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

DEPARTMENT: Industrial Engineering
EFFECTIVE SESSION: 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

PROPOSED:
Subject Abbreviation: IE
Course Number: 68500
Long Title: Competitive Strategy

EXISTING:

TERMS OFFERED:
Check All That Apply:
- Summer
- Fall
- Spring

CAMPUS(ES) INVOLVED:
- Columbia
- Cent Ed
- Ft Wayne
- Indianapolis

Credit Type
1. Fixed Credit: Cr. Hrs.
2. Variable Credit Range:
   Minimum Cr. Hrs: 3
   Maximum Cr. Hrs: 3

Credits:
3. Equivalent Credit: Yes
4. Thesis Credit: Yes

Course Attributes: Check All That Apply
1. Pass/Not Pass Only
2. Satisfactory/Unsatisfactory Only
3. Repeatable
4. Credit by Examination
5. Special Fees
6. Full Time Privilege
7. Variable Title
8. Offered
9. Honors
10. Instructor

Course Description (Include Requisites/Restrictions):
Graduate standing with consent of instructor

Calumet Department Head
Calumet School Dean
Calumet Undergrad Curriculum Committee

Fort Wayne Department Head
Fort Wayne School Dean
Fort Wayne Chancellor

Indianapolis Department Head
Indianapolis School Dean
Undergrad Curriculum Committee

North Central Faculty Senate Chair
Vice Chancellor for Academic Affairs
Date Approved by Graduate Council

Joe Pekey
12/30/2010

West Lafayette Department Head
West Lafayette College/School Dean
Graduate Council Secretary

Graduate Area Committee Convener
Graduate Dean
West Lafayette Registrar

OFFICE OF THE REGISTRAR

(Grad Form 40G [Excel format] - Does not include the Graduate Council’s required supporting document. See pdf version of Form 40G)
To: Faculty of the College of Engineering  
From: Faculty of the School of Industrial Engineering  
Re: New graduate course - IE 68500 Competitive Strategy

The faculty of the School of Industrial Engineering has approved a proposed new course described in the following. This action is now submitted to the Engineering Faculty with a recommendation for approval.

IE 68500 COMPETITIVE STRATEGY  
SEM. 1 OR 2, LECTURE 3, CR. 3  
PREREQUISITES: Graduate standing in Engineering with consent of instructor


REASON: While engineering graduate students take a wide range of courses for developing their technical competence in a selected area, no course has been offered for effective decision making and resource allocation needed by engineering managers and chief technical executives. Industrial Engineering has conventionally focused on improving system efficiency, no course has been offered for pursuing and managing effectiveness. Thus, it is beneficial to offer a new course covering the generation and selection of competitive strategies for achieving the desired objectives and system impact. It is desirable to offer it as a 600 level course as research and case development are required of the students. This course has been offered 3 times in the Spring Semesters of 2002, 2005 and 2007 on an experimental basis in the form described in this document. It received positive feedback from the students each time offered. Enrollment was 7, 11 and 14 respectively. In view of the increased strength in the area of decision science and game theory, it is timely to add this course as a new graduate course.

Joe Pezny  
Professor and Interim Head

[Signature]

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

ECC Minutes  #14  
Date  1/6/11  
Chairman ECC  R. Cipriano
IE 68500 COMPETITIVE STRATEGY

A. Justification for the Course:

While engineering graduate students take a wide range of courses for developing their technical competence in a selected area, no course has been offered for effective resource allocation needed by engineering managers and chief technical executives. Industrial Engineering has conventionally focused on improving system efficiency, no course has been offered for pursuing and managing effectiveness. Thus, it is beneficial to offer a new course covering the generation and selection of competitive strategies for achieving the desired system objectives and impact. It is desirable to offer it as a 600 level course as research and case development are required of the students. This course has been offered 3 times on an experimental basis in the form described in this document and has received positive feedback from the students. This course was offered in the Spring Semester of 2002, 2005 and 2007. Enrollment was 7, 11 and 14 respectively. In view of the increased strength in the area of decision science and game theory, it is timely that this course be added as a new graduate course at this time.

The knowledge learned from this course can serve as a base for determining strategic directions of products, processes, services and technical research in a competitive environment. An example is the strategic product decisions of developing 787 by Boeing and 380X by Airbus, the determinations of the subsequent research and engineering projects, the related resource allocations and the consequences of these decisions on product safety, reliability, profitability and solving societal problems. Other examples include the pioneering development of the new industrial structure with global supply chains, the invention of a new machining factory based on super finish hard machining, the new product development of i-Pod, i-Pad and i-Phone, the positioning of the products for Harley Davison, the planning of the future missions for NASA, the strategic positioning of Google, etc. The strategic decisions of all the above would have required not only the understanding of the principles of competitive strategy but also the related domain knowledge. Therefore, this course is best taught by an engineering professor to engineering graduate students who have already had substantial domain knowledge.

B. Learning Outcomes:

The course objective is to prepare a graduate student in engineering or technology management for strategic decision-making in a competitive environment. The following learning outcomes are expected from the students after taking this course:
1. Knowledge and scholarship: students will be able to demonstrate the ability to conduct original research through case development and term papers,

2. Communication: students will be able to demonstrate the ability to effectively communicate their study through written and oral presentations,

3. Critical thinking: students will be able to demonstrate the ability to think critically and creatively and solve problems in their study through case development and term papers,

4. Ethical and responsible conduct: students will be able to demonstrate the ability to conduct their work in an ethical manner.

C. **Prerequisite:** Graduate standing in Engineering with consent of the instructor.

D. **Course Instructor:**

C. Richard Liu, PhD, Professor of Industrial Engineering and a member of the graduate faculty, liuch@purdue.edu, 494 5413.

E. **Course Outline:**

The course will start with a review of the philosophy, structure and principles of strategic planning in the Art of War by Sun Tzu. Movies and cases are used to illustrate the very significant impacts of competitive strategies in waging wars and in running business. Contemporary thoughts on principles and framework of forming competitive strategies will be discussed in details.

Proposed topics and schedule:

(1) Week 1-2: The art of war and its application in strategic planning,  
   a. Fundamental considerations before forming strategies: external environment, 
      competitive terrain, ethics, values, consensus, internal loyalty and leadership.  
   b. The importance of planning,  
   c. Strategic considerations,  
   d. Tactical considerations,  
   e. Formation and structure,  
   f. Opportunism, maneuvers and variations,  
   g. Dynamic situations,  

(2) Week 3-4: The dynamics of innovation, and its effect on competitive positions of a corporation,  
   a. The Dynamics of Innovation,  
   b. Dominant Designs and the Survival of Firms,  
   c. Innovation and Industrial Evolution,  
   d. Invasion of a Stable Business by Radical Innovation, and  
   e. The Creative Power of Technology in Process Innovation.  
   f. Management of Innovation and entrepreneurship.

(3) Week 5-6: The arts and the structure of strategic thinking,
a. Analysis,
b. Four Routes to Strategic Advantage,
c. Focusing on Key Factors,
d. Building on Relative Superiority
e. Exploiting Strategic Degree of Freedom
(4) Week 7-8: Methods for building successful strategies,
a. The Strategic Triangle—3 C’s,
b. Customer-based Strategies,
c. Corporate-based Strategies,
d. Competitor-based Strategies, and
e. Corporate Strategy.
(5) Week 9: Modern strategic realities,
a. Coping with Strategic Change,
b. Japan: Myths and Realities,
c. Foresighted Decision Making,
d. A Strategic Success Formula, and
e. Politics and Human Factors.
(6) Week 10-12: Scale, niche market, technology, innovation, entrepreneurship and globalization. Vertical integration and disintegration, design, manufacturing and supply-chain and their impact on business strategies,
(7) Week 13-15: Cases.

F. Grading: The students will be graded based on (1) homework problems and tests related to the lectures and case studies and (2) a major term paper/new case development.

G. Reading List:

1. The Art of War by Sun Tzu, Private Lecture Notes.

**H. Library Resources:**

1. The above references are to be ordered by Potter Library.
2. Contemporary books are available from Amazon.com.