The Hashemite University
Faculty of Engineering
Civil Engineering Program
Course Syllabus

Course Title:	Soil Stabilization and Ground Reinforcement	**Course Number:**	110401531
Department:	Civil Engineering	**Designation:**	Elective
Prerequisite(s):	0401336		
Instructor:	Dr. Hend Alshatnawi	**Instructor's Office:**	E3006
Instructor's contact:	Microsoft Teams		
Office Hours:	12:00 – 1:30: Sun. and Tue, 12:00 – 1:00: Mon.		
Time:	9:30-11:00 Mon & Wed	**Class Room:**	E2025

Course Description (catalog): Dynamic compaction, vibro-compaction, compaction grouting, preloading and prefabricated vertical drains, Blast densification, lime-cement columns, vibro stone columns, vibro concrete column, jet grouting, deep mixing, Micropiles, ground anchors, fiber reinforced soils, soil nailed retaining structures, geosynthetics in ground improvement, dewatering, admixtures, geopiers.

Textbook(s): Principles of Foundation Engineering, Braja M. Das, 8th edition.

References: : Hausmann, M. R. (1990). Engineering Principles of Ground Modification, McGraw Hill, NY.

Topics covered:

Topics	No. of Weeks	Contact hours*
Compaction Theory and Methods	2	6
Deep Densification of Soils	1	3
Traditional and non-traditional methods	2	6
Earth retaining walls	1	3
Geosynthetics and Mechanically Stabilized Earth Walls	2	6
Preloading and use of Vertical Drains	3	9
Chemical Stabilization and Grouting Techniques	3	9
Sheet piles	1	3
Total	**15**	**45**

*Contact hours include class lectures and record classes, quizzes and exams

Course objectives:

1. To highlight the need for soil improvement.(1)
2. To gain an understanding of the need to use different site improvement techniques. (1)
3. To describe different site improvement techniques.(1)
4. To develop the theoretical background and analysis methods needed for the design of site improvement techniques. (1)
5. To develop design guidelines for site improvement techniques. (2).

Student Outcomes (SO) Addressed by the Course:

#	Outcome Description	Contribution
General Engineering Student Outcomes		
(1)	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	M (50)
(2)	An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	M (50)
(3)	an ability to communicate effectively with a range of audiences	
(4)	an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	
(5)	an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	
(6)	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	
(7)	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	
H=High, **M**= Medium, **L**=Low		

Grading Plan:

First Exam	(25 Points)
Second exam	(20 Points)
Project	(15 Points)
Final Exam	(40 Points)

General Notes:

-Students should meet in the classroom on time.
-There are a record class every Thursday sending on Teams
-Meetings with the instructor outside the classroom should be during the office hours.

Prepared by: Dr. Hend Alshatnawi **Date:** 19/2/2023