

## Liverpool John Moores University

Title: GEOTECHNICS  
Status: Definitive  
Code: **5203CIV** (122929)  
Version Start Date: 01-08-2021

Owning School/Faculty: Civil Engineering and Built Environment  
Teaching School/Faculty: Civil Engineering and Built Environment

Team	Leader
Edward Loffill	Y
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**Academic Level:** FHEQ5  
**Credit Value:** 10  
**Total Delivered Hours:** 38.5  
**Total Learning Hours:** 100  
**Private Study:** 61.5

### Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	22
Practical	4
Tutorial	11

**Grading Basis:** 40 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Exam	AS1	EXAMINATION	100	1.5

### Aims

*To gain an advanced understanding of soil mechanics in engineering applications, and to apply this to the design of foundations and methods for slope stabilisation.*

### Learning Outcomes

After completing the module the student should be able to:

- 1 Evaluate the multiple reasons behind a geotechnical failure.
- 2 Apply the principles of site investigation to make suitable preliminary design choices.
- 3 Evaluate the significance of water in soils, its movement and effects upon soil properties and strength parameters under advanced conditions.
- 4 Proficiently assess the stability of slopes, foundations and earth retaining structures under effective stress conditions.
- 5 Apply appropriate codes to foundation design for short term and long term conditions.

### **Learning Outcomes of Assessments**

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

EXAMINATION	1	2	3	4	5
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### **Outline Syllabus**

*Slope stability in soils covering total and effective stress situations and different soil types. Slope stability in rock, weathering, pinning etc.*

*Lateral earth pressures in effective situations covering thrusts including Coulombs wedge theory, the use of appropriate codes for design and analysis and the different methods of providing stability in a lateral earth situation.*

*Cofferdam design.*

*Foundation design considering pad, strip and pile foundations in multiple different soil and water conditions to appropriate standards.*

*Stress analysis utilising best practice and current techniques to establish long-term effective ground analysis.*

### **Learning Activities**

Lectures/Tutorials/Practicals.

### **Notes**

The module develops knowledge and understanding of geotechnics, particularly with regard to long term conditions and the important influence of water on ground behaviour for civil engineering applications in analysis, design and construction. The module makes extensive use of mathematics and engineering principles, this is supported by lectures, case studies, tutorials and analytical exercises.