**PURDUE UNIVERSITY**
REQUEST FOR ADDITION, EXPIRATION,
OR REVISION OF AN UNDERGRADUATE COURSE
(100-400 LEVEL)

DEPARTMENT: Engineering
EFFECTIVE SESSION: Fall 2010

**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. 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: CE
- Course Number: 47800
- Long Title: Design of Concrete Structures
- Short Title: Des of Concrete Struct

**EXISTING:**
- Subject Abbreviation: CE
- Course Number: 37600

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

**TERMS OFFERED**
- Check All That Apply:
  - [ ] Summer
  - [x] Fall
  - [x] Spring

**CAMPUS(ES) INVOLVED**
- Calumet
- Cont Ed
- Tech Statewide
- Ft Wayne
- Indianapolis
- W Lafayette

**CREDIT TYPE**
- Fixed Credit: Cr. Hrs.: 3
- Variable Credit Range:
  - Minimum Cr. Hrs: [ ]
  - (Check One) To [ ]
  - Maximum Cr. Hrs: [ ]

- Equivalent Credit: Yes [ ] No [ ]
- Thesis Credit: Yes [ ] No [ ]

**INSTRUCTIONAL TYPE**
- Minutes Per Mgr: 75
- Meetings Per Week: 2
- Weeks Offered: 19
- % of Credit Allocated: 100
- Delivery Method (Asyn, Cr Sync.): Synchronized
- Delivery Medium (Audio, Internet, Live, Text-Based, Video):

**COURSE ATTRIBUTES:** Check All That Apply
- 1. Pass/Not Pass Only
- 2. Satisfactory/Unsatisfactory Only
- 3. Repeatable
- 4. Credit by Examination
- 5. Designator Required
- 6. Special Fees

**COURSE DESCRIPTION (INCLUDE REQUISITES):**
P: CE 316; CE 378. Flexural analysis and design of reinforced concrete beams including singly and doubly reinforced rectangular beams and T-beams, shear and diagonal tension, serviceability, bond, anchorage and development length, short and slender columns, slabs, footings and retaining walls, including computer applications.

**OFFICE OF THE REGISTRAR**

[Signatures and dates for approval]
Required Course  CE 478 - Design of Concrete Structures  
Offered each fall and spring

Catalog Data  
Class: 3. Credits: 3  
Flexural analysis and design of reinforced concrete beams including singly and doubly reinforced rectangular beams and T-beams, shear and diagonal tension, serviceability, bond, anchorage and development length, short and slender columns, slabs, footings and retaining walls, including computer applications.

Prerequisite  
CE 375 - Structural Analysis  
CE 375: Civil Engineering Materials

Corequisite  
None  
Authorized equivalent courses or consent of instructor may be used in satisfying course pre-requisites.

Required Textbook and Code  
- Building Code Requirements for Reinforced Concrete, ACI 318M-05, ACI, 2005.

Reference  

Course Objectives  
To introduce the students to the fundamentals of reinforced concrete design with emphasis on the design of rectangular and T-beams, shear, bond, short and slender columns, slabs, and footings and retaining walls. In addition, student will learn how to analysis and design of reinforced concrete structural members under bending, shear, and/or axial loads according to the American Concrete Institute (ACI) building code requirements.

Schedule:  
Two classes of 75 minutes per week

Lecture Topics  
1. Flexural Analysis and Design of Beams.  
2. Shear and Diagonal Tension In Beams.  
4. Serviceability.  
5. Short Columns.  
10. Retaining Walls.  
11. Quizzes/Exams

Course Outcomes  
By the end of this course, students shall be able to:  
1. Identify and compute the main mechanical properties of concrete and steel such as material strengths, moduli of elasticity, and modular ratio. [a (1)]  
2. Identify and calculate the design loads and distribution[a (1), e (2),]  
3. Apply the strength method to design R.C. structural members. [a (1), c(4), k (6)]
4. Analyze and design R.C. members under flexure and shear. [a (1), c(4), k (6)]
5. Analyze and design short R.C. columns. [a (1), c(4), k (6)]
6. Apply relevant ACI Code provisions to ensure safety and serviceability of structural elements. [a (1), c(4), k (6)]
7. Analyze and design R.C. footings. [a (1), c (4), k (6)]
8. Apply relevant ACI Code provisions to ensure safety and serviceability of structural elements. [a (1), c (4), f (7), i (9), k (6)]

ABET category: Engineering Science 0.5 credits or 16.7%
Engineering Design: 2.5 credits or 83.3%