

**CES 5726      DESIGN OF CONCRETE SYSTEMS      SPRING 2003**

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**OBJECTIVE:** Comprehensive design of a complete reinforced concrete structural system for a building. Group effort will include study of alternate solutions, structural analysis and design, preparation of drawings, and oral and written presentation of solutions.

**PREREQUISITES:** Proficiency in basics of concrete design (flexural design, shear design, bond and anchorage, short columns), structural analysis (including ability to utilize available analysis software), and utilization of computer tools (word processing, spreadsheets, and MathCad).

**TIME:** Tu, Th 6<sup>th</sup> and 7<sup>th</sup> Period (Class will meet four periods per week for 45 lectures)

**TEXTS :** *Notes on ACI 318-02*, Portland Cement Association, 2002

*Simplified Design - Reinforced Concrete Buildings of Moderate Size and Height*, 2nd Edition, Portland Cement Association, 1993 (See instructor for copy)

*ACI 318-02, Building Code Requirements for Structural Concrete*, American Concrete Institute, 2002 (Available for purchase thru instructor during first week of class)

Class Notes and Class CD

**RECOMMENDED:** Have available a good, recent concrete design textbook. Recommended are Leet and Bernal, Nawy, Wang and Salmon, or McGregor. We will not be specifically referring to any one book, but it will be very helpful to the student to have another reference available to supplement the lecture, the required text, and the notes.

Additionally, for those students who wish to have a copy, the instructors class notes for CES 4702 (Design of Reinforced Concrete) will be available for purchase thru ASCE. It is intended that students be proficient in all the material covered in those notes.

**ADDITIONAL INFORMATION:**

The instructor will lecture on advanced topics in reinforced concrete design which will extend beyond those covered in the introductory course in concrete design. These lectures **must** be supplemented by the students with independent study beyond the lecture topics. The intent is to develop in students (and soon to be engineers) the ability to independently solve a problem for which they do not yet have the required knowledge or information.

**MAXIMUM GRADING SCALE:** (May be relaxed at the option of the instructor)

93 - 100	A
90 - 92.99	B+
85 - 89.99	B
83 - 84.99	C+
77 - 82.99	C
75 - 76.99	D+
70 - 74.99	D
00 - 69.99	E

**GRADING CRITERIA:**

Final Term Project	80%
Homework	20%

**FINAL TERM PROJECT:** Will deal with the design of a multi-story concrete building. Further information will be provided as the semester progresses. ***Date of final presentation to be determined.***

**RULES FOR BETTER LIVING:**

1. Attendance at lecture is mandatory and timeliness is important. Absences and tardiness will be considered by the instructor as a lack of professional motivation, and will be dealt with accordingly at the time grades are assigned.
2. Each lesson requires preparation by the student prior to the lecture. At a minimum, read the assigned material prior to the lecture.
  - a. The textbook and ACI 318 are required for all lectures.
3. Homework will be occasionally assigned. Working with fellow students on homework will be allowed as self-help, but the final homework which is turned in must represent the work of the individual student. Do not copy another student's work. Homework will be compared and violations will be dealt with. Homework will be due on the assigned date. **Late homework will be accepted up to 2 days late with a 25% penalty.**
  - a. Homework will be submitted on engineering computation paper or as computer output (**DO NOT RE-USE PAPER!**) Number and label all pages. **Work neatly. All work will be graded on the basis of content and neatness.** Use straightedges, reasonable scales, use pencil (that means also using an eraser), and print and label clearly. Reference equations to ACI 318 or textbook (i.e.: ACI Eqn. 10-2). List assumptions or rationale for your work. **Sloppy or difficult to follow work will be returned ungraded. No exceptions.**
4. No make-up work will be allowed, except in cases of emergencies or civic responsibilities (jury duty, etc.), provided that the instructor is notified by e-mail in advance. Provisions for make-up work will be determined on a case-by-case basis.
5. Some class communication will be by means of e-mail. Check your e-mail regularly (at least daily). Keep the instructor informed of any changes to your e-mail address. Failure on the part of the student to keep-up with e-mail communications is not excusable.

## IMPORTANT UNIVERSITY INFORMATION:

### *Academic Honesty:*

All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a student at the University of Florida and to be honest in all work submitted and exams taken in this class and all others.

### *Accommodations for Students with Disabilities:*

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation.

## TENTATIVE LECTURE SCHEDULE: (Subject to modification)

Reference Key:	Notes	<i>Notes on ACI 318-02</i>
	SD	<i>Simplified Design</i>
	318	<i>ACI 318-02</i>
	CN	Class Notes
	CRSI	CRSI section of CD
	PCA	PCA section of CD
	WRI	WRI section of CD
	FBC	FBC section of CD

Lecture #	Topic	Reference
1	Introduction	CN; Syllabus
2	Project Development	CN; SD (1)
3	Building Loads	SD (2.2) ; FBC (16)
4	Building Loads	SD (2.2) ; FBC (16)
5	Building Loads	SD (2.2) ; FBC (16)
6	Changes to ACI 318-02	318, Notes (5, 6)
7	Analysis - Approximate Methods	SD (2.3, 2.4, 2.6)
8	Analysis - Approximate Methods	SD (2.3, 2.4, 2.6)
9	Analysis - Continuous Members	SD (2.3, 2.4, 2.6)
10	Floor Design - One Way Joist	Notes (7); SD (8, 9); PCA (Beams); CRSI (43, 46); WRI (208, 209)
11	Floor Design - One Way Joist	Notes (7); SD (8, 9); PCA (Beams); CRSI (43, 46); WRI (208, 209)

12	Floor Design - One Way Slab	Notes (7); SD (8, 9); PCA (Beams); WRI (208, 209)
13	Floor Design - Two Way Slab	Notes (18, 19), PCA (2 Way Slab, Two Way Slab)
14	Floor Design - Two Way Slab - DDM	Notes (18, 19), PCA (2 Way Slab, Two Way Slab)
15	Floor Design - Two Way Slab - DDM	Notes (18, 19), PCA (2 Way Slab, Two Way Slab)
16	Floor Design - Two Way Slab - DDM	Notes (18, 19), PCA (2 Way Slab, Two Way Slab)
17	Floor Design - Two Way Slab - DDM	Notes (18, 19), PCA (2 Way Slab, Two Way Slab)
18	Floor Design - Two Way Slab - 318-63 Coeff. Method	CN
19	Floor Design - Two Way Slab - Finite Element Method	CN
20	Floor Design - Two Way Slab - Finite Element Method	CN
21	Floor Design - Two Way Slab - Shear	Notes (16)
22	Floor Design - Two Way Slab - Shear	Notes (16)
23	Continuous Beams	Notes (7)
24	Torsion	Notes (13)
25	Torsion	Notes (13)
26	Torsion	Notes (13)
27	Torsion	Notes (13)
28	Short Columns	Notes (7), PCA (Columns, Col-Wall)
29	Short Columns - Bi-Axial Bending	Notes (7), PCA (Columns, Col-Wall)
30	Short Columns - Bi-Axial Bending	Notes (7), PCA (Columns, Col-Wall)
31	Frames - Moment Amplification	Notes (11)
32	Frames - Strength Reduction	Notes (11)
33	Frames - Computer Modeling	Notes (11)
34	Frames - Computer Modeling	Notes (11)
35	Walls - Axial Design	Notes (21); PCA (Walls)
36	Walls - Axial Design	Notes (21); PCA (Walls)

37	Walls - Shearwall Design	Notes (21); PCA (Walls)
38	Foundations	Notes (22)
39	Foundations	Notes (22)
40	Foundations	Notes (22)
41	Foundations	Notes (22)
42	Stairs	CN
43	TBD	
44	TBD	
45	TBD	

General References on Design and Reinforcement Detailing:

CRSI 30, 32, 40, 44, 47, 50  
 PCA Design1  
 WRI 208, 209  
 SD 8, 9

This short paper by Professor Yao from Texas Tech is a pretty good summary of my thoughts and philosophy on grades. I could not have said it better than this.

**Sputo**

## **ON GRADES AND GRADING**

by James T. P. Yao for his students and interested colleagues

The grade in a given course is a measure of the student's performance in that endeavor. The overall grade point averages are indeed important considerations for all students. When I was a student at the University of Illinois in Urbana-Champaign, I did care about my grades at that time. However, I never complained about any of my grades though, at times, I felt that the grade I received in a particular course might not be fair. The fact is, on the average, the overall grade point average did reflect the knowledge gained and the effort that I put into my college education. There were courses for which I thought that I deserved a better grade than the one on my record. On the other hand, I also had grades that were better than what I expected and/or deserved. In the long run, they all averaged out at the end of my college career. Most importantly, I learned from each professor and from each course that I had.

A few years after I graduated, I forgot all my grades. No one has ever asked for my grades just a few years after I graduated from college. To date, however, I have kept all the basic knowledge that I gained from my college education. Especially, the method of learning new things on my own has been useful. If the students aim at learning as much as they can from each course and each professor, the good grades will come as a result of their diligent work, on the average. On the other hand, if the students waste their time arguing about their grades, they will lose time for studying new lessons and thus hurt their future grades.

As a teacher, I try very hard to be fair and consistent in grading student papers. The student will get a perfect score if he/she gives a correct answer. If the answer is not correct, the teacher is the one who judges how serious the error is and assigns a partial score accordingly. As a student, I had several professors who did not give partial scores. The reason was that, the engineering system could fail with the wrong answer, no matter how close the answer is to the correct one (e.g., exactly the same number but with a wrong sign). I do not agree with that policy but respect their judgement in those courses. In any event, partial scores are subjective depending on the experience and viewpoints of the individual teachers. It is counter-productive to argue about it.

Please be careful in doing your homework, tests, and other assignments. People's lives and properties will depend on your work someday in the near future. Try to learn as much as you can while you are in school. Communicate with your teachers and classmates frequently, and concentrate on the learning process. With knowledge, you will become a successful and proud engineer soon. **HAVE KNOWLEDGE, WILL SUCCEED!**