GEOTECHNICAL EARTHQUAKE ENGINEERING

1	Course Title:	GEOTECHNICAL EARTHQUAKE ENGINEERING	
2	Course Code:	INS5077	
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 YEŞİM SEMA ÜNSEVER	
15	Course Lecturers:		
16	Contact information of the Course Coordinator:	unsever@uludag.edu.tr 0224 2942946	
17	Website:		
18	Objective of the Course:	The objective of the course is to introduce the effects of dynamic soil behavior on ground shaking characteristics and on design of structures.	
19	Contribution of the Course to Professional Development:		
20	Learning Outcomes:		
		1	Adequate knowledge in mathematics, science and engineering subjects pertaining to the relevant discipline; ability to use theoretical and applied knowledgein these areas incomplex engineering problems
		2	Ability to identify, formulate, and solve complex engineering problems; ability to select and apply proper analysis and modeling methods for this purpose.
		3	Students will gain fundamental knowledge on earthquakes.
		4	Students will gain knowledge on the behavior of soils subjected to dynamic loads.
		5	Students will gain knowledge on the design of foundations by considering dynamic effects
		6	
		7	
		8	
		9	
		10	
21	Course Content:		

Course Content:

Week	Theoretical	Practice
1	Introduction to Geotechnical Earthquake Engineering	

2	Earthquakes, Strong ground motions and estimation of Strong ground motions parameters	
3	Seismic hazard analysis	
4	Dynamic soil properties	
5	Measurement of dynamic soil properties from field and laboratory tests	
6	Ground response analysis	
7	Liquefaction and effects of liquefaction	
8	Liquefaction analysis	
9	Settlement analysis of granular soils under dynamic loadings	
10	Bearing capacity under dynamic loadings	
11	Seismic design of retaining wall	
12	Seismic slope stability, microzonation	
13	Turkish Earthquake Code	
14	Discussions, Research and Presentations	

22	Textbooks, References and/or Other Materials:	- Kramer, S.L. (1996) Geotechnical Eartguake Engineering, Prentice Hall Upper Saddle River, New Jersey 07458 - Ishihara, K. (1996) Soil Behaviour in Earthquake Engineering, Oxford University Press, New York - Iam Finn W.D (1991) Dynamic Analysis in Geotechnical Engineering, ASCE Spe.Conf. Earthquake Engineering and Soil Dynamics II, pp523-591 - Resistant Design Codes in Japan, Japan Society of Civil Engineers, Tokyo, Japan - Soil Dynamics, 1993. - Das, B.M. Principles of Soil Dynamics, 1993.

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	8.00	112.00
Homeworks	2	10.00	20.00
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			178.00
Total work load/ 30 hr			5.93
ECTS Credit of the Course			6.00

TERM LEARNING ACTIVITIES	**NUMBE**	**WEIGHT**
Midterm Exam	1	25.00
Home work-project	2	15.00
Final Exam	1	60.00
Total	4	100.00
Contribution of Term (Year) Learning Activities to Success Grade		40.00
Contribution of Final Exam to Success Grade		60.00
Total		100.00
Measurement and Evaluation Techniques Used in the Course		

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	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
ÖK5	0	0	0	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							