

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

efd 44-11

DEPARTMENT Industrial Engineering EFFECTIVE SESSION Fall 2011

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

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

PROPOSED:

Subject Abbreviation IE

Course Number 68500

Long Title _____

Short Title Competitive Strategy

Abbreviated title will be entered by the Office of the Registrar if omitted. (30 CHARACTERS ONLY)

EXISTING:

Subject Abbreviation _____

Course Number _____

TERMS OFFERED

Check All That Apply:

- Summer Fall Spring

CAMPUS(ES) INVOLVED

- Calumet N. Central
 Cont Ed Tech Statewide
 Ft. Wayne W. Lafayette
 Indianapolis

CREDIT TYPE

1. Fixed Credit: Cr. Hrs. 3
2. Variable Credit Range:
 Minimum Cr. Hrs. _____
 (Check One) To Or
 Maximum Cr. Hrs. _____
3. Equivalent Credit: Yes No
4. Thesis Credit: Yes No

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. Registration Approval Type
 Department Instructor
7. Variable Title
8. Honors
9. Full Time Privilege
10. Off Campus Experience

Schedule Type	Minutes Per Mtg	Meetings Per Week	Weeks Offered	% of Credit Allocated
Lecture	50	3	15	100
Recitation				
Presentation				
Laboratory				
Lab Prep				
Studio				
Distance				
Clinic				
Experiential				
Research				
Ind. Study				
Pract/Observ				

Cross-Listed Courses

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):

Graduate standing with consent of instructor

Calumet Department Head _____ Date _____	Calumet School Dean _____ Date _____	Calumet Undergrad Curriculum Committee _____ Date _____
Fort Wayne Department Head _____ Date _____	Fort Wayne School Dean _____ Date _____	Fort Wayne Chancellor _____ Date _____
Indianapolis Department Head _____ Date _____	Indianapolis School Dean _____ Date _____	<i>R. Cipra</i> _____ <i>4/20/2011</i> Undergrad Curriculum Committee _____ Date _____
North Central Faculty Senate Chair _____ Date _____	Vice Chancellor for Academic Affairs _____ Date _____	Date Approved by Graduate Council _____
<i>Joe Pekny</i> _____ <i>12/30/2010</i> West Lafayette Department Head _____ Date _____	West Lafayette College/School Dean _____ Date _____	Graduate Council Secretary _____ Date _____
Graduate Area Committee Convener _____ Date _____	Graduate Dean _____ Date _____	West Lafayette Registrar _____ Date _____

OFFICE OF THE REGISTRAR

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

COURSE DESCRIPTION: The art and structure of strategic thinking in engineering decision making and public policy formulation. Principles and frameworks for developing competitive strategies. Determination of relevant environments and key factors for success. Customer-based, Corporate-based, Competitor-based and Public-based Strategies. Scale, niche market, technology, innovation and globalization. Competitive strategy involving engineering domain knowledge for products, processes, services and technical research. Contemporary approaches for strategic planning and the fundamental concepts in The Art of War by Sun Tzu. Strategic positioning, entry barriers, advantage of speed and winning without competition. Research and case development based on domain knowledge in engineering.

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 Pelny
Professor and Interim Head

APPROVED FOR THE FACULTY
OF THE SCHOOLS OF ENGINEERING
BY THE ENGINEERING
CURRICULUM COMMITTEE
ECC Minutes #16
Date 4/6/11
Chairman ECC R. Cipra

Form 40G and Supporting Document for a New Graduate Course

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.
2. Competitive Advantage, M. E. Porter, The Free Press, NY, 1985.
3. The Mind of the Strategist- the Art of Japanese Business, K. Ohmae, McGraw-Hill, 1982.
4. Mastering the Dynamics of Innovation, J. M. Otterback, Harvard Business School, 1994.
5. Wharton on Dynamic Competitive Strategy, George Day and David Reibstein, John Wiley and Son, 1997.
6. Strategy Safari, Mintzberg, Ahlstrand and Lampel, The Free Press, NY, 1998.
7. Kellogg on Strategy: Concepts, Tools and Frameworks for Practitioners, by D. Dranove and S. Marciano, Pearson Education Publishes, 2006.
8. The Innovator's Solution: Creating and Sustaining Successful Growth (Kindle Edition) by Clayton M. Christensen and Michael E. Raynor, Harvard Business School Press, 2004.
9. Seeing What's Next: Using Theories of Innovation to Predict Industry Change, by Clayton M. Christensen, Erik A. Roth and Scott D. Anthony, Harvard Business School Press, 2004.

10. Blue Ocean Strategy: How To Create Uncontested Market Space And Make The Competition Irrelevant, by W. Chan Kim and Renee Mauborgue, Harvard Business School Press, 2005.

H. Library Resources:

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

