EARTHQUAKE RESISTANT STRUCTURAL DESIGN

1	Course Title:	EARTHQUAKE RESISTANT STRUCTURAL DESIGN
2	Course Code:	INS6033
3	Type of Course:	Optional
4	Level of Course:	Third Cycle
5	Year of Study:	1
6	Semester:	1
7	ECTS Credits Allocated:	6.00
8	Theoretical (hour/week):	3.00
9	Practice (hour/week):	0.00
10	Laboratory (hour/week):	0
11	Prerequisites:	
12	Language:	Turkish
13	Mode of Delivery:	Face to face
14	Course Coordinator:	Dr. Ögr. Üyesi SERKAN SAĞIROĞLU
15	Course Lecturers:	
16	Contact information of the Course Coordinator:	Dr. Öğr.Üye. Serkan SAĞIROĞLU
17	Website:	
18	Objective of the Course:	To learn earthquake concepts, principles of earthquake resistant building design, rules in earthquake regulations and the reasons for these rules.
19	Contribution of the Course to Professional Development:	This course will contribute to the student in terms of knowledge about the occurrence of earthquakes and basic seismology, knowledge of earthquake spectra, knowledge of the behavior of structures during earthquakes, and knowledge of the current earthquake regulations.
20	Learning Outcomes:	
	1	To provide information about the formation of earthquakes and basic seismology
	2	To provide information about earthquake spectra
	3	To provide information about the behavior of structures during earthquakes
	4	To convey information about the current earthquake regulations
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21	Course Content:	

Course Content:

Week	Theoretical	Practice
1	Introduction	

2	Earthquake formation, faults and general characteristics, important fault systems and properties in our country, earthquake waves and their properties, earthquake surface and focal center, determination of the earthquake center	
3	Measuring earthquake motion, earthquake intensity, earthquake intensity scales, earthquake magnitude, earthquake magnitude measurements, earthquake energy, earthquake energy measurements, earthquake intensity maps	
4	Spectrum concept, dynamical equation of motion of single degree of freedom systems, creation and properties of earthquake response acceleration spectra	
5	Earthquake resistant building design principles, earthquake safety, earthquake regulations in our country, general behavior of the building during an earthquake.	
6	Irregularities defined in the earthquake regulation, conditions related to irregular buildings, irregularities in plan and vertical, issues to be considered while creating the carrier system	
7	Ductility concepts in buildings, calculation methods of earthquake loads acting on buildings, creation of the design earthquake acceleration spectrum, force-based design	
9	Mode superposition method	
10	center of stiffness, finding the center of stiffness	
11	second order effects	
12	Capacity principle in dimensioning, high ductility level and normal systems	
13	Earthquake resistant design rules for reinforced concrete buildings in the earthquake code,	

Activites	Number	Duration (hour)	Total Work Load (hour)
Theoretical	14	3.00	42.00
Practicals/Labs	0	0.00	0.00
Self study and preperation	14	6.00	84.00
Homeworks	0	0.00	0.00
Projects	0	0.00	0.00
Field Studies	0	0.00	0.00
Midterm exams	0	0.00	0.00
Others	0	0.00	0.00
Final Exams	1	50.00	50.00
Total Work Load			176.00
Total work load/ 30 hr			5.87
ECTS Credit of the Course			6.00

22	Textbooks, References and/or Other Materials:	"Deprem-Zemin ve Depreme Dayanıklı Yapı Tasarımı", Adem Doğangün, Birsen Yayınevi, İstanbul, 2021. "Deprem Mühendisliğine Giriş ve Depreme Dayanıklı Yapı Tasarımı", Z. Celep, N. Kumbasar, Beta Dağıtım, İstanbul, 2000.
23	Assesment	

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Midterm Exam	0	0.00
Quiz	0	0.00

Home work-project	0	0.00
Final Exam	1	100.00
Total	1	100.00
Contribution of Term (Year) Learning Activities to Success Grade		0.00
Contribution of Final Exam to Success Grade		100.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		Exam

24 ECTS / WORK LOAD TABLE

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	3	0	3	0	0	3	0	0	0	0	3	0	0	0	0	0
ÖK2	4	3	3	3	0	3	3	0	0	2	3	2	0	0	0	0
ÖK3	3	3	4	3	2	4	3	0	0	2	2	0	0	0	0	0
ÖK4	0	2	0	0	5	3	4	2	0	0	0	5	0	0	0	0

LO: Learning Objectives PQ: Program Qualifications

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