THE UNIVERSITY OF WESTERN ONTARIO
Faculty of Engineering
Department of Civil and Environmental Engineering

CEE9621a  Landslides and Slope Stability

COURSE OUTLINE 2020-2021

DESCRIPTION
Study principles of slope stability analysis, evaluate stability of earth slopes and investigate landslides and other slope failures from engineering perspectives. The theory, techniques and methodologies for the assessment, recognition, investigation, analyses and mitigation of landslides and slope failures will be discussed.

PREREQUISITES
Completion of an undergraduate degree in civil engineering or permission of the instructor. Unless you have either the requisites for this course or written special permission from the course instructor to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

TOPICS

<table>
<thead>
<tr>
<th>Topic #</th>
<th>Description</th>
<th>Learning Activities</th>
<th>Week*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Introduction</td>
<td>Zoom lectures and discussions</td>
<td>1**</td>
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<tr>
<td>2</td>
<td>Review of fundamentals</td>
<td>Zoom lectures and discussions</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Methods of slope stability analysis</td>
<td>Zoom lectures and discussions</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>Back analysis of slope failures</td>
<td>Zoom lectures and discussions</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Rapid drawdown induced instability</td>
<td>Zoom lectures and discussions</td>
<td>5</td>
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<tr>
<td>6</td>
<td>Reliability analysis</td>
<td>Zoom lectures and discussions</td>
<td>6</td>
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<tr>
<td>7</td>
<td>Investigation and monitoring</td>
<td>Zoom lectures and discussions</td>
<td>7</td>
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<tr>
<td>8</td>
<td>Mitigation and prevention</td>
<td>Zoom lectures and discussions</td>
<td>8</td>
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<tr>
<td>9</td>
<td>Case studies</td>
<td>Zoom lectures and discussions</td>
<td>9</td>
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</tbody>
</table>

*Counted from classes begin, excluding study week
** Details of class organization will be discussed in detail. Announcement will be made on OWL course site
## SPECIFIC LEARNING OUTCOMES

<table>
<thead>
<tr>
<th>Degree Level Expectation</th>
<th>Weight</th>
<th>Assessment Tools</th>
<th>Outcomes</th>
</tr>
</thead>
</table>
| Depth and breadth of knowledge | 25% | • Assignments  
• Project | • Understanding of advanced concepts and theories  
• Awareness of important current problems in the field of study  
• Understanding of computational and/or empirical methodologies to solve related problems |
| Research & scholarship | 15% | • Assignments  
• Project | • Ability to conduct critical evaluation of current advancements in the field of specialization  
• Ability to conduct coherent and thorough analyses of complex problems using established techniques/principles and judgment |
| Application of knowledge | 30% | • Assignments  
• Project | • Ability to apply knowledge in a rational way to analyze a particular problem  
• Ability to use coherent approach to design a particular engineering system using existing design tools |
| Professional capacity / autonomy | 5% | • Assignments  
• Project | • Awareness of academic integrity  
• Ability to implement established procedures and practices in the coursework  
• Defends own ideas and conclusions  
• Integrates reflection into his/her learning process |
| Communication skills | 15% | • Assignments | • Ability to communicate (oral and/or written) ideas, issues, results and conclusions clearly and effectively |
| Awareness of limits of knowledge | 10% | • Assignments  
• Project | • Awareness of the need of assumptions in complex scientific analyses and their consequences  
• Understanding of the difference between theoretical and empirical approaches  
• Ability to acknowledge analytical limitation due to complexity of practical problems |

## ASSESSMENTS

<table>
<thead>
<tr>
<th>Assessment Type</th>
<th>Material Covered</th>
<th>Tentative Due Date</th>
<th>Weight%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignment 1</td>
<td>Specified in class</td>
<td>Oct 15, 2020</td>
<td>10</td>
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<tr>
<td>Assignment 2</td>
<td>Specified in class</td>
<td>Oct 29, 2020</td>
<td>10</td>
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<tr>
<td>Assignment 3</td>
<td>Specified in class</td>
<td>Nov 12, 2020</td>
<td>10</td>
</tr>
<tr>
<td>Final project</td>
<td>Specified in class</td>
<td>Dec 7, 2020</td>
<td>60</td>
</tr>
<tr>
<td>Participation (asynchronous)</td>
<td>Post questions in course forums</td>
<td></td>
<td>10</td>
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Activities in which collaboration is permitted:
Three Assignments

Activities in which students must work alone (collaboration is not permitted):
Final project

CONTACT INFORMATION
Course instructor: Dr. Julie Q. Shang, P. Eng
Email address: jqshang@uwo.ca
Contact policy:
• Contact instructor via email (above) or through messages in OWL
• Weekly Office hours are held via Zoom after online lectures
• A general FAQ section on the ‘forums’ section of OWL will be used for students to pose course-related questions so that all have the same information.

REQUIRED TEXTBOOK / SOFTWARE
1. Course notes and other references posted on the course Web site
2. GeoStudio 2018, WE ITG Gen Labs (remote access available)

CHEATING, PLAGIARISM/ACADEMIC OFFENCES
Academic integrity is an essential component of learning activities. Students must have a clear understanding of the course activities in which they are expected to work alone (and what working alone implies) and the activities in which they can collaborate or seek help; see information above under “Assessments” and ask instructor for clarification if needed. Any unauthorized forms of help-seeking or collaboration will be considered an academic offense. University policy states that cheating is an academic offence. If you are caught cheating, there will be no second warning. Students must write their essays and assignments in their own words. Whenever students take an idea or a passage of text from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence. Academic offences are taken seriously and attended by academic penalties which may include expulsion from the program. Students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence (see Western's scholastic discipline regulations for graduate students).

SYNCHRONOUS LEARNING ACTIVITIES
Students are expected to participate in synchronous learning activities as outlined in the course syllabus and/or described by the instructor. If you have issues that will impede your ability to participate in synchronous activities, please discuss with the course instructor at the beginning of the course.
CONDUCT
Students are expected to follow proper etiquette during synchronous and asynchronous activities to maintain an appropriate and respectful academic environment. Any student who, in the opinion of the instructor, is not appropriately participating in the synchronous and asynchronous learning activities and/or is not following the rules and responsibilities associated with the online learning activities, will be reported to the Associate Dean (Graduate) (after due warning has been given). On the recommendation of the Department concerned, and with the permission of the Associate Dean (Graduate), the student could be debarred from completing the assessment activities in the course as appropriate.

HEALTH/WELLNESS
As part of a successful graduate student experience at Western, we encourage students to make their health and wellness a priority. Western provides several health and wellness related services (remotely accessible) to help you achieve optimum health and engage in healthy living while pursuing your graduate degree. Information regarding health- and wellness-related services available to students may be found at http://www.health.uwo.ca/.

Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (graduate chair), or other relevant administrators in their unit. Campus mental health resources may be found at http://www.health.uwo.ca/mental_health/resources.html https://www.uwo.ca/health/psych/index.html

SICKNESS
Students should immediately consult with the Instructor (for a particular course) or Associate Chair (Graduate) (for a range of courses) if they have problems that could affect their performance. The student should seek advice from the Instructor or Associate Chair (Graduate) regarding how best to deal with the problem. Failure to notify the Instructor or the Associate Chair (Graduate) immediately (or as soon as possible thereafter) will have a negative effect on any appeal. Obtaining appropriate documentation (e.g., a note from the doctor) is valuable when asking for accommodation due to illness.

ACCESSIBILITY
Please contact the course instructor if you require material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Accessible Education at 661-2111 x 82147 or http://academicsupport.uwo.ca/accessible_education/index.html, for any specific question regarding an accommodation.