Introduction to Geotechnics

Module Information

2022.01, Approved

Summary Information

Module Code	4204CIV
Formal Module Title	Introduction to Geotechnics
Owning School	Civil Engineering and Built Environment
Career	Undergraduate
Credits	20
Academic level	FHEQ Level 4
Grading Schema	40

Teaching Responsibility

LJMU Schools involved in Delivery
Civil Engineering and Built Environment

Learning Methods

Learning Method Type	Hours
Lecture	33
Practical	8
Tutorial	22

Module Offering(s)

Display Name	Location	Start Month	Duration Number Duration Unit
SEP-CTY	CTY	September	12 Weeks

Aims and Outcomes

Aims	To gain an entry level understanding of soil and rock mechanics and soil interaction in engineering applications.

After completing the module the student should be able to:

Learning Outcomes

Code	Number	Description
MLO1	1	Demonstrate their understanding of the physical and engineering characteristics of typically encountered soils and rocks.
MLO2	2	Evaluate the significance of water in soils, its movement and effects upon soil properties and strength parameters.
MLO3	3	Apply their understanding of the principles involved in assessing the stability of slopes to the design of foundations and earth retaining structures under total stress conditions.
MLO4	4	Apply appropriate geotechnical understanding and analysis to soil loading and stress analysis problems.
MLO5	5	Collect and process data from laboratory experiments and produce a formal written report with conclusions.

Module Content

Outline Syllabus	Site investigation, use of historical resources, legislative background, techniques, service avoidance, importance, health and safety. Classification of soils to appropriate standards and the techniques to classify soils of different types effectivelyProperties of soils, cohesive, granular how the properties differ. Compaction of soils and the rationale behind it, compaction techniques, calculation of air-void content. Soil improvement in practice. Geological structures, types, classification, weathering classifications, strengths and engineering properties of rock masses. Rock cycle. Hydrological cycle, hydrostatic forces. Principles of total and effective stress analysis. Water flow in soils, flow nets, flow and pore pressure calculations. Stress analysis calculations with different methods of stress increase examined. Basic foundation principles and design, piling techniques, pad foundations, contact pressure.
Module Overview	This module provides you with an introduction through practical work to the composition, deposition, and behaviour of engineering soil. The module makes extensive use of mathematics and engineering principles. You will be supported through lectures, case studies, tutorials, and analytical exercises.
Additional Information	The module provides an introduction through practical work to the composition, deposition and behaviour of engineering soil. The module makes extensive use of mathematics and engineering principles, this is supported by lectures, case studies, tutorials and analytical exercises.Where this module is part of a Degree Apprenticeship programme, the knowledge learning outcomes are K2 and K4, the skills learning outcomes are S3.

Assessments

Assignment Category	Assessment Name	Weight	Exam/Test Length (hours)	Module Learning Outcome Mapping
Report	LABORATORY REPORT	30	0	MLO1, MLO2, MLO3, MLO4, MLO5
Centralised Exam	Examination	70	2	MLO1, MLO2, MLO3, MLO4

Module Contacts

Module Leader

Contact Name	Applies to all offerings	Offerings
Monower Sadique	Yes	N/A

Partner Module Team

Contact Name	Applies to all offerings	Offerings