Module Descriptor Form

Civil and Environmental Engineering

EO207 - Civil Engineering Practice

Module Code	EO207	**Module Title**	Civil Engineering Practice				
Module Registrar	Hamilton, Dr Andrea						
Other Staff Involved	Dr Stella I Pytharouli (Lecturer), Mrs Sarah E Lavery (Lecturer)						
Credit Weighting	20	**Semester**	1	**Elective**	No	**Academic Level**	2
Pre-requisites							
Required for							

Module Format and Delivery (hours):

Lectures	Tutorials	Assignments	Labs	Private Study	Total
30	0	20	30	120	200

Educational Aim

This module aims to:

This module consists of two parts: (1) Engineering Surveying (wks 1-5, 8) and (2) Chemistry and Materials (wks 6 -7, 9-11).

The aim of Part (1) is to provide a basic understanding of (1) the concepts and application of land surveying for civil engineering purposes and (2) the use of coordinate systems and satellite geodesy in civil engineering projects.

The aim of Part (2) is to provide a basic understanding of chemistry (1), the structure of materials (2) the manufacturing process of some commonly used building materials (3) and their engineering properties (4).

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Syllabus

This module will teach the following:

The module will include the following:

Part 1: Engineering Surveying
Introduction to Land Surveying
Units and the use of map scale
Basic surveying principles
Calculation of azimuths
Theory of errors and survey statistics
Levelling, use of level and surveying staff, levelling procedure
Angle and distance measurement with use of total stations
Traverse surveying and adjustment
Topographic surveying and contour generation
Setting out engineering structures
Calculations of Earthworks, areas and volumes
Coordinate Systems and map projections
Introduction to Global Navigation Satellite Systems

Learning Outcomes

On Completion of the module, the student is expected to be able to:

LO: 1	Understand and quantify errors in measurements in land surveying.
LO: 2	Understand the basic surveying principles and apply them to successfully conduct a basic land survey.
LO: 3	Understand and correctly use surveying data (levelling data, angle and distance measurements, GNSS data).
LO: 4	Demonstrate a working knowledge of fundamental principles of chemistry and materials science.
LO: 5	Identify aspects of chemistry and materials science that link to the engineering properties and behaviour of materials.
LO: 6	Apply fundamentals of chemistry and materials science to solve engineering problems.

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

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Assessment of Learning Outcomes - Criteria

Learning Outcome: **1**

	Criteria
1	Be able to estimate and interpret statistical quantities in measurements in surveying.
2	Be able to apply the basic surveying principles to provide answers to simple surveying problems.

Learning Outcome: **2**

	Criteria
1	Be able to set up and use correctly basic surveying instruments, i.e. level and total station.
2	Be able to design an appropriate field strategy to address a problem in land surveying.
3	Be able to provide adequate answers to theoretical questions on the area of land surveying.

Learning Outcome: **3**

	Criteria
1	Be able to reduce heights from levelling data
2	Be able to reduce horizontal and vertical angles from measurements using a total station
3	Be able to calculate earthworks, areas and volumes, construct contours from land surveying data and understand the relationship between map distances and ground distances.
4	Be able to understand GNSS data and how decisions taken during processing of GNSS data can affect results.

Learning Outcome: **4**

	Criteria
1	Understand concepts from chemistry and materials science relevant to civil and environmental engineering
2	Link fundamental phenomena of chemistry and materials science to complex phenomena.
3	Apply theoretical principles of chemistry and materials science to complex, open-ended problems in civil and environmental engineering.

Learning Outcome: **5**

	Criteria
1	Develop a working knowledge of how basic principles affect complex engineering phenomena
2	Link complex engineering behaviour to fundamental science
3	Demonstrate this knowledge in the application of appropriate tests to engineering materials

Learning Outcome: **6**

	Criteria
1	Identify materials of interest to civil and environmental engineering and their fundamental physical properties
2	Determine the key aspects of fundamental chemistry and materials science that affect these materials
3	Apply this knowledge to explain how these materials are manufactured (including historic technologies) and manipulated by their environment.

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

To Pass the module, students need to gain a summative mark of: 40%

Description	Semester	Start Week	Duration	Weight	Submission Week	Linked Criteria
Practical Surveying lab on-campus wk3	1	3		5%	5	LO 1: C1 LO 2: C1, C2 LO 3: C1
online quiz wk6	1	6		5%	7	LO 4: C1 LO 5: C1 LO 6: C2
Assignment submission wk7	1	7		10%	8	LO 4: C2, C3 LO 5: C3
online quiz wk9 quiz 9.24	1	8		3%	9	LO 4: C1 LO 5: C2 LO 6: C1
online quiz wk9 quiz 9.19	1	8		3%	9	LO 4: C1 LO 5: C1
Practical Surveying lab on-campus wk8	1	8		5%	10	LO 1: C1 LO 2: C1, C2 LO 3: C2
lab report hand-in	1	10		10%	11	LO 5: C1, C2, C3
online quiz wk10 quiz 10.09	1	10		2%	11	LO 5: C1 LO 6: C1, C2, C3
online quiz wk10 quiz 10.20	1	10		2%	11	LO 5: C2 LO 6: C1, C2, C3
online quiz wk12 quiz 12.26	1	E		3%	E	LO 5: C1, C3 LO 6: C2
online quiz wk12 quiz 12.17	1	E		3%	E	LO 4: C2 LO 5: C1, C3
online quiz wk12 quiz 12.10	1	E		3%	E	LO 4: C1 LO 5: C1, C3
online quiz wk11 quiz 11.11	1	11		3%	E	LO 4: C1, C2, C3
online quiz wk 11 quiz 11.18	1	11		3%	E	LO 4: C1, C2, C3
Exam Part 1. Closed Book	1		2.00	40%	E	LO 1: C1, C2 LO 2: C2, C3 LO 3: C1, C2, C3, C4

Principles of Assessment Feedback

Principle 1: The assessment of the course has been designed to encourage student engagement and understanding. Formative online quizzes are designed in such a way so that feedback is provided to each student within minutes from the completion of the activity. Discussion of the course material between teacher & learner and between learners is encouraged in both online sessions and forums. Students are encouraged to collaborate in tutorials, lab reports and other formative exercises. However, it is emphasised that work submitted by students for summative assessment must be entirely their own work.

Principle 2: All assessments are marked in an appropriate, fair and transparent way with pre-specified marking criteria.

Principle 3: Marking criteria are clearly stated in each assessment brief, also on the course page on MyPlace.

Additional Information

Students must gain a summative mark of 40% for each individual Part, i.e. Part 1 AND Part 2, to pass the module. Students who fail any or both Parts of the module at the first attempt will be re-examined during the August diet on the Part they have failed. This re-examination will consist of an exam for Part 1 and entirely of coursework for Part 2. No marks from any previous attempts will be transferred to a new resit attempt.

Resit Procedure

Students who fail any or both Parts of the module at the first attempt will be re-examined during the August diet on the Part they have failed. This re-examination will consist of an exam for Part 1 and entirely of coursework for Part 2. No marks from any previous attempts will be transferred to a new resit attempt.

Recommended Reading

art 1:
Recommended Reading
Schoefield, W. and Breach, M. “Engineering Surveying”, 6th Edition (2007), Elsevier, ISBN-13: 978-0-7506-6949-8 (Electronic Access)
Expanded Reading List
Uren, J., Price, W.F. “Surveying for engineers”, 5th Edition (2010), Palgrave Macmillan, ISBN 9780230221574 (Hard copy available in Strathclyde library - D 526.9024 URE)
Grant, S. “Setting out for Construction: A practical Guide to Site Surveying” (2019), Costello House Publishing, ISBN 1916068405 (Hard copy available in Strathclyde library - D 692.5 GRA)
Bannister, A., Raymond S. and Baker, R. “Surveying”, 7th Edition (1998), Pearson-Prentice Hall, ISBN 0-582-30249-8 (Hard copies available in Strathclyde library - D 526.9 BAN)
Irvine, W. and MacLennan, F. “Surveying for Construction”, 5th Edition (2006), McGraw-Hill, ISBN 0077111144.

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Module Timetable

Week	Semester 1	Semester 2
0		
1		
2		
3		
4		
5	Lab 5%	
6		
7	Continuous 5%	
8	Continuous 10%	
9	Continuous 3%, Continuous 3%	
10	Lab 5%	
11	Continuous 2%, Continuous 2%, Continuous 10%	
E	Examination 40%, Continuous 3%, Continuous 3%, Continuous 3%, Continuous 3%, Continuous 3%	

Date of Last Modification

10-09-2025