CES 4702 – ANALYSIS AND DESIGN OF REINFORCED CONCRETE – SPRING 2020 – SECTION 2920

Instructor	Dr. Kurtis Gurley, Associate Professor of Civil Engineering Weil 475, *kgurl@ce.ufl.edu*, (352) 294-7795
Lecture Times	3rd and 4th period, Tuesday and Thursday in FAB 103
Office Hours	1:45 PM – 3:15 PM Thursday in Weil 475. Other times by appointment.
Grader/T.A.	Student assistant will grade homework. Dr. Gurley will grade quizzes and hold office hours
Course Description	Ultimate strength analysis and design of reinforced concrete beams and columns, working stress design for flexure.
Course Objectives	Develop the ability of the student to determine the flexural and shear strength of existing reinforced concrete beams and columns, and to design reinforced concrete beams, one-way slabs, columns, and footings for given design loads. Develop the ability to compute deflections for reinforced concrete beams. Develop the ability to design reinforcement details for reinforced concrete structures.
Learning Outcomes	To teach the student to identify, formulate, and solve open-ended structural engineering problems. The course will also enhance the student's ability to use techniques, skills, and modern engineering tools necessary for the practicing structural engineer.
ABET-Related Objectives and Outcomes	This course achieves the following ABET-related objectives and outcomes: Outcome (a): Apply knowledge of mathematics, science and engineering Outcome (c): Design systems and components to meet desired needs
Prerequisites	CGN 3501 – Civil Engineering Materials, CES 3102 – Mechanics of Structures
Required Text	McCormac and Brown, *Design of Reinforced Concrete*, 10th edition ISBN: 9781118879108 Wiley
Student Attendance	Students are expected to show up on time and attend every class.
Homework Policy	Late homework will not be accepted. The layout and appearance of your work must be of professional quality. Please underline or box the answers and provide your name, the course number, the assignment number at the top of the first page.
Exam Policy	Make-up quizzes are not allowed. One of the quizzes will be dropped (see below).
Academic Honesty	UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code." On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor in this class.
Grading	Seven in-class, closed-book quizzes will comprise 90% of the final grade. Seven homework assignments will account for the remaining 10% of the final grade. Each quiz will be preceded by a homework assignment. The lowest scoring homework and quiz will be dropped. The

purpose of this drop is to remove the need for make-up quizzes caused by unplanned or conflicting events, illness, etc. Quizzes are given during scheduled class time only. It is your responsibility to show up and take the quiz. No make-up quizzes will be given.

Quiz #7 drop exception: In order for quiz #7 to qualify as the dropped quiz, you must score at least 50% on quiz #7. For example, say your lowest score among the first six quizzes is 70%, and your score on quiz #7 is 45%. In this case the 70% would be dropped and the 45% retained. However, if your score on quiz #7 is 50%, the 50% will be dropped and the 70% retained.

The final grade will be determined based on a class average performance. This is not a straight scale or a standard curve. In reference to the standard straight scale, the minimum average for a particular grade may be adjusted downward, but not upward. After a quiz or homework is posted, you have five (5) business days to discuss the grading with the instructor. Grades will not be changed after that time.

For more information on grades and grading policies, please visit: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, https://www.dso.ufl.edu/drc) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Software Use

All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Calculator Policy for Quizzes

To prevent students from programming equations and problem solutions into their calculators for quizzes, or having their calculators communicate with other calculators or computers during quizzes, only certain models of calculators are permitted to be used during quizzes. These are the same calculators permitted for use in the Fundamentals of Engineering Examination (FE), which all Civil Engineering students will eventually need to take. There are **no exceptions** to this requirement. No other models of calculators will be allowed in quizzes. The only acceptable models are those listed as follows:

Casio:	All fx-115 models.
Hewlett Packard:	The HP 33s and HP 35s models, but no others.
Texas Instruments:	All TI-30X and TI-36X models.

Cell phones

Cellular telephones are to be turned off during class. These devices are especially unacceptable during quiz time. Students **must** turn off their cell phones at the beginning of a quiz, and not turn it on again until they have submitted their quiz to the instructor and left the room. Any student **doing anything with a phone during a test** will be assumed to be communicating with another person and fail the quiz. Any student who leaves the room during a test, and does not satisfy the instructor concerning the location of their telephone, will not be permitted to resume the test upon their return.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html

Campus Resources

Health and Wellness

U Matter, We Care:
If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.
Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.
Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.
University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.
Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. https://www.crc.ufl.edu/.
Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.
Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.
Writing Studio, 302 Tigert Hall*,* 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.
Student Complaints Campus*:*
https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.
On-Line Students Complaints*:* http://www.distance.ufl.edu/student-complaint-process.

Disclaimer

The syllabus and course material is subject to change. All changes will be announced in class and distributed. Students are responsible for all announced changes.

Notes: The topics and order are unlikely to change. However, the specific calendar days in the schedule are subject to change as the pace dictates. The quiz dates may change (with advance notice), but this is unlikely.

Class	Date	Topic	HW due date
1	Tu, January 7	Course introduction, syllabus, materials, loads	
2	Th, January 9	Review of critical material from previous classes	
3	Tu, January 14	Flexure theory, fundamentals	
4	Th, January 16	**Quiz 1** (topic ➔intro and review)	HW#1 DUE
5	Tu, January 21	Strength analysis – singly reinforced beams	
6	Th, January 23	Strength analysis – singly reinforced beams	
7	Tu, January 28	Strength analysis –T-beams, Doubly reinforced beams	
8	Th, January 30	**Quiz 2** (topic ➔ Flexure – singly reinforced beams)	HW#2 DUE
9	Tu, February 4	Strength analysis – T-beams, Doubly reinforced beams	
10	Th, February 6	Strength analysis – T-beams, Doubly reinforced beams	
11	Tu, February 11	Beam design – singly reinforced beams	
12	Th, February 13	**Quiz 3** (topic ➔ Flexure – double and T-beams)	HW#3 DUE
13	Tu, February 18	Design – singly reinforced, doubly reinf. and T-beams	
14	Th, February 20	Design – doubly reinforced and T-beams	
15	Tu, February 25	Design – doubly reinf and T-beams, Shear and stirrups	
16	Th, February 27	**Quiz 4** (topic ➔ Design of single, double and T beams)	HW#4 DUE
17	Tu, March 10	Shear and stirrups	
18	Th, March 12	Shear and stirrups, Bond and development	
19	Tu, March 17	Bond and development	
20	Th, March 19	**Quiz 5** (topic ➔ Shear and Stirrups)	HW#5 DUE
21	Tu, March 24	Bond and Development, Deflections	
22	Th, March 26	Deflections	
23	Tu, March 31	Deflections, Columns	
24	Th, April 2	**Quiz 6** (topic ➔ Bond and Development, Deflections)	HW#6 DUE
25	Tu, April 7	Columns	
26	Th, April 9	Columns	
27	Tu, April 14	Columns, Footings	
28	Th, April 16	Footings	
29	Tu, April 21	**Quiz 7** (topic ➔ Columns, Footings)	HW#7 DUE

Topic	Book Chapter
Introduction, material properties and behavior, design process, loads	1, 4.1
Flexure theory	2
Strength analysis – singly reinforced beams	3
Strength analysis – T beams and doubly reinforced beams	5
Design of singly reinforced sections	4
Design of T beams and doubly reinforced beams	5
Shear stress and stirrups	8
Bond and development	7
Deflections	6
Columns – introduction	9
Columns – design of short columns with bending	10
Footings	12