COMPUTER APPLICATIONS IN DESING OF STRUCTURAL SYSTEMS

1	Course Title:	COMPUTER APPLICATIONS IN DESING OF STRUCTURAL SYSTEMS
2	Course Code:	INS4046
3	Type of Course:	Optional
4	Level of Course:	First Cycle
5	Year of Study:	4
6	Semester:	8
7	ECTS Credits Allocated:	4.00
8	Theoretical (hour/week):	2.00
9	Practice (hour/week):	2.00
10	Laboratory (hour/week):	0
11	Prerequisites:	None
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Prof. Dr. ADEM DOĞANGÜN
15	Course Lecturers:	Doç. Dr. Ramazan LİVAOĞLU
16	Contact information of the Course Coordinator:	adogangun@uludag.edu.tr
17	Website:	http://insaat.uludag.edu.tr/
18	Objective of the Course:	To provide an ability to be able to interpret the behavior of reinforced concrete members by performing design and analyses.
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	

	1	Be able to describe the behavior of different types RC structural elements
	2	Be able to understand fundamental calculations of ultimate strength theory and to be able to implement them into application
	3	Be able to know basics codes and specification for reinforced concrete structures
	4	Be able to know practice problems and solutions encountered in application
	5	Be able to check the results obtained from computer programs frequently used in applications
	6	Be able to differentiate which analyses should be carried out for each reinforced concrete elements
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	History, application fields of reinforced concrete structures, advantages and disadvantages	

2	Materials in reinforced concrete structures, classes of concrete and reinforced steel	
3	Bond development between concrete and reinforcing steel, and adding reinforcing steel	
4	Main principles of ultimate strength design	
5	Loads and load combinations. Structural safety	
6	Behavior of RC sections under axial compression and tension and section design	Problem solving
7	Behavior of RC sections with tension reinforcement under pure bending and section design with singly reinforced	
8	Behavior of RC sections with tension and compression reinforcements under pure bending, section design with doubly reinforced section	Problem solving
9	Behavior of RC columns under axial load and bending and design section with singly reinforced	
10	Behavior of RC columns under axial load and bending and design section with doubly reinforced	Problem solving
11	Behavior and design of slender columns.	
12	Behavior of structural member under the effects of shear and section design	Problem solving
13	Behavior of structural member under the effects of torsion and section design	Problem solving
14	Serviceability conditions, cracks and deflections of the structural members of reinforced concrete structures	

22	Textbooks, References and/or Other Materials:	Doğangün A. 2011, Betonarme yapıların hesap ve tasarımı, Birsen Yayınevi, 7. Baskı Celep Z. ve Kumbasar N. 2005; Betonarme Yapılar, Beta Dağıtım, İstanbul Ersoy U. ve Özcebe G., 2001, Betonarme, Evrim Yayınevi. TS 500,"Betonarme Yapıların Tasarım ve Yapım Kuralları", Türk Standartları Enstitüsü, Ankara, 2000. Deprem Bölgelerinde Yapılacak Binalar Hakkında Yönetmelik, Mart 2007
23	Assesment	

TERM LEARNING ACTIVITIES	**NUMBER**	**WEIGHT**
Midterm Exam	1	30.00
Quiz	0	0.00
Home work-project	1	20.00
Final Exam	1	50.00
Total	3	100.00
Contribution of Term (Year) Learning Activities to Success Grade		50.00
Contribution of Final Exam to Success Grade		50.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

24	**ECTS / WORK LOAD TABLE**

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	14	1.00	14.00
Self study and preperation	14	5.00	70.00
Homeworks	1	15.00	15.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	1	2.00	2.00
Others	0	0.00	0.00
Final Exams	1	2.00	2.00
Total Work Load			145.00
Total work load/ 30 hr			4.83
ECTS Credit of the Course			4.00

25	**CONTRIBUTION OF LEARNING OUTCOMES TO PROGRAMME QUALIFICATIONS**															
	PQ1	**PQ2**	**PQ3**	**PQ4**	**PQ5**	**PQ6**	**PQ7**	**PQ8**	**PQ9**	**PQ10**	**PQ11**	**PQ12**	**PQ13**	**PQ14**	**PQ15**	**PQ16**
ÖK1	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0
ÖK2	2	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	5	0	0	4	0	0	0	0	0
ÖK4	0	2	0	2	0	0	0	0	0	0	4	0	0	0	0	0
ÖK5	0	0	0	2	4	0	0	0	0	0	0	0	0	0	0	0
ÖK6	0	5	3	0	0	0	0	0	0	0	0	0	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

Contribution Level:	**1 very low**	**2 low**	**3 Medium**	**4 High**	**5 Very High**