COURSE INSTRUCTOR: Dr. Son Nguyen, P.Eng.
(MC2035, SonT.Nguyen@carleton.ca)

LECTURES: Monday/Wednesday AT 302 8:35-9:55 AM

LABORATORY: Civil Engineering Laboratory, Minto Centre (Room: 1060)

TEACHING ASSISTANT: TBD

COURSE TEXT:

The lab handouts and lecture notes will be available on CuLearn before class.

Laboratory attendance and satisfactory submittal of all Lab reports are compulsory. Missing Labs or failure to submit Lab reports will lead to a grade of FND in the course.

REFERENCE TEXTS:

COURSE CONTENT

<table>
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<tr>
<th>Topics</th>
<th>Reading</th>
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<tbody>
<tr>
<td>Introduction: Scope, Methodology</td>
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<tr>
<td>Origin and particle distribution of soils: residual and transported soils</td>
<td>Chapter 2</td>
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</table>
### Phase relationships: mass and volume relationships in soil

Chapter 3

### Fine-grained soil: Consistency and clay mineralogy

2.12

### Soil classification: Unified and AASHTO classification systems

Chapter 4

### Soil compaction: Standard & Modified Proctor tests; Factors affecting soil compaction, Field compaction

Chapter 5

### Flow of water through soil: Total, elevation & pressure heads, Darcy's law and the coefficient of permeability; Constant and falling head tests, Seepage, flow nets; Field permeability measurements

Chapter 6, 7

### Stresses in soils: Total, effective stresses & pore water pressure; Normal & shear stresses; Stress increment due to external load

Chapter 8

### Consolidation: Terzaghi's theory of one-dimensional consolidation; The oedometer test; consolidation settlement and degree of consolidation

Chapter 9

### Shear strength of soils: Mohr-Coulomb failure criterion, cohesive vs cohesion-less materials, principal stresses, p-q representation of failure criteria; Laboratory shear tests

Chapter 10

### Review

#### MARKING SCHEME*

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<tr>
<th>Component</th>
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<td>Assignments</td>
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<td>Laboratory Reports</td>
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<td>Final Examination</td>
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**Note:**

* To pass this course, one has to obtain at least 40% in the final examination.
* The final examination is for evaluation purposes only and will not be returned to students.
* “The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). Requests made within two weeks will be reviewed on a case-by-case basis. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website ([www.carleton.ca/pmc](http://www.carleton.ca/pmc)) for the deadline to request accommodations for the formally-scheduled exam (if applicable).”