Advanced Soil Mechanics–CEEN 510

3 Hours Credit, Room CO 212, Time: TR 9.30-10.45 am

Instructor: D.V. Griffiths
Coolbaugh Hall: CO252, Tel: 273 3669, d.v.griffiths@Mines.EDU
Office Hours: T 2-4 pm and by appointment
Web: www.mines.edu/~vgriffit

Advanced soil mechanics concepts and theories as applied to analysis and design in geotechnical engineering. The course has an emphasis on numerical and analytical methods.

Course Outline:

a Seepage: Review; Principle of effective stress; Confined flow; Flow nets; Method of Fragments; Introduction to finite element software for steady seepage.

b Settlement and Consolidation: Review; Amount and rate of settlement; Boundary/initial conditions; Finite difference and finite element solutions; Sand drains.

c Slope Stability Analysis: Review of shear strength; Analytical Methods; Charts; Methods of Slices; Finite element slope stability software.

d Introduction to Probabilistic Methods: Review of basic concepts; Probability density functions; First Order Second Moment; First Order Reliability Methods; Monte-Carlo.
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Prerequisite: A first course in Soil Mechanics.

Additional reading:


Assessment:

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<th>Component</th>
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<tr>
<td>Exam 1</td>
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<tr>
<td>Exam 2</td>
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<tr>
<td>Coursework</td>
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Exam dates TBA

Practice questions will be handed out throughout the course but will not be graded. There will be four computational assignments that will be graded.