

Module (soil mechanics) Catalogue 2022-2023

College/ Institute	Erbil Technology College	
Department	Road Construction Department	
Module Name	Soil Mechanics / 2	
Module Code	SOM302	
Degree	Technical Diploma <input type="checkbox"/>	Bachelor <input type="checkbox"/>
	High Diploma <input type="checkbox"/>	Master <input type="checkbox"/> PhD <input type="checkbox"/>
Semester	3	
Qualification	SMc.	
Scientific Title	Soil Mechanics	
ECTS (Credits)	6	
Module type	Prerequisite <input type="checkbox"/>	Core <input type="checkbox"/> Assist. <input type="checkbox"/>
Weekly hours	8	
Weekly hours (Theory)	(2)hr Class	(162)Total hrs Workload
Weekly hours (Practical)	(2)hr Class	(162)Total hrs Workload
Number of Weeks	12	
Lecturer (Theory)	Hozan Khalil Yaba	
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Lecturer (Practical)	Hozan Khalil Yaba	
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Websites		

Course Book

<p>Course Description</p>	<p>Soil mechanics” is the study of the engineering behavior of soil when it is used either as a construction material or as a foundation material. This is a relatively young discipline of civil engineering, systematized in its modern form by Karl Von Terzaghi (1925), who is rightly regarded as the “Father of Modern Soil Mechanics”.</p> <p>An understanding of the principles of mechanics is essential to the study of soil mechanics. A knowledge and application of the principles of other basic sciences such as physics and chemistry would also be helpful in the understanding of soil behaviour. Further, laboratory and field research have contributed in no small measure to the development of soil mechanics as a discipline.</p> <p>The application of the principles of soil mechanics to the design and construction of foundations for various structures is known as “Foundation Engineering”. “Geotechnical Engineering” may be considered to include both soil mechanics and foundation engineering.</p>
<p>Course objectives</p>	<p>The objective of this course is to introduce Technical Road Department students the basic, principle and application of soil mechanics. This include:</p> <ul style="list-style-type: none"> • Learn index properties of soils, methods of soil classification and subsurface investigations. • Learn principle of seepage through porous media and effective stress. • Learn principles of consolidation and shear strength.
<p>Student's obligation</p>	<ul style="list-style-type: none"> • Student should attend lectures (theory part) and practicing in soil mechanics laboratories. • Student should attend exams during the course. • Home works. • Quizzes . • work as a team .
<p>Required Learning Materials</p>	<ol style="list-style-type: none"> 1. Lecture notes will be handled to the students at the beginning of each part to facilitate easier understanding of books and also to read references. 2. Power point presentation for parts of the course as

	required.				
	3. White board will be used to explain program commands, draw sketches and solve problems in the lab.				
Evaluation	Task	Weight (Marks)	Due Week	Relevant Learning Outcome	
	Paper Review				
	Assignments	Homework	5%		
		Class Activity	2%		
		Report			
		Seminar	10%		
		Essay			
		Project			
	Quiz	8%			
	Lab.	10%			
	Midterm Exam	25%			
	Final Exam	40%			
Total	100%				
Specific learning outcome:	<p>At the end of year, student will be have :</p> <ul style="list-style-type: none"> information on soil types, soil properties , soil composition , soil grain-size distribution ,soil consistency, plasticity and Atterberg limits, soil permeability ,stresses in soil, soil classification ,soil stabilization , consolidation ,lateral earth pressure ,soil compaction , CBR California Bearing Ratio, swelling and shear stress. Information on all soil laboratories tests. 				
Course References:	<ol style="list-style-type: none"> Title: Principles of Geotechnical Engineering Authors : Braja M.Das Title: Physical and Geotechnical Properties of Soil Authors: Joseph E.Bowel 				

	<p>3. Title: Soils Mechanics in Engineering Practise". 3rd Edition Authors : Tergazhi, Karl, Ralph, B. Teck, and Mesri, Publisher :Gholamreza(1988)</p> <p>4. Title: Basic Soil Mechanic". 4th edition. Authors : Whitlow, R Publisher:Pearson Education Limited England. (2001)</p> <p>5. Title: Manual of Soil laboratory Testing Authors: Head, K.H Publisher: Volume 1". Pentech Press, London. (1981)</p> <p>6. Paper and magazins from internet</p>
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Course topics (Theory)	Week	Learning Outcome
1.Introduction:	1	
2. Soil composition and soil properties:	2&3	
3. Soil grain – size distribution:	4	
4. Soil classification:	5	
5. Permeability:	6	
6. Stresses in soil:	7&8	
7. Soil compaction and Swelling:	9	
8. Foundations:	10	
9. Shear stress:	11	
10.California Bearing Ratio (CBR): settlement of soil.	12	

Practical Topics	Week	Learning Outcome
Introduction on the soil lab Water content test	1	
Organic content test & Specific gravity test	2	
Sieve analysis test	3	
Hydrometer test	4	
Liquid limit test , Plastic limit ,Shrinkage limit test	5	
Constant head permeability test	6	
Falling head permeability test	7	
Standard compaction test, Modified compaction test	8	
Filed density (sand cone test)	9	
Filed density (Core cutter test)	10	
Direct shear test	11	
California bearing ratio(C.B.R) test, Consolidation test	12	