hrs. (Check One)
   3. Equivalent Credit:
   Yes or No

COURSE ATTRIBUTES: Check All That Apply
0. Registration Approval Type
   Department
   Instructor
2. Satisfactory/Unsatisfactory Only
3. Repeatable
4. Maximum Repeatable Credit:
5. Credit by Examination
6. Special Fees
7. Variable Title
8. Honors
9. Full-Time Privilege
10. Off-Campus Experience

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
History and dynamics of globalization, and its impact on engineering practice and the lives and education of engineers. Topics include: global migration of highly-skilled people, free flow of capital and the globalization of R&D investment, world trade of commodities and high-tech products, global value chains and the process of innovation, role of multinational and metanational corporations, role of intellectual property and the global spread of technology, global outsourcing and off-shoring of engineering jobs and services, global convergence of engineering education and life-long learning. The course includes lectures by the instructor and by guest speakers representing industry and academia from all over the world. Prerequisite: (1) There are no specific courses required as prerequisites; (2) Students must have graduate or senior status. This course is designed assuming a maturity level congruent with students having work experience or planning to enter full-time employment within a year.

Professor Harris.

Calumet Department Head
Date
Calumet School Dean
Date
Fort Wayne Department Head
Date
Fort Wayne School Dean
Date
Indiana Department Head
Date
Indiana University
Date
North Central College Senate Chair
Date
Vice Chancellor for Academic Affairs
Date
Lafayette Department Head
Date
Lafayette College School Dean
Date
Graduate Area Committee Chair
Date
Graduate Dean
Date

OFFICE OF THE REGISTRAR

9/10/2010

9/10/2010

9/10/2010

9/10/2010

9/10/2010
PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF A GRADUATE COURSE
(50000-60000 LEVEL)

DEPARTMENT: School of Engineering Education
EFFECTIVE SESSION: Fall 2011

INSTRUCTIONS: Please check the items below which describe the purpose of this request.

- New course with supporting documents (complete proposal form)
- Add existing course offered at another campus
- Expiration of a course
- Change in course number
- Change in course title
- Change in course credit/ type

PROPOSED:
Subject Abbreviation: ENE
Course Number: 55300
Long Title: Introduction to Globalization and Engineering
Short Title: Intro to Global and Engr

EXISTING:
Subject Abbreviation
Course Number

TERMS OFFERED:
Check All That Apply:
- Summer
- Fall [X]
- Spring

CAMPUS(ES) INVOLVED:
- Calumet
- Cont Ed
- Ft. Wayne
- Indianapolis [X]
- W. Lafayette

ABBREVIATED TITLE WILL BE ENTERED BY THE OFFICE OF THE REGISTRAR IF OMITTED.
(30 CHARACTERS ONLY)

CREDIT TYPE
1. Fixed Credit: Cr. Hrs. __________
2. Variable Credit Range: Minimum Cr. Hrs. ______ To ______ Maximum Cr. Hrs. ______
3. Equivalent Credit: Yes [X] No [ ]
4. Thesis Credit: Yes [X] No [ ]

SCHEDULE TYPE
- Lecture
- Recitation
- Laboratory
- Lab Prep
- Studio
- Distance
- Clinic
- Experiential
- Research
- Ind. Study
- Pract/Observer

MEETINGS PER WEEK
- Minutes Per Mtg 50
- Meetings Per Week 1

WEEKS OFFERED
- 16

% OF CREDIT ALLOCATED
- 100%

CREDIT ATTRIBUTES:
- Pass/Not Pass Only
- Satisfactory/Unsatisfactory Only
- Repeatable
- Maximum Repeatable Credit: __________
- Credit by Examination
- Special Fees

REGISTRATION APPROVAL TYPE
- Department [ ]
- Instructor [X]

VARIABLE TITLE
- Yes [X] No [ ]

HONORS
- Yes [X] No [ ]

FULL TIME PRIVILEGE
- Yes [X] No [ ]

OFF CAMPUS EXPERIENCE
- Yes [X] No [ ]

COURSES DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
- History and dynamics of globalization, and its impact on engineering practice and the lives and education of engineers. Topics include: global migration of highly-skilled people, free flow of capital and the globalization of R&D investment, world trade of commodities and high-tech products, global value chains and the process of innovation, role of multinational and transnational corporations, role of intellectual property and the global spread of technology, global outsourcing and offshoring of engineering jobs and services, global convergence of engineering education and lifelong learning. The course includes lectures by the instructor and by guest speakers representing industry and academia from all over the world. Prereqs: (1) There are no specific courses required as prerequisites (2) Students must have graduate or senior status. This course is designed assuming a maturity level consonant with students having work experience or planning to enter full-time employment within a year.

Calumet Department Head Date
Calumet School Dean Date

Fort Wayne Department Head Date
Fort Wayne School Dean Date

Indianapolis Department Head Date
Indianapolis School Dean Date

North Central campus Senate Chair Date
Vice Chancellor for Academic Affairs Date

West Lafayette Department Head Date
Vul Lafayette College School Dean Date

Office Area Committee Convener Date
Graduate Dean Date

Calumet Undergrad Curriculum Committee Date

Fort Wayne Chancellor Date

Undergrad Curriculum Committee Date

Date Approved by Graduate Council

Graduate Council Secretary Date

West Lafayette Registrar Date

OFFICE OF THE REGISTRAR
To: The Faculty of the College of Engineering  
From: School of Engineering Education  
Subject: New Graduate Course, ENE 55300

The faculty of the School of Engineering Education has approved the following new graduate ENE course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

ENE 55300  Introduction to Globalization and Engineering  
Sem. 1, Lec. 1, Cr. 1.

Prerequisite:  
Graduate or upper division undergraduate standing. Students who successfully complete ENE55400 Globalization and Engineering cannot subsequently enroll in ENE 55300.

Course description:  
History and dynamics of globalization, and its impact on engineering practice and the lives and education of engineers. Topics include: global migration of highly-skilled people, free flow of capital and the globalization of R&D investment, world trade of commodities and high-tech products, global value chains and the process of innovation, role of multinational and metanational corporations, role of intellectual property and the global spread of technology, global outsourcing and off-shoring of engineering jobs and services, global convergence of engineering education and life-long learning. The course includes lectures by the instructor and by guest speakers representing industry and academia from all over the world.

Reasons:  
Globalization is the most, or one of the most, influential forces of the first half of the 21st century. All students, regardless of discipline, benefit from an understanding of this force and its impact on their lives and professions. Engineers, in particular, will increasingly function in a globalized work environment. To lead and excel, engineers must understand globalization and incorporate that knowledge in their educational and career choices, as well as within their daily professional activities. This course provides an introductory framework on which students can expand their global competence. This course is designed for students planning a career in engineering or engineering education.

This credit course was previously offered as ENE 695D – Globalization and Engineering in 2006 (9 registered students) and ENE 595D – Globalization and Engineering in Fall 2007 (17 registered students) and Fall 08 (27 registered students). Average evaluation of course = 4.2 and average evaluation of instructor = 4.2.

Kamyar Haghighi, Head  
Engineering Education

APPROVED FOR THE FACULTY  
OF THE SCHOOLS OF ENGINEERING  
BY THE ENGINEERING  
CURRICULUM COMMITTEE

ECC Minutes
3/20
Date 3/23/10
Chairman ECC R. Cipriano
1. Level: Graduate
2. Course Instructors: Dale Harris
3. Course Outline

Learning Outcomes:
- Increased global awareness
- Knowledge of the dynamics of globalization as an economic and social process
- Recognition of engineering and engineers as important social and economic actors
- Understanding the global as the horizon of interest to the engineering profession in the 21st century
- Increased understanding of the nature and roles of engineering education and lifelong learning within the globalization dynamic
- Knowledge of how globalization impacts the process of innovation
- Knowledge of the engineering tools, processes, and attributes required to lead and innovate within a rapidly globalizing profession

Textbook: The World is Flat by Thomas Friedman (Farrar, Strauss and Giroux, 2007)

Syllabus: This syllabus is modeled after the course as it was taught in Fall 2008. Because of the use of case studies and the participation of guest speakers, the course syllabus would be different in details each time it is taught.

Class 1
Introduction
- Introduction to the course; Introduction to globalization

Class 2
19th Century Globalization
- Why important
- Causes and how studied by economists, sociologists, and political scientists
- Globalization dynamics - economics, migration of people, flow of capital
- Impact on workers (industrial and farming)
- Impact on the engineering profession
- Political response leading to deglobalization and isolationism

Class 3
20th and 21st Century Globalization
- Culture; Economics; Politics; Technology; Environment; Psychology; Migration of highly skilled labor including engineers

Class 4
Case Study: Globalization of the Indian Software Services Industry

Class 5
Global Value Chains and Attributes of Engineers

Class 6
Globalization and Engineering Practice
- Multinational Corporations
- Globalization of R&D Investment
- Intellectual Property
Outsourcing and off-shoring of engineering jobs and services

Class 7  
* Asia and the Flat World

Class 8  
* Case Study: Entrepreneurship and Upgrading of R&D Services in India

Class 9  
* Case Study: Rolls-Royce and the Global Gas Turbine Engine Industry

Class 10  
* Managing Innovation in Global Engineering Environments
  * Exam on book, The World is Flat

Class 11  
* Europe and the Flat World

Class 12  
* Case Study: Politics of the Global Economy

Class 13  
* Global Governance
  * Sovereign Nation-States
  * Multinational Corporations
  * Non-governmental Organizations (NGOs)
  * Intergovernmental Organizations (IGOs)

Class 14  
* Case Study: John Deere Corporation in China

Class 15  
* Globalization and Engineering Education

**Guest Speakers:**

**Parasuram Balasubramanian**  
Founder and CEO, Theme Work Analytics  
Previously, Vice President, Infosys Technologies  
Previously, CEO, Hytec Software Engineers

**Professor Terrence Casey**  
Department of Political Science, Rose-Hulman Institute of Technology

**Jeffery Finn**  
General Manager for China Operations, John Deere Corporation

**Dr. Renate Fruchter**  
Department of Civil Engineering, Stanford University

**Gopichand Katragadda**  
General Manager, GE India Technology Center

**Allan Novik**  
Vice President, Rolls-Royce Corporation

**Professor Balaji Parthasarathy**  
International Institute of Information Technology, Bangalore, India

**Professor Bjorn Pherson**  
Department of Telematics, Royal Institute of Technology, Sweden

**Peter Tannenwald**  
Manager, Infosys Technologies

**Grading:**
  * Attendance  80%; Exam  20%
Supporting Document for a New Graduate Course

To: Purdue University Graduate Council
From: Faculty Member: Dale Harris
Department: Engineering Education
Campus: West Lafayette

Date: ____________

Subject: Proposal for New Graduate Course-Documentation Required by the Graduate Council to Accompany Registrar's Form 40G

Contact for information if questions arise:
Name: Cindey Hays (temporary)
Phone Number: 494-3884
E-mail: isenberg@purdue.edu
Campus Address: ARMS 1321

Course Subject Abbreviation and Number: ENE 55300
Course Title: Introduction to Globalization and Engineering

A. Justification for the Course:

- Provide a complete and detailed explanation of the need for the course (e.g., in the preparation of students, in providing new knowledge/training in one or more topics, in meeting degree requirements, etc.), how the course contributes to existing fields of study and/or areas of specialization, and how the course relates to other graduate courses offered by the department, other departments, or interdisciplinary programs.

- Justify the level of the proposed graduate course (50000- or 60000-level) including statements on, but not limited to: (1) the target audience, including the anticipated number of undergraduate and graduate students who will enroll in the course; and (2) the rigor of the course.

B. Learning Outcomes and Method of Evaluation or Assessment:

- Describe the course objectives and student learning outcomes that address the objectives (i.e., knowledge, communication, critical thinking, ethical research, etc.).

- Describe the methods of evaluation or assessment of student learning outcomes. (Include evidence for both direct and indirect methods.)

- Grading criteria (select from dropdown box); include a statement describing the criteria that will be used to assess students and how the final grade will be determined.

Criteria: Attendance and Class Participation
• Identify the method(s) of instruction (select from dropdown box) and describe how the methods promote the likely success of the desired student learning outcomes.

**Method of Instruction**  Presentation

C. **Prerequisite(s):**

• List prerequisite courses by subject abbreviation, number, and title.

• List other prerequisites and/or experiences/background required. If no prerequisites are indicated, provide an explanation for their absence.

D. **Course Instructor(s):**

• Provide the name, rank, and department/program affiliation of the instructor(s).

• Is the instructor currently a member of the Graduate Faculty?  
  [ ] Yes  [ ] No  (If the answer is no, indicate when it is expected that a request will be submitted.)

E. **Course Outline:**

• Provide an outline of topics to be covered and indicate the relative amount of time or emphasis devoted to each topic. If laboratory or field experiences are used to supplement a lecture course, explain the value of the experience(s) to enhance the quality of the course and student learning. For special topics courses, include a sample outline of a course that would be offered under the proposed course.

F. **Reading List (including course text):**

• A primary reading list or bibliography should be limited to material the students will be required to read in order to successfully complete the course. It should not be a compilation of general reference material.

• A secondary reading list or bibliography should include material students may use as background information.

G. **Library Resources**

• Describe the library resources that are currently available or the resources needed to support this proposed course.

H. **Example of a Course Syllabus**  (While not a necessary component of this supporting document, an example of a course syllabus is available, for information, by clicking on the link below, which goes to the Graduate School’s Policies and Procedures Manual for Administering Graduate Student Programs. See Appendix K.)


(Revised and Approved by the Graduate Council 2/08)
EN 53300  Introduction to Globalization and Engineering (one credit)

Course description:
History and dynamics of globalization, and its impact on engineering practice and the lives and education of engineers. Topics include: global migration of highly-skilled people, free flow of capital and the globalization of R&D investment, world trade of commodities and high-tech products, global value chains and the process of innovation, role of multinational and metanational corporations, role of intellectual property and the global spread of technology, global outsourcing and off-shoring of engineering jobs and services, global convergence of engineering education and life-long learning. The course includes lectures by the instructor and by guest speakers representing industry and academia from all over the world.

A. Justification for the Course

• Globalization is the most, or one of the most, influential forces of the first half of the 21st century. All students, regardless of discipline, benefit from an understanding of this force and its impact on their lives and professions. Engineers, in particular, will increasingly function in a globalized work environment. To lead and excel, engineers must understand the dynamics of globalization and incorporate that knowledge in their educational and career choices, as well as within their daily professional activities. This course provides an introductory framework on which students can expand their global competence. This course is designed for students planning a career in engineering practice or engineering education.

• The course is organized as a seminar course making use of outside speakers from around the world. There is also required reading. The course targets graduate students in all engineering disciplines planning a career in engineering or engineering. The course is also suitable for undergraduate seniors. This credit course was previously offered as EN 595 – Globalization and Engineering in Fall 2007 (17 registered students), Fall 2008 (27 registered students) and Fall 2009 (34 registered students). Average evaluation of course = 4.2 and average evaluation of instructor = 4.2. Based on enrollments in the experimental versions of the course, approximately 40 enrollments per offering are expected.

B. Learning Outcomes and Methods of Evaluation or Assessment

Learning outcomes:

• Increased global awareness
• Knowledge of the dynamics of globalization as an economic and social process
• Recognition of engineering and engineers as important social and economic actors
• Understanding the global as the horizon of interest to the engineering profession in the 21st century
• Increased understanding of the nature and roles of engineering education and life-long learning within the globalization dynamic
• Knowledge of how globalization impacts the process of innovation
• Knowledge of the engineering tools, processes, and attributes required to lead and innovate within a rapidly globalizing profession

Methods of evaluation of learning outcomes:
Evaluation of learning outcomes is done by
• observation of student in-class engagement and discussions
• exam results
• student written work
• end of course survey

Grading:
Grading is based on a combination of class attendance (this is primarily a seminar course), one exam covering the course textbook, and completion of formal notes taken on each seminar speaker.

C. Prerequisites:
• There are no specific courses required as prerequisites

• Students must have graduate or senior status. This course is designed assuming a maturity level congruent with students having work experience or planning to enter fulltime employment within a year.

D. Course Instructor:
Dale Harris
Professor, Engineering Education
Currently a member of the Graduate Faculty

E. Course Outline:
The syllabus below describes the course topics and indicates the relative amount of time devoted to each. Guest speakers will vary year-to-year. Those listed below participated in the experimental offering of the course in Fall 2009.
Week 1

**Introduction**
- Introduction to the course
- Introduction to globalization

Week 2

**19th Century Globalization**
- Why important
- Cause
- Dynamics - Economics, migration of people, flow of capital
- Impact on labor (industrial and farming)
- Impact on the engineering profession
- Political response leading to deglobalization and isolationism

Week 3

**Guest Speaker: Gopichand Katragadda**
General Manager, Engineering Operations
GE Energy - India
Bangalore, India
Subject of talk: Global Innovation in the Flat World

Week 4

**20th and 21st Century Globalization**
- Global Governance
  - Sovereign Nation-States
  - Intergovernmental Organizations (IGOs)
  - Non-Governmental Organizations (NGOs)
  - Multinational Corporations
- **Guest Lecture by Hari Harikumar**
  Vice President, Ingersoll Rand Engineering Center, Bangalore, India

Week 5

**20th and 21st Century Globalization**
- Globalization of R&D Investment
  - Importance and Impact
  - Drivers and Dynamics
  - Statistical Snapshot
- **Guest Lecture by Professor Kaili Kan**
  Previous Dean of the School of Business Management
  Beijing University of Posts and Telecommunications, China

Week 6

**20th and 21st Century Globalization**
- Global Dispersion of Engineering Jobs and Migration of Highly Skilled People
  - Statistical Snapshot
  - Importance and Impact
- **Guest Lecture by Professor Rabi Mohtar**
  Director of Global Engineering Programs, Purdue University

Week 7

**Guest Speaker: Bjorn Pehrson**
Professor and Previous Chair, Department of Teleinformation
The Royal Institute of Technology
Stockholm, Sweden
Subject of talk: Globalization and Engineering Education - The Swedish Perspective

Week 8

**20th and 21st Century Globalization**
- Impact of Globalization on Organizations and Multinational Corporations
  - SclerORIZATION, Rationalization, and Standardization of Organization Management
  - Innovation in the Flat World by Multinational Corporations
- **Guest lecture by Professor Vedhathiri Thanikachalam**
  National Institute of Technical Teachers Training and Research, Chennai, India

Week 9

**Guest Speaker: Emily Ligget**
CEO, NovaTorque
Sunnyvale, California
Subject of talk: Global Engineering Leadership in Companies Large and Small
Week 10
Guest Speaker: Gene Spafford
Professor of Computer Science
Executive Director, Center for Education and Research in Information Assurance and Security
Purdue University
Subject of talk: Globalization and Intellectual Property

Week 11
Guest Speaker: Shyamal Majumdar
Director General and CEO
Columbo Plan Staff College for Technical Education
Manila, Philippines
Subject of talk: Engineering and Engineering Education in the Asia Pacific Region

Week 12
Test on The World is Flat

Week 13
20th and 21st Century Globalization
- Globalization of Technology, Innovation, and Intellectual Property Law
  ✓ Technology Transfer and Technology Leak
  ✓ Distributed Research, Development, and Design
  ✓ Standardization of Intellectual Property Law and Trends in Enforcement
- Guest lecture by Sergio Nacach
  Vice President of Andean Region Operations, Kimberly-Clark, Lima, Peru

Week 14
21st Century Globalization and Beyond
- The Future of Globalization

Week 15
Course Conclusion and Review

F. Reading List (course text)
The World is Flat by Thomas Friedman; Published by Picador / Farrar, Straus and Giroux (New York, 2007)

G. Library Resources
None required beyond the course text