



# Philadelphia University

Faculty of Engineering and Technology  
Department of Civil Engineering  
Second Semester 2020/2021

## Course Information

**Title:** **Special Topics in Civil Engineering (0670553)**  
**Sun, Tue, Thu 11:10-12:00**

**Prerequisite:** 120 hours

**Credit Hours:** 3 credit hours (15 weeks per semester, approximately 45 contact hours)

**Textbook:** R. C. Hibbler. "Mechanics of Materials", 9<sup>th</sup> edition.

Nilson, A.H., Darwin, D., and Dolan, C.W. "Design of Concrete Structures", 14<sup>th</sup> edition.

- References:**
- ACI Code (ACI 318 M -11).
  - Design of Reinforced Concrete by J. C. McCormac and R.H. Brown, 8th Edition, John Wiley & Sons.

**CourseDescription:** Advanced mechanics and design of reinforced concrete, which includes: Shear and moment in members, bending deformation, the flexure formula, inelastic bending, reinforced concrete section design, deflection of beams, wall footing, single footing, eccentric footing, combined footing, strap footing, piles and pile cap design, Concrete building systems, brackets and corbels design.

**Website:** <http://www.philadelphia.edu.jo/academics/>

**Instructor:** **Dr. Mais Aldwaik**  
**Email:** Aldwaik.1@osu.edu  
**Office:** Civil engineering building, room 318  
**Office hours:** Sun, Tues, Thurs:10:00-11:00  
Mon, Wed: 9:45-11:15 (I will be available online on MS Teams during these times)

## Course Outline (Classes will be conducted online via Microsoft Teams)

Week	Topic
1,2	Introduction, Shear and moment in members
3,4	Bending deformation, the flexure formula, inelastic bending
5,6	Flexural analysis and design of reinforced concrete section
7,8	Deflection of beams
9	Wall footing
10	Single footing
11	Combined footing

12	eccentric footing
13	Strap footing
14	Piles and pile cap design
15	Bracket and corbel design

**Course Learning Outcomes with reference to ABET Student Outcome**

Upon successful completion of this course, student should:

1.	Understand the behavior of concrete sections under bending	1,2
2.	Learn how apply mechanics principles to reinforced concrete design	1,7
3.	Use different techniques to determine deflection of members	2,7
4.	Understand the flexural behavior of reinforced concrete beams, investigate and design beams for bending and shear.	2,7
5.	Analyze buildings and proposing appropriate structural system	4
6.	Learn how to design advanced reinforced concrete elements	2,7

**Assessment Guidance (subjected to change based on COVID-19 updates)**

Evaluation of the student performance during the semester (total final mark) will be conducted according to the following activities:

**Exams:** Students will be subjected to a scheduled mid exam during the semester.

**Quizzes:** Two quizzes of (10-15) minutes will be conducted during the semester.

**Homework:** Two homeworks will be assigned during the semester, homework should be solved individually and submitted before the due date.  
Cheating by copying homework from others is strictly forbidden and punishable by awarding the work with zero mark.

**Collective Participation:** Brain storming and collective discussions will be carried out during any lecture. Individual students will be assessed accordingly.

**Final Exam:** Students will undergo a scheduled final exam at the end of the semester covering the whole materials taught in the course.

**Grading policy**

Midterm Exam	30%
Home works, Quizzes, and term work	30%
Final Exam	40%
Total:	100%

**Attendance Regulation**

The semester has in total 45 credit hours. Total absence hours from classes and tutorials must not exceed 15% of the total credit hours. Exceeding this limit without a medical or emergency excuse approved by the deanship will prohibit the student from sitting the final exam and a zero mark will be recorded for the course. If the excuse is approved by the deanship the student will be considered withdrawn from the course.