CIV_ENV 495-0  
Sec 22—Fall 
GROUND IMPROVEMENT

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GRADING:  
Class Participation = 20%  
Homeork = 55%  
Term Project/Presentation = 25%.

COURSE OUTLINE:

WEEK 1  
Introduction  
Course Objectives / Instructor Perspective  
Subsurface Challenges  
Discussion of Important Soil Properties and Behavior  
Objectives of Ground Improvement

WEEK 2  
Improvement by Accelerated Consolidation / Accelerated Drainage  
Vertical Drains  
Seismic Drains

WEEK 3  
Improvement by Densification (I)  
Dynamic Compaction  
Explosive Densification

WEEK 4  
Improvement by Densification (II)  
Vibro-compaction  
Compaction Grouting

WEEK 5  
Improvement by Reinforcement (I)  
Vibro-replacement/-displacement  
Aggregate-Stone Columns
WEEK 6
Improvement by Reinforcement (II)
- Deep Soil Mixing
- Rigid Inclusions
- Column-supported Embankment Considerations

WEEK 7
Improvement by Injection / Grouting (I)
- Introduction
- Permeation Grouting (Solution and Suspension)

WEEK 8
Improvement by Injection / Grouting (II)
- Fracture / Compensation Grouting
- Jet Grouting

WEEK 9
Miscellaneous Techniques
- Injection
- Ground Freezing
- Other

WEEK 10
Student Topics/Presentations
- Recap Discussions

WEEK 11
Student Topics/Presentations
- Recap Discussions

FINAL EXAM
No Class