



**The Hashemite University**  
**Faculty of Engineering**  
**Civil Engineering Program**  
**Course Syllabus**



<b>Course Title:</b>	Soil Stabilization and Ground Reinforcement	<b>Course Number:</b>	110401531
<b>Department:</b>	Civil Engineering	<b>Designation:</b>	Elective
<b>Prerequisite(s):</b>	0401336	<b>Instructor's Office:</b>	E3016
<b>Instructor:</b>	Dr. Omar Hattamleh		
<b>Instructor's e-mail:</b>	hattam@hu.edu.jo		
<b>Office Hours:</b>	9:00 – 10:00: Sun., Tue. & Thurs., 11:00 – 12:30: Mon. & Wed		

**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, 8<sup>th</sup> 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
Geosynthetics and Mechanically Stabilized Earth Walls	3	9
Preloading and use of Vertical Drains	3	9
Chemical Stabilization and Grouting Techniques	3	9
Modifications by Inclusions and Confinement	3	9
<b>Total</b>	<b>15</b>	<b>45</b>

\*Contact hours include lectures, quizzes and exams

**Course objectives:**

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

**Student Outcomes (SO) Addressed by the Course:**

#	Outcome Description	Contribution
<b>General Engineering Student Outcomes</b>		
(a)	an ability to apply knowledge of mathematics, science, and engineering	M (50)
(b)	an ability to design and conduct experiments, as well as to analyze and interpret data	



**The Hashemite University**  
**Faculty of Engineering**  
**Civil Engineering Program**  
**Course Syllabus**



(c)	an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	M(25)
(d)	an ability to function on multidisciplinary teams	
(e)	an ability to identify, formulate, and solve engineering problems	M(25)
(f)	an understanding of professional and ethical responsibility	
(g)	an ability to communicate effectively	
(h)	the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
(i)	a recognition of the need for, and an ability to engage in life-long learning	
(j)	a knowledge of contemporary issues	
(k)	an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	
<b>H=High, M= Medium, L=Low</b>		

**Prepared by:**

Dr. Omar Hattamleh

**Date:**

9/8/2016

**Grading Plan:**

Mid Term Exam (40 Points)

Project (20 Points)

Final Exam (40 Points)

**General Notes:**

-Students should meet in the class room on time.

-Meetings with the instructor outside the class room should be during the office hours.