Civil, Environmental and Geomatic Engineering

Soil Mechanics and Engineering Geology (CEGE0013)

Description

Brief Description
In any Geotechnical Design project, it is necessary to understand not only the soil properties but also the geological origin and history of the soil and the rock mass. Building on the principles of soil mechanics taught in Year 1, this course is aimed at extending the students’ geology and soil testing knowledge and introduce site investigation concepts, where soil properties can be derived. Within Geology, a fundamental understanding of plate tectonics, rock formation, weathering and deposition will be covered, allowing the students to understand the origin of soils and how these will influence certain properties that are impossible to describe with classical soil mechanics. The knowledge provided by Site Investigation will demonstrate how to take the basic geology of a site and obtain a detailed understanding of the engineering properties of the soils and how to communicate the relevant information obtained. In soil mechanics, consolidation theory will be introduced, together with the basic principles of Critical State Soil Mechanics. Methodologies for the design of shallow and deep foundations, using Serviceability and Ultimate Limit State (SLS and ULS) will be introduced, together with methodologies for the analysis of slope stability, giving the students a broad overview of Geotechnical Engineering.

Aims and Learning outcomes

- At the end of the module the students should be able to:
  - Understand the importance of Geology for Civil Engineers
  - Understand the stress regimes and deformation of the Earth’s crust
  - Understand the geological cycle and the origins of soils
  - Understand Geological Hazards

Key information

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<tr>
<th>Year</th>
<th>2019/20</th>
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<tr>
<td>Credit value</td>
<td>15 (150 study hours)</td>
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<tr>
<td>Delivery</td>
<td>UG L5, Campus-based</td>
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<tr>
<td>Reading List</td>
<td>View on UCL website</td>
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<tr>
<td>Tutor</td>
<td>Dr Pedro Ferreira</td>
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<td>Term</td>
<td>Terms 1 and 2</td>
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Assessment

- Coursework: 10%
- Coursework: 20%
- Written examination (main exam period): 60%
- Other: 10%

Find out more

For more information about the department, programmes, relevant open days and to browse other modules, visit ucl.ac.uk

Disclaimer: All information correct as of August 2019. Please note that aspects of the module may be subject to change. UCL will make best efforts to inform applicants of major changes.
Understand ground investigations and how to specify them

Understand desk studies, site and lab works as well as factual and Interpretive reports

Understand how to use Site Investigation Reports in design

Understand the behaviour of soils before and after failure using Critical State Soil Mechanics

Design shallow and deep foundations based on Limit States

Analyse Slope Stability as well as provide solutions to mitigate against slope failure

Develop laboratory skills relevant to geotechnical Engineering

Present information textually and graphically

Recomended Readings


Other readings:
