



**School of Engineering and Applied Science  
Civil & Environmental Engineering Department**

**CE 206, Section 10, CRN 74726**  
**Design of Reinforced Concrete Structures (3 credits)**

**Fall 2002: From 09/02/02 To: 12/08/02**

Meet in GLM 609 on Thursday, at 06:10 pm - 08:40 pm

**Tentative Course Outline**

**Prerequisites:** CE 122, Structural Theory II  
CE 192, Reinforced Concrete I

**Instructor:** Sameh S. Badie, Ph.D., P.E.  
Academic Center, Suite 638  
Tel: 202-994-8802, Fax: 202-994-0127  
E-mail: [badies@gwu.edu](mailto:badies@gwu.edu)  
Office hours for class questions: M & W, from 1:00 to 3:00 PM

**Text Book:** "Design of Reinforced Concrete Structures," Arthur H. Nilson, 13<sup>th</sup> Edition, 2003, McGraw-Hill, Inc., New York, ISBN 0-07-292199-4

**References:**

- "Building Code Requirements for Reinforced Concrete (ACI318-02)," and "Commentary on Building Code Requirements For Reinforced Concrete" American Concrete Institute, P.O. 4754 Redford Station, Detroit, Michigan 48912.
- Notes on ACI 318-02 by Portland Cement Association, PCA.

**Course Objective:**

After completion of this course, the student should be able to proportion reinforced concrete members in moderately complex structural arrangements in a manner that ensures the safety and utility of the structure.

**Tentative Course Content:**

- |   |                       |
|---|-----------------------|
| 1. New provision for flexural analysis in the ACI318-02 | Chapter 3             |
| 2. Review of analysis and design of vertical shear      | Chapter 4, 4.1 to 4.6 |
| 3. Design of two-way shear (punching shear)             | Chapter 16, 16.6.a    |
| 4. Shear Friction Theory                                | Chapter 4, 4.9        |
| 5. Corbels (application of the shear friction theory)   | Chapter 11, 11.7      |
| 6. Design of Horizontal shear for composite beams       |                       |
| 7. Deep beams (Strut and Tie Theory)                    | Chapter 10, 10.5      |
| 8. Torsion  | Chapter 7             |

9. Deflection	Chapter 6, 6.4 to 6.7
10. Axial compression	Chapter 8
11. Axial compression plus bending	Chapter 8 & 9
12. Axial compression plus biaxial bending	Chapter 9
<del>13. Slender compression members</del>	<del>Chapter 9</del>
<del>14. Footings **</del>	<del>Chapter 16</del>
<del>15. Building frame analysis**</del>	<del>Chapter 12</del>
16. Introduction to prestressed concrete **	

\*\* If time permits

### Course Operation:

1. Homework problems and reading assignments will be assigned in class.
2. Reading assignments will be assigned from the textbook, ACI318-02, and handouts distributed in the class.
3. Homework and design projects MUST be done on engineering paper, utilizing pencil and straight edge for drawings. It must be turned before the announced deadlines. No late homework or design project can be accepted for grading.
4. No make-up quizzes or tests will be given without prior consent of the instructor except for very unusual circumstances.
5. Each student has to submit a written report of the project and give a 15 minutes presentation of his project.

### Tentative Components of Final Grade:

Homework	20%	
Quizzes	20%	
Midterm exam	20%	(Thursday October 23, 2003)
Project	20%	(Due Thursday December 04, 2003)
Final exam	20%	(Thursday December 18, 2003)

### Tentative Letter Grade:

A	> 95%	4.0
A -	= 90% to 94.9%	3.7
B+	= 85% to 89.9%	3.3
B	= 80% to 84.9%	3.0
B -	= 75% to 79.9%	2.7
C +	= 70% to 74.9%	2.3
C	= 65% to 69.9%	2.0
C -	= 60% to 64.9%	1.7
F	< 60%	----

### Course Website:

Visit the course website at: <https://gwu.blackboard.com/>

You can use it to check the new assignments, your grades, any other information related to the course.

**GOOD LUCK**