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

DEPARTMENT: Engineering  EFFECTIVE SESSION: Fall 2014

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

- [x] 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

1. Subject Abbreviation: CE
2. Course Number: 51000
3. Long Title: Advanced Selected Topics in Civil Engineering
4. Short Title: Advance Selected Topics in CE

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

<table>
<thead>
<tr>
<th>CREDIT TYPE</th>
<th></th>
<th>COURSE ATTRIBUTES:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Fixed Credit: Cr. Hrs.</td>
<td></td>
<td>1. Pass/Not Pass Only</td>
<td></td>
</tr>
<tr>
<td>2. Variable Credit Range: Minimum Cr. Hrs. (Check One)</td>
<td>1-3</td>
<td>2. Satisfactory/Unsatisfactory Only</td>
<td></td>
</tr>
<tr>
<td>Maximum Cr. Hrs.</td>
<td>Or</td>
<td>3. Repeatable</td>
<td></td>
</tr>
<tr>
<td>3. Equivalent Credit Yes</td>
<td>No</td>
<td>Maximum Repeatable Credit</td>
<td></td>
</tr>
<tr>
<td>4. Thesis Credit: Yes</td>
<td>No</td>
<td>4. Credit by Examination</td>
<td></td>
</tr>
</tbody>
</table>

Schedule Type: Lecture, Recitation, Presentation, Laboratory, Lab Prep, Studio, Distance, Clinic, Experiential, Research, Ind. Study, Pract/Observe

<table>
<thead>
<tr>
<th>Schedule Type</th>
<th>Minutes Per Mil</th>
<th>Meetings Per Week</th>
<th>Weeks Offered</th>
<th>% of Credit Allocated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>75</td>
<td>2</td>
<td>15</td>
<td>100</td>
</tr>
</tbody>
</table>

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):
P: Graduate Standing, Senior in Engineering, or permission from instructor. Formal classroom or individualized instruction on topics of current interest or contemporary issues. May be repeated for credit.

* COURSE LEARNING OUTCOMES

See attached

<table>
<thead>
<tr>
<th>Cross-Listed Courses</th>
<th></th>
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<tbody>
<tr>
<td>Calumet Director of Graduate Studies</td>
<td></td>
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<tr>
<td>Fort Wayne Director of Graduate Studies</td>
<td></td>
</tr>
<tr>
<td>IU/PUI Associate Dean for Graduate Education</td>
<td></td>
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<tr>
<td>North Central Director of Graduate Studies</td>
<td></td>
</tr>
<tr>
<td>Date Approved by Graduate Council</td>
<td></td>
</tr>
<tr>
<td>Graduate Council Secretary</td>
<td></td>
</tr>
</tbody>
</table>

OFFICE OF THE REGISTRAR
Supporting Document
to accompany the Registrar's FORM 40G when:

1. Requesting a New Graduate Course (Complete Section I)
or

2. Adding Distance as an Additional Schedule Type (Complete Section II)

To: Purdue University Graduate Council
From: Faculty Member: Suleiman Ashur
Department: Engineering
Campus: Fort Wayne
Date: 30 November 2013
Subject: Supporting Document to the Registrar's Form 40G

For Reviewer’s comments only
(Select One)

Reviewer:

Comments:

Contact for information if questions arise:
Name: Suleiman Ashur
Phone Number: 260-481-6080
E-mail: ashurs@ipfw.edu
Campus Address: ETCS, 321B

Course Subject Abbreviation and Number: CE 5xx00
Course Title: Selected Topics in Civil Engineering

SECTION I

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 majors and/or concentrations, and how the course relates to other graduate courses offered by the department, other departments, or interdisciplinary programs.

The Department of Engineering has approved a new civil engineering concentration to its Master in Engineering Degree. This course will be used to provide to provide new knowledge in selected areas of civil engineering including environmental, structure, geotechnical, construction management, and transportation.

• 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.

The target audience are graduate and undergraduate senior students. It is anticipate to have more than five students at the beginning of the offering and steadily increase to have more that 10 students in the class. The course rigor will be at a level of graduate courses and include but limited to an independent project or research work submitted, presented, and defended by the end of the semester.
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.).

  Students who successfully complete this course will be able to:
  1) solve selected advanced engineering problems using fundamental skills of engineering, science, and math.
  2) utilize modern computational and engineering tools in modeling, simulating, analyzing, optimizing and/or designing selected civil and environmental engineering problems.
  3) conduct an independent project/research and/or write an original manuscript related to the selected topic of this class.
  4) effectively communicate technical and non-technical information of their work orally and in writing.

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

  The assessment of the courses will be based on:
  1) Direct measures include homework, quizzes, exams, term paper/project. In some courses, experimental or laboratory work may be required.
  2) Indirect measures include class participation and student survey at the end of semester to evaluate to what degree students believe they master the learning outcomes of the course.

- Grading criteria (select from drop down boxes): include a statement describing the criteria that will be used to assess students and how the final grade will be determined.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Exams and Quizzes</th>
<th>Criteria</th>
<th>Laboratory Exercises</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria</td>
<td>Papers and Projects</td>
<td>Criteria</td>
<td>Attendance and Class Participation</td>
</tr>
</tbody>
</table>

- Identify the method(s) of instruction (select from drop down box) and describe how the methods promote the likely success of the desired student learning outcomes.

<table>
<thead>
<tr>
<th>Method of Instruction</th>
<th>Lecture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Method of Instruction</td>
<td>Laboratory</td>
</tr>
<tr>
<td>Method of Instruction</td>
<td>Presentation</td>
</tr>
<tr>
<td>Method of Instruction</td>
<td>Experiential</td>
</tr>
</tbody>
</table>

C. Prerequisite(s):

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

  Vary and depends on the course. The example syllabus attaches requires CE 330 Construction Management or an equivalent course.

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

  Graduate standing, senior in engineering, or permission from instructor

D. Course Instructor(s):

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

  Dr. Suleiman Ashur, Professor of Civil Engineering, Civil Engineering program

- Is the instructor currently a member of the Graduate Faculty?  X 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.

T.1. Introduction
   - The Concept of Total Quality Management
   - The Concept of Computer-Integrated Construction
   - Project Organization Structure
   - Value Engineering

   - Quantity Takeoff
   - Unit Pricing and Estimate Setup

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.

Text Book:

References:

G. Library Resources
- Describe the library resources that are currently available or the resources needed to support this proposed course.

5) Access to several research journals and databases including ERIC and Academic Search Premier (EBSCO).

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.)

Indiana University – Purdue University Fort Wayne (IPFW)

CE 5xx Syllabus Advanced Construction Management Fall 2014

1. Instructor Information

Name and Title: Suleiman Ashr, Professor of Civil Engineering.
Office: ET 321B
Office Hours: TBD
Contacts: Phone: (260) 481-6080.
E-mail: ashurs@ipfw.edu

2. Course Information

Course title and number: CE 5xx00 “Advanced Construction Management”
Number of credit hours: 3
Course description: Advanced techniques used for the planning and control of construction project operations, application of computer project management packages to construction, case studies outline the engineering system for productivity and its application procedure to construction projects.
Course prerequisites: CE 330 Construction Management or equivalent or permission from the instructor.
Description of students for whom the course was designed: Graduate or Senior Engineering students.

3. Course Outline

T.1. Introduction
   • The Concept of Total Quality Management
   • The Concept of Computer-Integrated Construction
   • Project Organization Structure
   • Value Engineering

   • Quantity Takeoff
   • Unit Pricing and Estimate Setup

T.3. Scheduling of Linear and Repetitive Projects
   • Linear Projects
   • Line of Balance (LOB) Technique

T.4. Resource Allocation Using Multiskilled Resources
Indiana University – Purdue University Fort Wayne (IPFW)

CE 5xx Syllabus  Advanced Water Treatment Processes  Fall 2014

T.5.  Time-Cost Tradeoff Analysis
   ▪ Project Time-Cost Relationship
   ▪ The Cost-Slope Method

T.6.  Bidding Strategy and Markup Estimation
   ▪ Analyzing the Bidding Behavior of Key Competitors
   ▪ Estimating Optimum Markup

T.7.  Project Control
   ▪ Measuring Work Progress
   ▪ Cost and Schedule Control
   ▪ Forecasting
   ▪ Schedule Updating

T.8.  Quality Assurance
   ▪ Quality Control
   ▪ Quality Assurance

T.9.  General Issues on Safety and Health in Construction

T.10. Claims, Liability, and Dispute Resolution
   ▪ Contract Changes and Delays
   ▪ Major Claim Categories
   ▪ Alternate Dispute Resolution

3. Goals and Course Outcomes

1. Course Goals:
   1. Introduce the students to various professional concepts of construction management and engage the students in real-world projects to acquire professional experience.
   2. Familiarize the students with the advanced construction management techniques including advanced detailed estimating, scheduling of repetitive projects, bidding strategies, project control, and quality control.
   3. Develop students' computer skills in controlling construction projects.

2. Course Outcome:
   Upon successful completion of the course, students should be able to:
   1. Understand various professional concepts of construction management including contract documents, project organization structure, safety and health in construction, claims, liability, and dispute resolution [F].
   2. Read and understand drawings, specifications, bills of quantities, and conditions of the contract of real life construction projects [F].
   4. Differentiate between resource-driven and duration-driven schedules and schedule linear and repetitive projects using the Line-of-Balance (LOB) technique [A, E].
   5. Deal with certain resource-related problems to improve resource allocation utilizing multi-skilled resources [A].
6. Perform time-cost tradeoff (TCT) analysis to meet a project deadline date by crashing the project [A, E].
7. Analyze the probability of winning a bid at a given markup value and estimate an optimum markup as an allowance for risk and profit [A].
8. Understand the basics of project control, measure the work progress using the earned value technique, update the schedule, and forecast the actual project cost at completion [A].
9. Understand the basic concepts of quality control and quality assurance [A, F].
10. Use specialized software for project scheduling and control [K].
11. Express their ideas during classroom discussions and communicate effectively while working in their term project [G].

Letter represents ABET outcomes (A-K).

4. Course Policies

Exams

All exams are closed books and notes unless advised otherwise. NO make-up exams will be given. Exceptions may be considered in case of illness, serious emergencies, or other university sponsored activities. However, appropriate evidences must be presented in order to qualify for exceptions.

Homework

You are expected to work the assigned homework problems individually, although you may discuss the assignments. Homework is due at the beginning of the class period one week after which it is assigned unless otherwise specified. Late homework will NOT be accepted. Exceptions may be considered in case of illness, serious emergencies, or other university sponsored activities. However, appropriate evidences must be presented in order to qualify for exceptions. All homework must be submitted on 8½"x11" white paper or on engineering design paper.

Project

At least one project will be assigned during the semester. This project will cover topics in a somewhat open-ended manner and will probably require literature search and technical evaluations. Late projects will NOT be accepted.

Policies

- My commitment is to create a climate for learning characterized by respect for each other and the contributions each person makes to class. I ask that you make a similar commitment.
- Do not be late for class. No eating and turn off beepers and cell phones during class.
- Adherence to the Student Conduct Code is expected.
- Students are expected to attend all classes. If you miss a class for any reason you are responsible for determining what material was covered, what assignments were made, and what announcements were made.
- Students with a disability should contact the SSD office at Walb 113 (481-6657) or visit the SSD website at www.ipfw.edu/ssd for a description of services available.
- Students are expected to be above reproach in all scholastic activities. Students
who engage in scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course. Scholastic dishonesty included but not limited to submission for credit of any work or materials that are attributable in whole or in part to another person. For more information about academic honesty rules and regulations, you may visit IPFW regulations at:  
http://www.ipfw.edu/academics/regulations/honesty.shtml

Grades

Averages will be calculated using the following point distribution (Total 100%):
- Class Participation ........................................... 5%
- Homework and Quizzes .................................... 15%
- Project ............................................................ 15%
- Midterm ......................................................... 30%
- Final Exam ...................................................... 35%

Grades will be assigned as follows:

<table>
<thead>
<tr>
<th>For % Score ≥</th>
<th>Grade</th>
<th>Grade Point Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>95</td>
<td>A+</td>
<td>4.0</td>
</tr>
<tr>
<td>90</td>
<td>A</td>
<td>4.0</td>
</tr>
<tr>
<td>88</td>
<td>A-</td>
<td>3.7</td>
</tr>
<tr>
<td>85</td>
<td>B+</td>
<td>3.3</td>
</tr>
<tr>
<td>80</td>
<td>B</td>
<td>3.0</td>
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<tr>
<td>78</td>
<td>B-</td>
<td>2.7</td>
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<tr>
<td>75</td>
<td>C+</td>
<td>2.3</td>
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<tr>
<td>70</td>
<td>C</td>
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<tr>
<td>68</td>
<td>C-</td>
<td>1.7</td>
</tr>
<tr>
<td>65</td>
<td>D+</td>
<td>1.3</td>
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<tr>
<td>60</td>
<td>D</td>
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</tr>
<tr>
<td>&lt;60</td>
<td>F</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Email Notices  I expect that you will receive any emails I send to your IPFW email account. Either check this account regularly (daily) or forward the messages to an account that you do check daily.

Comments  Please feel free to stop by any time if you have any comments or suggestions. Any suggestions that will benefit the class are appreciated, and I will try my best to address any concerns that you might have.
| Important Dates | August 29 | Last day for full refund  
| | September 1 | Pass/Not Pass and Audit-to-Credit Deadline  
| | October 6 | Labor Day Holiday  
| | October 20 | Project assigned  
| | October 13-14 | Midterm Exam  
| | November 26-28 | Fall Recess  
| | December 15-22 | Thanksgiving Recess  
| | | Last Week of Classes and Final Exam  