### 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
- [X] 3. Expiration of a course
- [X] 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)
- [X] 8. Change in instructional hours
- [ ] 9. Change in course description
- [X] 10. Change in course prerequisites
- [ ] 11. Change in semesters offered (department head signature only)
- [ ] 12. Transfer from one department to another

### PROPOSED:

<table>
<thead>
<tr>
<th>Subject Abbreviation</th>
<th>Subject Abbreviation</th>
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</thead>
<tbody>
<tr>
<td>CE</td>
<td>CE</td>
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<table>
<thead>
<tr>
<th>Course Number</th>
<th>Course Number</th>
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<tbody>
<tr>
<td>33000</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Long Title</th>
<th>Construction Management</th>
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<table>
<thead>
<tr>
<th>Short Title</th>
<th></th>
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</table>

Abbreviated title will be entered by the Office of the Registrar if omitted. (22 CHARACTERS ONLY)

### TERMS OFFERED:

- [ ] Summer
- [X] Fall
- [X] Spring
- [ ] Summer

### CAMPUS(ES) INVOLVED:

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

### CREDIT TYPE:

1. Fixed Credit: 3 Cr. Hrs.
2. Variable Credit Range:
   - Minimum Cr. Hrs: (Check One)
   - Maximum Cr. Hrs: (Check One)
3. Equivalent Credit: Yes
4. Thesis Credit: Yes

### COURSE ATTRIBUTES:

- 1. Pass/Net Pass Only
- 2. Satisfactory/Unsatisfactory Only
- 3. Repeatable
- 4. Credit by Examination
- 5. Designator Required
- 6. Special Fees
- 7. Registration Approval Type: Department
- 8. Variable Title
- 9. Remedial
- 10. Honors
- 11. Full Time Privilege
- 12. Off Campus Experience

### COURSE DESCRIPTION (INCLUDE REQUISITES):

P: ENGR 199. Type and functions of management, types of construction, project delivery methods, types of construction contracts, the competitive bidding process, data and project management tools, early and detailed cost estimates, project planning, project scheduling with AOA and AON using the critical path method (CPM), project scheduling with uncertainty using PERT method, resource leveling and allocation, project financing options, project cash flow analysis, computer applications.

### SIGNATURES:

- Calumet Department Head: Donald J. Smith, 9/9/10
- Calumet School Dean: [Signature], 9/9/10

- Fort Wayne Department Head: [Signature], 9/9/10
- Fort Wayne School Dean: [Signature], 9/9/10

- Indianapolis Department Head: [Signature], 9/9/10
- Indianapolis School Dean: [Signature], 9/9/10

- North Central Department Head: [Signature], 9/9/10
- North Central Chancellor: [Signature], 9/9/10

- West Lafayette Department Head: [Signature], 9/9/10
- West Lafayette College/School Dean: [Signature], 9/9/10
- West Lafayette Registrar: [Signature], 9/9/10
**Required Course**  
**CE 330 – Construction Management**  
Offered each fall and spring

**Catalog Data**  
Class: 2. Lab: 1, Credits: 3  
Type and functions of management, types of construction, project delivery methods, types of construction contracts, the competitive bidding process, data and project management tools, early and detailed cost estimates, project planning, project scheduling with AOA and AON using the critical path method (CPM), project scheduling with uncertainty using PERT method, resource leveling and allocation, project financing options, project cash flow analysis, computer applications.

**Prerequisite**  
None

**Co-requisite**  
ENGR 199: Introduction to Engineering Design.  
Authorized equivalent courses or consent of instructor may be used in satisfying course co-requisites.

**Required Textbook**  

**References**  

**Course Objectives**  
1) To introduce the students to the basic concepts and principles of construction management and engage the students in real-world projects to acquire professional experience.  
2) Familiarize the students with the various construction management techniques including estimation, scheduling, resource management, and project financing.  
3) Develop students’ computer skills in managing construction projects.

**Schedule:**  
Two classes of 75 minutes each per week

**Lecture Topics**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Types &amp; functions of management and types of construction</td>
<td>1 Class</td>
</tr>
<tr>
<td>2. Project Contract Strategy</td>
<td>3 Classes</td>
</tr>
<tr>
<td>3. Data and Project Management Tools</td>
<td>2 Classes</td>
</tr>
<tr>
<td>4. Early Cost Estimates</td>
<td>1 Class</td>
</tr>
<tr>
<td>5. Detailed Cost Estimates</td>
<td>4 Classes</td>
</tr>
<tr>
<td>6. Project Planning</td>
<td>4 Classes</td>
</tr>
<tr>
<td>7. Project Scheduling</td>
<td>5 Classes</td>
</tr>
<tr>
<td>8. Resource Management</td>
<td>4 Classes</td>
</tr>
<tr>
<td>9. Project Financing</td>
<td>4 Classes</td>
</tr>
<tr>
<td>10. Quizzes/Exams</td>
<td>3 Classes</td>
</tr>
</tbody>
</table>

**Laboratory Topics**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Labs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Term Project Description</td>
<td>1 lab</td>
</tr>
<tr>
<td>2. Quantities Takeoff- site preparation, excavation, and backfilling</td>
<td>2 labs</td>
</tr>
<tr>
<td>3. Quantities Takeoff- concrete work</td>
<td>2 labs</td>
</tr>
<tr>
<td>4. Quantities Takeoff- masonry work</td>
<td>1 lab</td>
</tr>
<tr>
<td>5. Quantities Takeoff- Thermal and moisture protection</td>
<td>1 lab</td>
</tr>
<tr>
<td>6. Quantities Takeoff- Finishes</td>
<td>1 lab</td>
</tr>
<tr>
<td>7. Quantities Takeoff- Doors and windows</td>
<td>1 lab</td>
</tr>
<tr>
<td>8. Quantities Takeoff- Electrical and mechanical work: lump-sum</td>
<td>1 lab</td>
</tr>
<tr>
<td>9. Project Cost Estimates</td>
<td>2 labs</td>
</tr>
<tr>
<td>10. Project Planning and scheduling</td>
<td>2 labs</td>
</tr>
<tr>
<td>11. Final report and presentation</td>
<td>1 lab</td>
</tr>
</tbody>
</table>

In addition, the lab will include training on using Microsoft Excel and Project in construction management
Course Outcomes

By the end of this course, students shall be able to:

1. Understand the basic concepts of construction management such as types and functions of management, project participants, life-cycle stages of projects, project delivery methods, types of contracts, and bidding [f (7)].
2. Read and understand blue prints (drawings) and other contract documents of real life construction projects [f (7)].
3. Prepare early (preliminary) and detailed cost estimates for construction projects [a (1), f (7)].
4. Breakdown the project into work activities using the Work Breakdown Structure (WBS) and the Master Specification format and establish the logical relationship among activities [e (2)].
5. Draw network diagrams for construction projects using the critical path method (CPM) activity on arrow (AOA) and activity on node (AON) networks [e (2)].
6. Estimate activities' durations [a (1)].
7. Determine activities' times (early start, early finish, late start, late finish, total float, and free float) and schedule the project using the CPM and the bar chart (Gantt chart) scheduling techniques [a (1)].
8. Schedule projects with uncertain durations using the program evaluation and review technique (PERT) [a (1)].
9. Smooth resource profiles (resource leveling) and schedule projects with limited resources (resource allocation) [a (1)].
10. Understand the various options of project financing and perform cash flow analysis [a (1)].
11. Use specialized software such as Microsoft Project for data management, project scheduling, resource leveling, and resource allocation. Formulate models of construction problems and use Excel solver to find an optimum solution. [k (6), e (2)].
12. Express their ideas during classroom discussions and communicate effectively while working in their term project [g (8)].

ABET category: Engineering science: 3 credits or 100%