PRINCETON UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION, OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

Department: Division of Construction Engineering and Management
Effective Session: Spring 2010 (201020) 20110

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

☐ 1. New course with supporting documents
☐ 2. 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 (department head signature only)
☐ 8. Change in instructional hours
☐ 9. Change in course description
☐ 10. Change in course requisites
☐ 11. Change in semesters offered (department head signature only)
☐ 12. Transfer from one department to another

PROPOSED:
Subject Abbreviation: CEM

Course Number: 30100

Long Title: Project Control & Life Cycle Execution of Constructed Facilities
Short Title: Pro-Cent Life Cyc Constr Fac

EXISTING:

Subject Abbreviation:

Course Number:

Long Title:

Short Title:

TERMS OFFERED:

Check All That Apply:
☐ Summer
☐ Fall
☐ Spring

CAMPUS(ES) INVOLVED:

☐ Camden
☒ N. Central
☐ Cont Ed
☒ Tech States
☐ Ft. Wayne
☐ W. Lafayette
☐ Indianapolis

CREDIT TYPE:

1. Fixed Credit Cr. Hrs.: 3.0
2. Variable Credit Range:
Minimum Cr. Hrs. (Check One) To
☐ 3.0
☐ 3.5
☐ 4.0
☐ 4.5
☐ 5.0
☐ 5.5
☐ 6.0

Maximum Cr. Hrs.:

3. Equivalent Credit: Yes ☐ No ☐

COURSE ATTRIBUTES:

1. Pass/Fail Only ☐
2. Satisfactory/Unsatisfactory Only ☐
3. Repeatable ☐
4. Credit by Examination ☐
5. Special Fees ☐

SCHEDULE TYPE:

Lecture: 75
Recitation: 75
Presentation: 75
Laboratory: 75
Studio: 75
Distance: 75
Clinic: 75
Experiential: 75
Research: 75
Ind. Study: 75
Pract/Observe: 75

Cross-Listed Courses: 

Course Description (Include Requisites/Restrictions):

Prerequisite: CEM 20100 Life Cycle Engineering and Management of Constructed Facilities

This course continues an introduction to construction management and engineering concepts for future engineers, contractors and owner representatives involved at different stages in the life-cycle of constructed facilities. Specifically, this course focuses on the principles, tools, and procedures used in the construction industry for project selection and financing, advanced planning and scheduling techniques, resource management, and project monitoring.

COURSE LEARNING OUTCOMES:

Building on the broad framework introduced in the prerequisite course, this course introduces further awareness of analytical tools and extends the basic foundation for advanced topics in construction engineering and management. Students will make gains in the following aspects of their engineering education:

- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
- an ability to design a process to meet desired needs within realistic constraints
PURDUE UNIVERSITY
REQUEST FOR ADDITION, EXPIRATION,
OR REVISION OF AN UNDERGRADUATE COURSE
(10000-40000 LEVEL)

DEPARTMENT Division of Construction Engineering and Management
EFFECTIVE SESSION Spring 2010 (201020)

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

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

PROPOSED:

Subject Abbreviation: CEM
Course Number: 30100
Long Title: Project Control Life Cycle Execution of Constructed Facilities
Short Title: Proj Contr Life Cyc Constr Fac

TERMS OFFERED:

Check All That Apply:
☐ Summer
☐ Fall
☒ Spring
☐ CAMPUS(ES) INVOLVED:
NEY
N. Central
Cont Ed
Pl. Wayne
Tech Statewide
W. Lafayette
Indyapolis

CREDIT TYPE:

1. Fixed Credit Cr. Hrs.: 3.0
2. Variable Credit Range: Yes
3. Equivalent Credit: No

1. Pass/No Pass Only
2. Satisfactory/Unsatisfactory Only
3. Repeatable
4. Credit by Examination
5. Special Fees
6. Registration Approval Type
7. Variable Title
8. Honors
9. Full Time Privilege
10. Off Campus Experience

COURSE ATTRIBUTES: Check All That Apply

Schedule Type:
Lecture
Radiation
Prep
Clinic
Experiential
Research
data
Pred/Observ

Minutes Meetings Per Week % of Credit Per Min
75 2 16 100

Cross-Listed Courses
CE 32200

COURSE DESCRIPTION (INCLUDE REQUISITES/RESTRICTIONS):

Prerequisite: CEM 20100 Life Cycle Engineering and Management of Constructed Facilities

This course continues an introduction to construction management and engineering concepts for future engineers, contractors, and owner representatives involved at different stages in the life-cycle of constructed facilities. Specifically, this course focuses on the principles, tools, and procedures used in the construction industry for project selection and financing, advanced planning and scheduling techniques, resource management, and project monitoring.

COURSE LEARNING OUTCOMES:

Building on the broad framework introduced in the prerequisite course, this course introduces further awareness of analytical tools and extends the basic foundation for advanced topics in construction engineering and management. Students will make gains in the following aspects of their engineering education:

- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
- an ability to design a process to meet desired needs within realistic constraints

Calumet Department Head
Date
Calumet School Dean
Date

Fort Wayne Department Head
Date
Fort Wayne School Dean
Date

Indianspolis Department Head
Date
Indianspolis School Dean
Date

North Central School Dean
Date
North Central Vice Chancellor for Academic Affairs
Date

West Lafayette Department Head
Date
West Lafayette College School Dean
Date
West Lafayette Registrar
Date

OFFICE OF THE REGISTRAR
TO: The Faculty of the College of Engineering
FROM: Division of Construction Engineering and Management
RE: New Undergraduate Course CEM 30100
    Project Control & Life Cycle Execution of Constructed Facilities

The faculty of the Division of Construction Engineering and Management has approved the following new course. This action is now submitted to the Engineering Faculty with a recommendation for approval.

CEM 30100  Project Control & Life Cycle Execution of Constructed Facilities
Sem. 1 & 2, Lecture 3, cr.3.
Prerequisite: CEM 19100 – Construction Internship I and
CEM 20100 - Life Cycle Engineering and Management of Constructed Facilities

Description: This course continues an introduction to construction management and engineering concepts for future engineers, contractors and owner representatives involved at different stages in the life-cycle of constructed facilities. Building on the broad framework introduced in the prerequisite course, this course introduces further awareness of analytical tools and extends the basic foundation for advanced topics in construction engineering and management. Specifically, this course focuses on the principles, tools, and procedures used in the construction industry for project selection and financing, advanced planning and scheduling techniques, resource management, and project monitoring.

Reason: This course will be taught in fulfillment of the Construction Engineering (CNE) degree requirements. The syllabus of the course is attached. This course has been taught as CEM 497 and will be offered in both the Spring and Fall semesters. CEM majors must enroll in this course to fulfill degree requirements.

Makarand Hastak, Professor and Head
Division of Construction Engineering and Management

APPROVED FOR THE FACULTY
OF THE SCHOOLS OF ENGINEERING
BY THE ENGINEERING
CURRICULUM COMMITTEE
ECC Minutes #21
Date 3/30/10
Chairman ECC R. Cipla
Instructor: Dr. Phillip S. Dunston
CIVL 1243; 765-494-0640; dunston@ecn.purdue.edu
General Office Hours: MTW 1500-1600; otherwise by e-mail or appointment

Teaching Assistant: Mr. Saumyang Patel
CIVL 1255; 494-0696; smpatel@purdue.edu
Office Hours: M W 1300-1430

Course Time and Location: T Th 1330-1445 CIVL 3153

Required Text
The collection of topics is taken from numerous sources. However, the greater part of the course
is based upon readings from the following primary text:

Owners, Engineers, Architects and Builders, Department of Civil and Environmental
Engineering, Carnegie Mellon University, Pittsburgh, PA 15213. Book is available online at
http://pmbook.ce.cmu.edu/

Other materials to be provided or referenced later by the instructor.

Supplementary References
Publishers.
Saddle River, New Jersey.
A Vista Blackboard section is being set up for this course. Subsequent to the first meeting, lecture notes, handouts, and other selected materials will be made available there.

**Objective**

This course continues an introduction to construction management and engineering concepts for future engineers, contractors and owner representatives involved at different stages in the life-cycle of constructed facilities. Building on the broad framework introduced in the prerequisite course, this course introduces further awareness of analytical tools and extends the basic foundation for advanced topics in construction engineering and management. Specifically, this course focuses on the principles, tools, and procedures used in the construction industry for project selection and financing, advanced planning and scheduling techniques, resource management, and project monitoring.

**Expected Outcomes**

By the end of this course, it is expected that, among other things, students will makes gains in the following aspects of their engineering education:

- an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice
- an ability to design a process to meet desired needs within realistic constraints

**Expectations and Grading**

Students are responsible to keep up with the readings associated with each topic as noted on the course syllabus. A series of focused individual assignments on specific topics covered in the course will be required in addition to two (2) midterm exams and a final exam. The dates of the midterm exams will be established at least two weeks before each.

<table>
<thead>
<tr>
<th>Performance Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>25%</td>
</tr>
<tr>
<td>Midterm Exams (2)</td>
<td>50%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
</tr>
</tbody>
</table>

A curve will **not** be used for grading. The minimum cutoff for an A is 90%, for a B is 80%, for a C is 70%, and for a D is 60%. Anything below 60% is considered a failing grade (F).
<table>
<thead>
<tr>
<th>Week Range</th>
<th>Number of Weeks</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-4</td>
<td>4</td>
<td>Time value of money and engineering economy</td>
</tr>
<tr>
<td>5-6</td>
<td>2</td>
<td>Construction project financing (emphasis on owner)</td>
</tr>
<tr>
<td>7-8</td>
<td>1</td>
<td>Cost of owning and operating equipment. Optimum period of ownership.</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>Exam 1</td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>Cost implications of labor and the company safety record</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>Relationship between risk and markup for bidding purposes.</td>
</tr>
<tr>
<td>9</td>
<td>0.5</td>
<td>Relationship between markup and expected profit</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>Work breakdown structure</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>Introduction to design of operations using simulation</td>
</tr>
<tr>
<td>12-13</td>
<td>1</td>
<td>Resource management, allocation, and leveling.</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Exam 2</td>
</tr>
<tr>
<td>14</td>
<td>0.5</td>
<td>Cost and time control</td>
</tr>
<tr>
<td>14</td>
<td>0.5</td>
<td>Repetitive scheduling method</td>
</tr>
<tr>
<td>15</td>
<td>0.5</td>
<td>Selected problems in construction engineering</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>Final Exam</td>
</tr>
</tbody>
</table>
Class Policy Regarding Attendance and Homework Assignments

1. Attendance is required, and subject to University class attendance policy as described in the following excerpt from University Regulations, Part 2, Section VI A (http://www.purdue.edu/univregs/pages/ac_regs_pro/classes.html): “Scheduled courses allow students to avoid conflicts and reflect the University’s expectation that students should be present for every meeting of a class/laboratory for which they are registered....Ultimately students are responsible for all required coursework and bear full responsibility for any academic consequences that may result due to absence...” Therefore, a class sign-up sheet will be circulated during each lecture after the first week of classes and will become the record of each student’s attendance during the semester. The instructor must be notified of any anticipated absences in writing (typed/word-processed memo or e-mail) and in advance, if possible, stating the date(s) and the reason for the absence. Otherwise, the absence will be noted as unexcused. Each student is allowed a maximum of two (2) unexcused absences. In addition, for seniors and graduates near the end of their program, up to a total of three (3) plant trips will be counted as excused absences. Three (3) unexcused absences will result in a grade reduction of one letter. Four (4) unexcused absences will result in a grade of “I” or “F” depending on whether or not the student is passing in all other respects at the time of the fourth absence. NO ABSENCES WILL BE EXCUSED ON SCHEDULED EXAM DATES.

2. All homework assignments will be completed individually. Assignments will be turned in at the beginning of class on the date due. It is each student’s responsibility to deliver any late assignments to the teaching assistant.

3. Assignments that are submitted after class but by noon the following day will receive a penalty of 30%. From that point, assignments received up to one class session late will receive a penalty of 40%, and thereafter a 100% penalty. All assignments must be submitted in order to avoid receiving an “I” letter grade.

4. Homework should have a professional appearance, being neat, logically formatted, and legible (either on engineering paper or word processed). All final solutions should be clearly highlighted (boxed, underlined, bold etc.). Table or figure references should be clearly cited. The Grader reserves the right not to grade (0 credit for the problem) or to deduct points for messy homework.

5. Sometimes, a solution to a problem may be misunderstood. Due to the size of the class, however, only one resubmission (re-grading of a specific homework assignment) is allowed for the semester (except in the case of instructor/grader error that affects most or all of the class).
6. Questions regarding grades earned should **first** be submitted to the grader in the form of a word-processed memo.

**Emergency Procedures**

In the event of a major campus emergency, course requirements, deadlines and grading percentages are subject to changes that may be necessitated by a revised semester calendar or other circumstances beyond the instructor’s and the student’s control. Here are ways to get information about changes in this course.

- Course web page on Blackboard Vista
  (http://www.itap.purdue.edu/tlt/blackboard/index.cfm)
- An e-mail list has been set up for the instructor or TA to convey announcements, to the class. This list does not permit student-to-instructor or student-to-student communication. When needing to reply to any announcements, an e-mail message should be sent to either the instructor’s or the TA’s campus e-mail address (both shown above) as appropriate.