

<b>Department of Building Engineering</b>			
<b>Geology and Soil Mechanics (68300)</b>			
<b>Total Credits</b>	<b>3</b>		
<b>major compulsory</b>			
<b>Prerequisites</b>	P1 : Mechanics of Materials (61207) OR Mechanics of Materials (61212)		
<b>Course Contents</b>			
<p>This course is an introductory course in soil mechanics and foundation engineering. Students will learn fundamental principles of soil behavior including physical and mechanical properties, as well as classification, identification, compaction and soil-testing. Students will also be introduced to principles of stresses within soil mass due to own weight and external loads as well as theory and applications of consolidation in addition to shear strength. The course ends with an introduction to foundation engineering including site investigation, bearing capacity, lateral earth pressure and pile foundation.</p>			
<b>Intended Learning Outcomes (ILO's)</b>		<b>Student Outcomes (SO's)</b>	<b>Contribution</b>
1	Have good understanding of the origin of the soil and geological cycle, phase diagram and consistency of soil-Atterberg limits.	A	25 %
2	Able to understand and perform soil classification and describe and quantify soil compaction.	A	25 %
3	Able to estimate soil stresses and settlement under different types of loads and understanding and evaluate soil shear strength	E	25 %
4	Have good understanding of basic ideas of foundation engineering including, site investigation, bearing capacity and settlement of shallow foundation, lateral earth pressure and retaining walls and pile foundation.	E	25 %
<b>Textbook and/ or References</b>			
1- Principles of Geotechnical Engineering, By: Braja M. Das, Seventh Edition, 2010. 2- Other references will be furnished during the semester			
<b>Assessment Criteria</b>		<b>Percent (%)</b>	
First Exam		20 %	
Second Exam		20 %	
Homeworks		10 %	
Final Exam		50 %	
<b>Course Plan</b>			
<b>Week</b>	<b>Topic</b>		
1	Introduction to Geotechnical Engineering		
2	Origin of Soil and Grail Size		
2-3	Weight-Volume Relationship, Plasticity, and Structure of Soil		
4	Engineering Classification of Soil		
5	soil compaction		
6	First EXAM		
7-8	Stresses in a Soil Mass		
9	Second Exam		
10	Compressibility of soil		
11	Shear Strength of soil		

12	Introduction to Site Investigation
13	Bearing Capacity of Shallow Foundation
14	Lateral Earth Pressure and Retaining Walls
15	Pile Foundation
16	Final Exam