Course Syllabus
According to JORDAN National Qualification Framework (JNQF)

Course Name: Reinforced Concrete - 2

Course Number: 04034241

D040_JNQF_Rev2

Ref: Deans Council (05) Decision No. (06) Date: 18/10/2021.
Ref: Quality Assurance Council Session (03) Decision No. (03) Date:05/10/2021.

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General Course Information:

Course title	Reinforced Concrete - 2
Course number	04034241
Credit hours	Three hours' theory
Education type	[Face-to-Face]
Prerequisites/corequisites	Reinforced Concrete-1 (403430)
Academic Program	BSc in Civil Engineering
Program code	04
Faculty	Engineering
Department	Civil Engineering
Level of course	Four
Academic year /semester	2021-2022/**Second**
Awarded qualification	Structural Engineer
Other department(s) involved in teaching the course	Non
Language of instruction	English
Date of production/revision	March 2021

Course Coordinator:

Coordinator's name	Dr. Mohammed Al-lami
Office No	4251
Office Phone extension number	2454
Office Hours	Sun. Tu.&Th.: 11-1 Mon. &Wen.: 11-12:30
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Other Instructors:

Instructor name	NON
Office No	
Office Phone extension number	
Office Hours	
Email	

Course Description *(English/Arabic)*:

English	Serviceability requirements according to ACI code; crack width and deflection calculation, Design for single and continuous solid one-way slab, Design for continuous Joist one-way slab, Design for single and continuous Floor Beams, Design for two-way slab supported by beams by coefficient method, Design for two-way slab supported by beams by coefficient method, Design for two-way slabs by direct design method, Slender columns design, braced columns, un-braced columns, Design for Single and Combined footing
Arabic	التصميم من أجل الحدود التشغيلية، ضبط التشققات، الترخيم، التصميم لمقاومة اللي، تصميم العقدات المصمتة وذات الأعصاب المرتكزة على جسور طرفية باتجاه واحد أو باتجاهين، طريقة المعاملات، تصميم العقدات المسطحة، طريقة التصميم المباشر، تصميم الأعمدة النحيفة المكتفة وغير المكتفة بطريقة تضخيم العزوم، الجيزان المستمرة والهياكل، أنماط الأحمال، إعادة توزيع عزوم الانحناء، تصميم القواعد المنفردة والمشتركة لعمودين.

Textbook: *Author(s), Title, Publisher, Edition, Year, Book website.*

Jack C. McCormak & Russell H. Brown "Design of Reinforced Concrete" 10th edition, WILEY, 2016

References: *Author(s), Title, Publisher, Edition, Year, Book website.*

1. Arther H. Nilson, David Darwin, Charles W. Dolan, "Design of concrete structures". 14th. Edition, McGraw – Hill, 2016.

2. American concrete institute, building code requirements for structural concrete (ACI – 318M – 14) and commentary, 2014.

Course Educational Objectives (CEOs):

1.	To provide a coherent development to the students for the courses in sector of Reinforced Concrete Designing.
2.	To develop an understanding of basic concepts of the design of One way solid, one way Joist slabs,
3.	To introduce the basic concepts and steps for the design of Continuous Floor Beams; coefficient method, ACI code requirements for design, design limitations of reinforcements.
4.	To introduce the basic concepts and steps for the design of Two way slabs; by coefficient method, direct design method, ACI code requirements for design, design limitations of reinforcements and spacing.
5.	To develop an understanding of basic concepts of Serviceability and crack width of beams using ACI code limitation for deflection and crack.
6.	To develop an understanding of basic concepts of the design of Slender columns according to ACI code requirements and limitations for braced columns, un-braced columns.
7.	To develop an understanding of basic concepts of the design of Single and Combined footing: design for shear and flexural reinforcement

Intended Learning Outcomes (ILO's):

1.		Subject Intended learning outcomes (ILOs) describe what students are expected to know and be able to do at the end of the course. These outcomes are related to the knowledge, skill and competence that students acquire:	Relationship to CEOs	Contribution to PLOs	Bloom Taxonomy Levels*	Descriptors**
2.	A	Knowledge and Understanding:				
3.	A1	Identify the strength method of design and ACI code requirements to make a safe and economical design for single and continuous solid one-way slabs and Joist slabs.	1,2	2,4	2,3,6	K
4.	A2	The engineering student should be able to develop a firm understanding how to make a safe and economical design for continuous floor beams.	3	2,4	1,2,3	K
5.	A3	The engineering student should be able to develop a firm understanding of how to make a safe and economical design for	4	2,4	1,2,3	K

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		two-way slab supported by beams by coefficient and direct design methods.					
6.	A4	The engineering student should be able to developed firm understanding how to check cracking width in beams and calculate and checking deflections.	5	2,4		1,2,3	K
7.	A5	The engineering student should be able to developed firm understanding how to make a safe and economical design for Slender columns.	6	2,7		1,2,3	K
8.	A6	The engineering student should be able to developed firm understanding how to make a safe and economical design for Single and Combined footing.	7	2,4		1,2,3	K
9.	B	Intellectual skills:					
10.	B1						
11.	B2						
12.	B3						
13.	C	Subject specific skills:					
14.	C1						
15.	C2						
16.	C3						
17.	D	Transferable skills:					
18.	D1						
19.	D2						
20.	D3						

*Bloom Taxonomy Levels

Level #	1	2	3	4	5	6
Level Name	Knowledge	Comprehension	Application	Analysis	Evaluation	Synthesis

** Descriptor (National Qualification Framework Descriptors): K : Knowledge, S: Skill, C: Competency.

Program Learning Outcome (PLOs):

Program Learning Outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviours that students acquire as they progress through the program. A graduate of the (_____) program will demonstrate:	Descriptors**		
	K	S	C

1.	An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics			
2.	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	K		
3.	An ability to communicate effectively with a range of audiences			
4.	An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	K		
5.	An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives			
6.	An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions			
7.	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies			

** Descriptors according to the national qualifications framework (K: knowledge, S: skill, C: Competency)

Weekly Schedule *(please choose the type of teaching)*

☐ **Face to Face**

Week	First Lecture (......................)	Second Lecture (......................)	Third Lecture (......................)	Ach. ILOs	Ach. PLOs	Descriptors**
1	Introduction to strength method of design and ACI code requirements	**21.** Introduction to strength method of design and ACI code requirements	Introduction to strength method of design and ACI code requirements	1	2,4	2,3
2	Design for single and continuous solid one-way slab.	**22.** Design for single and continuous solid one-way slab.	Design for single and continuous solid one-way slab.	1	2,4	2,3,6
3	Design for single and continuous solid one-way slab.	**23.** Design for single and continuous solid one-way slab.	Design for single and continuous solid one-way slab.	1	2,4	2,3,6
4	Design for continuous Joist one-way slab	**24.** Design for continuous Joist one-way slab	Design for continuous Joist one-way slab	1	2,4	2,3,6
5	Design for single and continuous Floor Beams	**25.** Design for single and continuous Floor Beams	Design for single and continuous Floor Beams	2	2,4	2,3,6

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6	Design for single and continuous Floor Beams	26. Design for single and continuous Floor Beams	Design for single and continuous Floor Beams	2	2,4	2,3,6
7	Design for two-way slab supported by beams by coefficient method	27. Design for two-way slab supported by beams by coefficient method	Design for two-way slab supported by beams by coefficient method	3	2,4	2,3,6
8	Design for two-way slab supported by beams by coefficient method	28. Design for two-way slab supported by beams by coefficient method	Design for two-way slab supported by beams by coefficient method	3	2,4	2,3,6
9	Design for two-way slabs by direct design method.	29. Design for two-way slabs by direct design method	Design for two-way slabs by direct design method	3	2,4	2,3,6
10	Design for two-way slabs by direct design method	30. Design for two-way slabs by direct design method	Design for two-way slabs by direct design method	3	2,4	2,3,6
11	Serviceability requirements according to ACI code; crack width and deflection calculation	31. Serviceability requirements according to ACI code; crack width and deflection calculation	Serviceability requirements according to ACI code; crack width and deflection calculation	4	2,4	2,3,6
12	Serviceability requirements according to ACI code; crack width and deflection calculation	32. Serviceability requirements according to ACI code; crack width and deflection calculation	Serviceability requirements according to ACI code; crack width and deflection calculation	4	2,4	2,3,6
13	ACI code requirements and limitations for slender columns design, braced columns, un-braced columns	33. ACI code requirements and limitations for slender columns design, braced columns, un-braced columns	ACI code requirements and limitations for slender columns design, braced columns, un-braced columns	5	2,4	2,3,6
14	ACI code requirements and limitations for	34. ACI code requirements	ACI code requirements and limitations for slender columns design, braced	5	2,4	2,3,6

	slender columns design, braced columns, un-braced columns	and limitations for slender columns design, braced columns, un-braced columns	columns, un-braced columns			
15	Design for Single and Combined footing	**35.** Design for Single and Combined footing	Design for Single and Combined footing	6	2,4	2,3,6

* **K: Knowledge, S: Skills, C: Competency**

Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:
- Interactive videos
- Discussion Forums
- Quizzes
-

Course Policies:

A- Attendance policies:

   The maximum allowed absences is 15% of the lectures.

B- Absences from exams and handing in assignments on time:

   Midterm exam can be retaken based on approval of excuse by the instructor's discretion.

   Not handing assignment on time will incur penalties.

C- Academic Health and safety procedures

D- Honesty policy regarding cheating, plagiarism, and misbehaviour:

   Cheating, plagiarism, misbehaviour will result in zero grade and further disciplinary actions may be taken.

E- Grading policy:

- All homework is to be posted online through the e-learning system.
- Exams will be marked within 72 hours and the marked exam papers will be handed to the students.
- Online Activities (Course Videos, Practice labs, Discussion Forums, Quizzes) **20%**
- Midterm **30%**
- Final Exam **50%**

F- Available university services that support achievement in the course: **E-Learning Platform, Labs, Library.**

Required equipment:

- **PC / Laptop with webcam and mic**
- **Internet Connection**
- **Access to the IU E-Learning Platform at: https://elearn.iu.edu.jo/**
- **E-learning plan**
- Satisfaction questionnaires for online and face-to-face learning
- Software for e-learning

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- Training

Assessment Tools implemented in the course:

- Final Exam
- Midterm Exam
- Quizzes
- Homework
- Discussion Forums
- Periodic reports for learning assessment
- face-to-face teaching

Responsible Persons and their Signatures:

Course Coordinator	Dr. Mohammed Al-lami	Completed Date	/ /
		Signature	

Received by (Department Head)	Dr. Ibrahim Varouqa	Received Date	/ /
		Signature	