

Liverpool John Moores University

Title: GEOLOGY
Status: Definitive
Code: **5020BEHN** (102327)
Version Start Date: 01-08-2016

Owning School/Faculty: Civil Engineering
Teaching School/Faculty: Civil Engineering

Team	Leader
William Atherton	Y
Gary Lamb	

Academic Level:	FHEQ5	Credit Value:	12	Total Delivered Hours:	70
Total Learning Hours:	120	Private Study:	50		

Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	24
Off Site	8
Practical	24
Tutorial	12

Grading Basis: BTEC

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	unseen	70	2
Test	AS2	assignment	20	
Test	AS3		10	

Aims

To provide the student with an introduction to the engineering characteristics of geological materials and the formation of rock and soil.

To provide the student with an understanding of the classification of geological

*materials and the significance of ground and site investigations.
To provide an understanding of soils testing practice to current Codes of Practice
and of the associated analysis of laboratory data.*

Learning Outcomes

After completing the module the student should be able to:

- 1 Investigate the various techniques involved in site investigation.
- 2 Describe the common soil types, their mode of formation, geographical/geological distribution
- 3 Describe the common rock types, their mode of formation, geographical/geological distribution and their uses within the construction industry.
- 4 Investigate the engineering performance of rock materials and rock masses.
- 5 Analyze the results obtained from standard soil tests.
- 6 Analyze the significance of water in soil, its movement and effects upon properties and strength parameters.
- 7 Analyze the significance of compaction and methods of ground improvement.

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

EXAM	1	2	3	4	6
TEST 1	5				
TEST 2	7				

Outline Syllabus

Introduction to site investigation and ground investigation techniques, sampling methods and in-situ testing techniques and site investigation reports.

The relevance of geology in Civil Engineering, the formation of Igneous, Sedimentary and Metamorphic rock. Interpretation of geological maps. The engineering characteristics of rock and the use of rock and its weathered products in construction.

General appreciation of the nature of soils and rock in the engineering sense. Classification of soils: index properties, particle size distribution, soil properties and phase relationships.

Total stress, pore water pressure and effective stress relationships for differing ground profiles.

Soil permeability, laboratory and in-situ testing.

Shear strength theory, Coulomb's law and the Mohr-Coulomb strength envelope.

The relationship between total stress and effective stress and a soils shear strength parameters.

A general appreciation of one-dimensional consolidation.

Learning Activities

Lectures, tutorials, fieldwork, problem solving sessions and laboratory work

Notes

The module is intended to develop the skills and knowledge required to assess and analyze test results to an appropriate level, the engineering characteristics and use of rock and soils. Students must have access to appropriate laboratory resources including examples of the common types of rock and soil. Students require access to current Codes of Practice and computer facilities for the analysis of test data.