College of Engineering

Department of Civil Engineering

CE 486 Improvement of Geotechnical Materials

Credit and Contact hours	3 / 3 (Lectures), 1 (Tutorials), 0 (Laboratory)
Required, or Elective	Elective for a BSCE degree
Course Description	Improving performance of soils for engineering applications. Analysis of methods of stabilizing soils and rocks including topics on: Mechanical and chemical stabilization and earth reinforcement.
Prerequisites or Co-requisites	Prerequisites for CE 481 (Geotechnical Engineering-II), and Co-requisites for CE 483 (Foundation Engineering)
Course Learning Outcomes	Students completing this course successfully will be able to

Course Learning Outcomes	*Related Student Outcomes (SO)*
CLO1. Determine the suitable types of ground modifications for and its range of applications based on soil and site conditions.	**SO1**
CLO2. Design the proper type of ground modification to provide solutions for different types of problematic soils considering , safety , environmental and economic factors (through a project)	**SO2**
CLO3. Interpret laboratory and field tests data to draw conclusions on behavior of different types of soils.	**SO6**

Student Outcomes related to this Course

SO1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics, and using modern engineering tools. [ABET 1]

SO2. 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. [ABET 2]

SO6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

Topics Covered

List of Topics	Related CLOs
1. Introduction of modification methods	CLO1
2. Mechanical modification	CLO2

	3. Hydraulic modification	CLO2
	4. Physical and chemical modification	CLO2
	5. Modification by inclusions	CLO2
	6. Evaluate of modification performance	CLO3
Textbook(s) and Other Required Material	1. Moseley, M.P. "Ground Improvement", Blackie Academic & Professional. 2. Hausmann, M.R. "Engineering Principles of Ground Modification". McGraw-Hill.	
Grading System	Homeworks 10% Two Midterm Exams 50% Final Examination 40%	
Instructors	Dr. Abdullah Alsabhan (Room 2A60), email; aalsabhan@ksu.edu.sa	
Date of Review	September 2020	