كلية الهندسة بشبرا
Faculty of Engineering at Shoubra
جامعة بنها
BENHA UNIVERSITY
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Learn Today ... Achieve Tomorrow

Course Specifications :
Reinforced Concrete 1-B

2021-2022

University : Benha University
Faculty : Faculty of Engineering at Shoubra
Department : Civil Engineering
Program on which the course is given: B. Sc. Civil Engineering
Major or minor element of program: Major
Department offering the program: Civil Engineering Department
Department offering the course: Civil Engineering Department

1- Course Data (Basic Information)

Course Code:
CVE 224

Course Title:
Reinforced Concrete 1-B

Study Year:
Second Year

Specialization :
Teaching Hours:
    Lecture : **2**   Tutorial : **2**   Practical : **0**

Compulsory or Elective element of program: **Compulsory**

2- Course Aims

The aims of this course are to have knowledge on the integrated design and detailing for beams and columns in RC structures and to be familiar with the design requirements of Egyptian code for beams and columns.

3- Course Contents (As indicated in the program Bylaw)

Calculation of dead loads for slabs, beams walls, flooring covers, and live loads. - Bond and development length. Reinforcement detailing for beams using exact method. Reinforcement detailing for beams using code method. Reinforcement detailing for columns. Serviceability limit states for deflection of beams. Design has to be done according to the Egyptian code for design of concrete structures.

4- Program Competencies Served by the Course (A4 and B2)

Level A Competencies

A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.

Level B Competencies

B2. Achieve an optimum design of reinforced concrete and steel

structures, foundations and earth retaining structures; and at least three of the following civil engineering topics: transportation, Traffic, roadways, airports, railways, sanitary works, irrigation, water resources and harbors; or any other emerging field relevant to the discipline.

5- Learning Outcomes (LO's)

At the end of the course, the student will be able to:

Cognitive Domain	
LO1	**Identify the all loads on the structural element.**
LO2	**Classify the loads and its internal forces.**
Psychomotor Domain	
LO3	**Adapt the design and the reinforcement detailing for beams and columns**
LO4	**Use Egyptian code reinforcement details for beams.**
Affective Domain	
LO5	**Demonstrate serviceability limit states for deflection of beams.**
LO6	**Integrate full design and detailing for beams.**

6- Mapping Learning Outcomes (LO's) with Competencies

LO's ⟍ NARS	A4	B2	
Cognitive Domain			
LO1	■		
LO2	■		
Psychomotor Domain			
LO3		■	
LO4		■	
Affective Domain			
LO5	■	■	
LO6	■	■	

7- Lecture Plan

Week No.	Topics	Planned Hours	LO1	LO2	LO3	LO4	LO5	LO6
1	**Load evaluation for slabs**	4	■					
2	**Load evaluation for beams and walls**	4	■	■				
3	**Internal forces for beams and columns**	4		■				
4	**Statically calculation for floors & halls**	4		■				
5	**Statically calculation for sheds**	4			■	■		■
6	**Integrated design of beams**	4			■	■		■
7	**Integrated design of columns**	4			■	■		■
8	**Midterm Exam**	2						
9	**Bond and development length**	4			■	■		■
10	**Reinforcement detailing for beams-exact method**	4			■	■		■
11	**Reinforcement detailing for beams-**	4			■	■		■

			Face-to-face Lecture	Online Lectures	Tutorial / Exercise	Group Discussions	Laboratory	Self-Reading	Presentation	Collaborate Learning (Team Project)	Research and Reporting	Brain Storming
	code method											
12	Reinforcement detailing for columns	4			■	■					■	
13	Design for deflection control 1	4						■				
14	Design for deflection control 2	4						■				
15	Final Exam	3										

8) Teaching and Learning Methods

Learning Outcomes		Teaching and Learning Methods									
		Face-to-face Lecture	Online Lectures	Tutorial / Exercise	Group Discussions	Laboratory	Self-Reading	Presentation	Collaborate Learning (Team Project)	Research and Reporting	Brain Storming
Cognitive Domain	#1		●	●							●
Cognitive Domain	#2		●	●							●
Psychomotor Domain	#3			●			●				●
Psychomotor Domain	#4			●			●				●
Affective Domain	#5	●	●	●			●				●
Affective Domain	#6		●	●			●				●

Student Academic Counseling and Support

- Students are directed to contact teaching staff or academic support during specific office hours.
- Regarding this course, Instructor and TA will be available two hours a week as indicated on the timetable declared for students from the beginning of the semester.
- A what App. group is created where students can ask questions and share files with teaching staff and to announce changes to the timetable, exam days …etc.
- There are no disabled students in the programs, so no special support is

needed.

9- Student Assessment

a- Student Assessment Methods

Learning outcomes		Written Exams	Online Exams	Oral Exam	Pop Quizzes	In-class Problem Solving	Take-Home Exam	Research Assignments	Reporting Assignments	Project Assignments	In-class Questions
Cognitive Domain	#1	●			●						●
	#2	●			●						●
Psychomotor Domain	#3	●*						●			●
	#4	●*						●			●
Affective Domain	#5	●			●						
	#6	●			●						

*Traditionally Psychomotor learning outcomes cannot be assesses using written exams, however, the students are asked to put in writing when they are going to perform in the office or on site when they start working as civil engineers in the future.

b- Assessment Schedule and Weight

Assessment Tools	Week	Weight
Midterm Examination	8	20 %
Final Examination	(As Scheduled) 15	60 %
Research assignments	4,7	10 %
Quizzes	3,9	10 %
Total		**100 %**

10- Facilities

The following facilities are needed for this course:

- ■ **Classroom**
- ■ **Lecture Hall**
- ■ **Sound and Microphone**
- ■ **Other: personal lap top of instructor**

- □ Smart Board
- ■ **White Board**
- ■ **Data Show**

- □ Computer with software
- □ MIS system
- ■ **Internet Access (at students homes for self study)**

11- List of References

a- Course Notes

1- **Lectures are sent to all students by email at the start of the semester.**
2- **Videos related to the topics of the course are sent to all students by email at the start of the semester.**
3- **Lectures notes and solved examples.**

b- Books

1. **Egyptian Code of Practice for analysis and design of R.C structures ECP-203 (Print 2017)**
2. **Egyptian code for design aids for RC structures, 2014**
3. **Egyptian code for standard reinforcement detailing, 2014**
4. **Design of concrete structures by A.H. Nilson, 2010**
5. **Reinforced concrete: mechanics & design by J.G. MacGreger, 2012**

c- Recommended Books

1- **Design of reinforced concrete structures- V1 by M. Ghoneim, 2008**

d- Journals

1- **ACI structural journal, American concrete institute.**
2- **Cement and Concrete Research, Elsevier**
3- **Construction and Building Materials, Elsevier.**
4- **Magazine of Concrete Research, Institution of Civil Engineers.**
5- **Journal of Building Engineers, Elsevier.**
6- **Journal of Structure Engineers ,Elsevier.**

- Course Coordinator: Prof. Ahmed Abd El Fattah Mahmoud   **Signature:**

- Program Coordinator: Prof. Nasser Mosleh   **Signature**