Module Specification

Module Summary Information

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<tr>
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<th>Module Title</th>
<th>Soil Mechanics</th>
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<tr>
<td>2</td>
<td>Module Credits</td>
<td>5</td>
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<td>3</td>
<td>Module Level</td>
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<td>BNV5123</td>
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Module Overview

In accordance with the programme philosophy and aims, this module has been designed to enable you to use problem-based learning to understand the geological materials and effects of soil mechanics on Civil Engineering and relate it to information about the geotechnical tests and reports. It includes opportunities to complete laboratory tests to define certain properties of soils.

The module follows the Civil Engineering programme philosophy of developing your intellectual and practical competence in technical, theoretical and environmental aspects of civil engineering. Similarly the learning and teaching philosophy incorporates learning through formal lectures including, seminars, tutorials, laboratory tests and problem based scenarios. Learning is practice-based, knowledge applied and work related including project based activities.

This module covers the basic description of soil including the fundamentals of soil phases, properties of soil classification, effective stress, permeability, consolidation, compressibility and shear strength. The core principles of soil mechanics are also applicable to soil-like material that are often used in civil engineering applications.

Learning activities will incorporate formative assessment including work-related learning and problem solving, in-class tasks, seminar work and laboratory work. The assessment outline section below details assessment for this module by way of examination.

Practical work within this module includes practical demonstrations, seminar, laboratory and tutorial work, use of ICT as a visual tool and group project work.

Indicative Content

1. Examine the role of engineering geology and recognise samples of geological materials.
   - Fundamental of soil and geology.

2. Appraise and classify different soils and safely complete laboratory tests to identify their physical and environmental properties.
   - Particle size and shape, consistency and classification of soil.
   - Stresses within soil.
   - Fluid flow through soil.
   - Shear strength

3. Analyse pore water pressure, effective stress and the impact of consolidation process in soil stability
   - Fluid flow through soil.
   - Consolidation and compressibility of soil.
4. Evaluate and demonstrate the understanding of mechanics in soil behaviour and properties

- Fundamental of soil and geology
- Stresses within soil
- Shear strength of soil
- Lateral earth pressure, slope stability and bearing capacity of soil.

7 | Module Learning Outcomes
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**On successful completion of the module, students will be able to:**
1 | Examine the role of engineering geology and recognise samples of geological materials.
2 | Appraise and classify different soils and safely complete laboratory tests to identify their physical and environmental properties.
3 | Analyse pore water pressure, effective stress and the impact of consolidation process in soil stability.
4 | Evaluate and demonstrate the understanding of mechanics in soil behaviour and properties.

8 | Module Assessment
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| Learning Outcome | Coursework | Exam | In-Person |
---|---|---|---|
1-4 | | X | |

9 | Breakdown Learning and Teaching Activities
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| Learning Activities | Hours |
---|---|
**Scheduled Learning (SL)** includes lectures, practical classes and workshops, peer group learning, Graduate+, as specified in timetable | 48 |
**Directed Learning (DL)** includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning, as directed on VLE | 20 |
**Private Study (PS)** includes preparation for exams | 132 |
**Total Study Hours:** | 200 |