CIVL471 -Design of Reinforced Concrete Structures

Department:
Civil Engineering

Program Name: Civil Engineering	**ProgramCode:**22
Course Number: CIVL471	**Credits:** 4 Cr

☒Required Course ☐ Elective Course (click on and check the appropriate box)

Prerequisite(s):
CIVL344 and CIVL372

Catalog Description:
Review of Columns; Design of slabs: One-way and two-way edge supported slabs, joist floors. Stairs. Earthquake resistant design principles: Seismic behavior of moment resisting frames. Ductility. Earthquake code requirements.General principles of footing design and its applications. Computer aided design.(Prerequsites: CIVL344 and CIVL372)

Course instructor:
Assoc. Prof. Dr. Mehmet Cemal Geneş
Office: CE 125
Office Hours: to be announced later in class
Course Assistant: Mohammad Ghorbanzadeh (Office:CE 241), Ahed Habib (Office:CE 140)

Course Web Page:
https://staff.emu.edu.tr/cemalgenes/en/teaching/c%C4%B1vl471

Textbook(s):
1) Karaboğa, E., Reinforced Concrete II, 2nd Edition, EMU Press, Gazimagusa, 2005

Indicative Basic Reading List :
1. Karaboğa, E., Reinforced Concrete I, EMU Press, Gazimagusa,2004
2. Reinforced Concrete, Ersoy, U., METU, Ankara 2013
3. Betonarme Yapıların Hesap ve Yapım Kuralları, TS 500, Türk Standartları Enstitüsü, 2000.
4. Ferguson, Breen & Jirsa, Reinforced Concrete Fundamentals
5. Nilson A. H., Design of Concrete Structures, McGraw Hill, 2010

Course Outline:

Week 1 **Introduction to course and requirements. (2 Classes)**
Course objectives and course learning outcomes. Relation of the course with the other courses. Brief review of RC beahvior.

Week 2-3 **Column design. (8 Classes)**
Review of column design and importance of the columns for earthquake resistant design

Week 4 **One-way slab design. (4 Classes)**
Behavior, analysis and design of one way slabs

Week 5 **Two way slab design. (4 Classes)**
Behavior, analysis and design of two way slabs

Week 6-7 **Computer Applications. (8 Classes)**

Week 8-9 **Midterm Exams**

Week 10-11 **Beahvior of RC structures under seismic excitation. (8 Classes)**
Earthquake code principles. Equivalent static load method and applications.

Week 12 **Joist floors. (4 Classes)**

Design of one and two way joist floors.

Week 13-14 Foundations (8 Classes)

Week 14 Design applications and project work (4 Classes)
Project study for the course – Finalization of the project work

Week 15 Final Examinations

Course Learning Outcomes:

At the end of the course the students will be able to:

1. Understand principles philosophies of structural design.
2. Have knowledge on the behavior of RC slabs and frames.
3. Understand basics of earthquake resistant design.
4. Design RC buildings using software
5. Analysis and design RC structural systems.
6. Use basic ideas to design RC structures.

Class Schedule:	**Laboratory Schedule:**
4 hrs of lectures per week	1 hr of tutorial per week

	Method	**No**	**Percentage**
Assessment	Midterm Exam	1	20%
	Project/Lab Work(s)	1	20%
	Final Exam	1	40%
	Quiz(s)	2	7.5% each
	Attendance	1	5%

NG Policy
Attendance will be taken every lecture hour by the lecturer. Any student who has poor interest in the course, with poor attendance (less than 70%), with lack of exams (more than one) or does not submit project work or fail to collect at least 25 points will be given NG (nil grade). This rule will be followed strictly.

Contribution of Course to Criterion 5
Credit Hours for:

Mathematics & Basic Science : 0
Engineering Topic and Design : 4
General Education : 0

Relationship of Course to Program Outcomes
The course makes significant contributions to the following program outcomes:

- an ability to apply knowledge of mathematics, science, and engineering,
- an ability to design a system, component, or process to meet desired needs within realistic constraints
- an ability to identify, formulate, and solve engineering problems,
- an understanding of professional and ethical responsibility,
- the board education necessary to understand the impact of engineering solutions in a global, economic, environmental, and social context
- a recognition of the need for, and an ability to engage in life-long learning,

Prepared by: Assoc. Prof. Dr. Mehmet Cemal Geneş	**Date Prepared:** 18/Feb/2020