AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Advanced Soil Mechanics I								
Course Code	MCE541		Couse Level		Second Cycle (Master's Degree)				
ECTS Credit	8	Workload	202 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	This course aims to provide the students with knowledge and skills related to the theoetical concepts of soil mechanics, in a more advanced curriculum than the undergraduate soils mechanics courses offered. Special emphasis is given to geomechanics related elasticity concepts to be used in analytical and numerical models, stress and strain paths, one dimensional consolidation theory as well as the whole consolidation phenomemon and finally, problematic soils.								
Course Content	1. The nature of soils. 2. Stresses within a soil mass, and stress states 3. Stress paths. 4. Stress-strain relationships. 5. Concepts from elastic theory. 6. Capillarity in soil. 7. Swelling and shrinkage. 8. Consolidation theory. 9. Settlement in granular soils								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Individual Study, Problem Solving								
Name of Lecturer(s)	Prof. Selman SAĞLAM								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	2	50
Final Examination	1	30
Assignment	5	20

Recommended or Required Reading	
1	Holtz R. D. And Kovacs W. D. (1981), An introduction to Geotechnical Engineering, Prentice Hall, New Jersey, USA.
2	Lambe W., and Whitman R. V. (1979) Soil Mechanics. John Wiley & Sons

Week	Weekly Detailed Course Contents	
1	Theoretical	Introduction-Nature of Soils
2	Theoretical	Stresses in soil mass
3	Theoretical	Mohr Circle Concept
4	Theoretical	Mohr Circle Concept
5	Theoretical	Stress Paths
6	Theoretical	Stress-strain relationships
7	Theoretical	Introduction to elasticity theory
8	Theoretical	Introduction to elasticity theory
9	Theoretical	Capillarity in soils
10	Theoretical	Consolidation Theory
11	Theoretical	Consolidation Theory
12	Theoretical	Swelling and shrinkage
13	Theoretical	Swelling and shrinkage
14	Theoretical	Settlement in granular soils

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	5	3	112
Assignment	5	0	15	75
Midterm Examination	2	3	2	10

Final Examination	1	3	2	5
			Total Workload (Hours)	202
			[Total Workload (Hours) / 25*] = **ECTS**	8
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	The students will be able to calculate the stresses and strains that the soils are subjected to in the elastic range, in a three dimensional state of stress
2	The students will be able to use soil compaction characteristics and evaluate the procedure to compact the soil layers
3	The students will be able to identify and classify swelling and collapsible soils based on laboratory test results
4	The students will be able to take the seepage effects into consideration during evaluation of soil overall behavior
5	The students will be able to fully understand the assumptions of the one dimensional consolidation theory and clearly decide on selecting/modifying the design parameters for consolidation settlement calculations in design process.

Programme Outcomes *(Civil Engineering (English) Master)*	
1	To be able to develop expertise knowledge in a civil engineering area founded on their graduate competence.
2	To be able to use the theoretical and practical expertise knowledge gained in their specialty area.
3	To be able to use the information, problem solving and / or practical skills from the field, in interdisciplinary studies.
4	To be able to create new knowledge by integrating their knowledge area with the knowledge coming from different disciplines; and solve problems that need expertise by using scientific research methods
5	To be able to solve the problems related to his/her area by using appropriate research methods
6	To be able to devise a problem in their specialty area, develop a solution methodology, solve the problem, and interpret the results and take action if necessary
7	To be able to criticize the knowledge in their specialty area, guide the learning process, and independently direct high level studies
8	To be able to systematically communicate the recent developments in their specialty area and their own studies to groups both inside and outside their specialty area, orally, in writing and visually
9	To be able to use computer software at a level required by their specialty area with drawing upon information and communication technology at a high level
10	To be able to introduce scientific, technological, social and cultural advancements in the field of civil engineering and to contribute to the process of being an information of the society and to sustain it.
11	To be conscious of professional and ethical responsibility and contribute to the establishment of this consciousness.
12	To be able to protect social, scientific, and ethical values during collection, interpretation, and dissemination stages of the data associated with their specialty area; instruct and supervise these values
13	To be able to use at least one foreign language in a level to follow current developments related to the field.

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	5	4	5	4	5
P2	4	5	4	5	4
P3	5	4	5	5	5
P4	4	5	4	5	4
P5	5	4	5	4	5
P6	4	5	4	5	4
P7	5	4	5	4	5
P8	4	5	4	5	5
P9	5	4	5	4	4
P10	4	5	5	5	5
P11	5	5	5	4	4
P12	4	4	4	5	5
P13	5	4	5	4	5