ADVANCED SOIL MECHANICS

1	Course Title:	ADVANCED SOIL MECHANICS
2	Course Code:	INS6074
3	Type of Course:	Optional
4	Level of Course:	Third Cycle
5	Year of Study:	2
6	Semester:	4
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:	Theoretical background to understand and solve problems in Soil Mechanics and Foundation Engineering areas numerically. Consolidation theory in details considering swelling and collapsible soils.
19	Contribution of the Course to Professional Development:	
20	Learning Outcomes:	

	1	Be able to understand soil stress and strain behaviors
	2	Be able understand and solve stress and strain relationships in soils
	3	Be able to calculate stresses and strains in soils.
	4	Be able to learn consolidation theory in details
	5	Be able to analyze consolidations and settlements in soils.
	6	Be able to learn critical state soil mechanics
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21	Course Content:	
	Course Content:	
Week	Theoretical	Practice
1	Introduction	
2	Concept of stress and strain, Principal stresses and strain; Stress- strain relationships	
3	Concept of stress and strain, Principal stresses and strain; Stress- strain relationships	

4	Special matrices, Plane stress, Plane strain	
5	Mohr's diagram, Stress-paths, Stress distribution in soils, Stresses under footings resting on elastic media	
6	Mohr's diagram, Stress-paths, Stress distribution in soils, Stresses under footings resting on elastic media	
7	Effective stress concept. Capillary phenomenon, Applications	
8	Elastic settlement of soils, Pore pressure parameters	
9	One- dimensional consolidation theory. Consolidation test, Secondary consolidation, Radial Consolidation	
10	Settlement of foundations, Immediate, consolidation and secondary consolidation settlements, Skempton-Bjerrum correction.	
11	Applications (Settlement correction for the construction period, sand drains, pre-consolidation, stress path method.)	
12	Swelling and Collapsible Soils	
13	Swelling and Collapsible Soils	
14	Some applications and examples	

22	Textbooks, References and/or Other Materials:	Harr, M. E., Foundations of Theoretical Soil Mechanics, McGraw Hill, 1966.; Lambe, W and R. V. Whitman, Soil

Activites		Number	Duration (hour)	Total Work Load (hour)
23 Assesment				
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		100.00		5.93
ECTS Credit of the Course				6.00

TERM LEARNING ACTIVITIES	NUMBER	WEIGHT
Mid-term Exam	1	25.00
Homework	2	15.00
Project work-project	2	10.00
Midterm exams	4	10.00
Quiz	1	10.00
Success Grade		100

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**
LO: Learning Objectives PQ: Program Qualifications																
Contribution Level:	**1 very low**		**2 low**			**3 Medium**			**4 High**			**5 Very High**				