University of the West of Scotland

Module Descriptor

Session: 2024/25

Title of Module: Digital Surveying & Field Experience			
Code: ENGG08015	**SCQF Level: 8 (Scottish Credit and Qualifications Framework)**	**Credit Points: 20**	**ECTS: 10 (European Credit Transfer Scheme)**
School:	School of Computing, Engineering and Physical Sciences		
Module Co-ordinator:	Djamalddine Boumezerane		

Summary of Module

This module is intended to give students the knowledge and skills to plan and practice surveying on construction sites. The module includes lectures and site work.

Students will learn about plane surveying; maps and plans; the work of the Ordnance Survey; surveying frameworks and detail surveys.

The use of tapes, theodolites, and levels are covered. Students develop skills to record their measurements, interpret them and the ability to assess the accuracy of their work.

Students will learn to establishing survey control frameworks by use of trilateration, traversing and triangulation. The students are introduced to National Grid and local co-ordinate systems in conjunction with the theory and use of Global Positioning Systems.

The presentation of information by plans, sections and analytical results is covered to develop communication skills. The theory and use of Geographical Information Systems are covered.

Digital techniques of surveying such as 3D scanning and Robotic Theodolites will be reviewed.

Students learn to apply their skills to setting out and monitoring of buildings, sewers, and road construction. Included in this is the determination of areas and volumes, resection, and the layout of curves.

Besides teaching and learning on campus the course includes a multi-day surveying field course. This involves significant use of the theodolite and level, analysis of results and preparation of drawings.

This module will support students to develop their UWS graduate attributes, namely: Academic (critical and analytical thinking, inquiring, knowledgeable, innovation, and problem solving); Personal (effective communicator, creative, imaginative); Professional (Collaborative, research-minded, and socially responsible).

- To develop an understanding and skill in the calculation procedures used for civil engineering surveying.
- To provide the opportunity for students to become competent users of civil engineering surveying equipment.
- To give students experience of working in a team to undertake civil engineering surveying.
- To give students experience in preparing civil engineering survey drawings.
- To expose students to digital techniques for surveying and setting out.

Module Delivery Method					
Face-To-Face	**Blended**	**Fully Online**	**HybridC**	**Hybrid 0**	**Work-Based Learning**
☒	☐	☐	☐	☐	☐
See Guidance Note for details.					

Campus(es) for Module Delivery						
The module will **normally** be offered on the following campuses / or by Distance/Online Learning: (Provided viable student numbers permit) (tick as appropriate)						
Paisley:	Ayr:	Dumfries:	Lanarkshire:	London:	Distance/Online Learning:	Other:
☒	☐	☐	☐	☐	☐	Add name

Term(s) for Module Delivery					
(Provided viable student numbers permit).					
Term 1	☐	Term 2	☒	Term 3	☐

Learning Outcomes: (maximum of 5 statements) **These should take cognisance of the SCQF level descriptors and be at the appropriate level for the module.** At the end of this module the student will be able to:	
L1	To gather, analyse and present construction survey information.
L2	To analyse construction situations and then determine and provide setting out solutions.
L3	To develop skills in the use of surveying equipment.
L4	To work in a team and complete surveying tasks.

Employability Skills and Personal Development Planning (PDP) Skills		
SCQF Headings	During completion of this module, there will be an opportunity to achieve core skills in:	
Knowledge and Understanding (K and U)	SCQF Level **8** • Demonstrate detailed knowledge and understanding of essential facts and principles of surveying especially the use of levels and theodolites.	
Practice: Applied Knowledge and Understanding	SCQF Level **8** • Develop practical surveying skills using the level and theodolite. • Be able to survey a framework, analyse and correct it as necessary and then set out works within this framework.	
Generic Cognitive skills	SCQF Level **8** • Be able to apply appropriate quantitative mathematical tools to the analysis of surveying problems. • Ability to define a problem and identify constraints. • Ability to obtain, interpret and apply the results of a detail survey.	
Communication, ICT and Numeracy Skills	SCQF Level **8** • Develop transferable skills in communication especially the communication of surveying information in drawings.	
Autonomy, Accountability and Working with others	SCQF Level **8** • Lab and field work is undertaken in groups to encourage team skills. • Autonomy and accountability are encouraged by setting absolute standards for the accuracy of the survey that must be met.	
Pre-requisites:	Before undertaking this module, the student should have undertaken the following:	
	Module Code:	**Module Title:**
	Other:	
Co-requisites	**Module Code:**	**Module Title:**

*Indicates that module descriptor is not published.

Learning and Teaching
In line with current learning and teaching principles, a 20-credit module includes 200 learning hours, normally including a minimum of 36 contact hours and maximum of 48 contact hours.

Learning Activities During completion of this module, the learning activities undertaken to achieve the module learning outcomes are stated below:	**Student Learning Hours** (Normally totalling 200 hours): (Note: Learning hours include both contact hours and hours spent on other learning activities)
Lecture/Core Content Delivery	12
Tutorial/Synchronous Support Activity	24
Laboratory/Practical Demonstration/Workshop	12
Independent Study	152
	200 Hours Total

****Indicative Resources: (eg. Core text, journals, internet access)**

The following materials form essential underpinning for the module content and ultimately for the learning outcomes:

Various handout material and materials on the University's VLE.

Irvine, W. and Maclennan F., "Surveying for construction", 5th Ed., McGraw-Hill, 2006. The University's VLE.

Schofield, W., "Engineering Surveying", 4th Ed., Butterworth-Heinemann, 1993.

(**N.B. Although reading lists should include current publications, students are advised (particularly for material marked with an asterisk*) to wait until the start of session for confirmation of the most up-to-date material)

Attendance and Engagement Requirements

In line with the Student Attendance and Engagement Procedure: Students are academically engaged if they are regularly attending and participating in timetabled on-campus and online teaching sessions, asynchronous online learning activities, course-related learning resources, and complete assessments and submit these on time.

For the purposes of this module, academic engagement equates to the following:

- Attending the lectures, tutorials, and field experience sessions.
- Engaging, participating, and delivering coursework, assignments in due time.

Equality and Diversity
The University's Equality, Diversity and Human Rights Procedure can be accessed at the following link: UWS Equality, Diversity and Human Rights Code. Please ensure any specific requirements are detailed in this section. Module Co-ordinators should consider the accessibility of their module for groups with protected characteristics..
(N.B. Every effort will be made by the University to accommodate any equality and diversity issues brought to the attention of the School)

Supplemental Information

Divisional Programme Board	Engineering
Assessment Results (Pass/Fail)	Yes ☐No ☒
School Assessment Board	Civil Engineering and Quality Management
Moderator	Shakun Paudel
External Examiner	Alison Robinson
Accreditation Details	This module is accredited by the Joint Board of Moderators as part of BEng (Hons) Civil Engineering.
Changes/Version Number	v3.09 April 2024: Assessment component 3 “Unseen open book” is replaced by “Unseen closed book class test”. Updated Learning and Teaching table to reflect module delivery. Updated assessment outcome grid. Previous changes v3.08 1. Section 5 - minor changes to module summary to remove reference to a residential field course.

	2. Section 5a - Added information about the purpose and scope of the module 3. Section 9 - Module delivery updated to include face-to-face and blended. 4. Section 12 - tidied up extension resources 5. Version number updated to 1.6 6. Last updated date changed

Assessment: (also refer to Assessment Outcomes Grids below)
Assessment 1: Coursework will consist of assignments and lab exercises (30%)
Assessment 2: Field Experience on a simulated construction site (20%)
Assessment 3: Unseen Closed Book Class Test (50%)
(N.B. (i) **Assessment Outcomes Grids** for the module (one for each component) can be found below which clearly demonstrate how the learning outcomes of the module will be assessed. (ii) An **indicative schedule** listing approximate times within the academic calendar when assessment is likely to feature will be provided within the Student Module Handbook.)

Assessment Outcome Grids (See Guidance Note)

Component 1						
Assessment Type (Footnote B.)	**Learning Outcome (1)**	**Learning Outcome (2)**	**Learning Outcome (3)**	**Learning Outcome (4)**	**Weighting (%) of Assessment Element**	**Timetabled Contact Hours**
Report of practical/ field/ clinical work	✓	✓	✓		10	4
Portfolio of practical work	✓	✓	✓		20	0

Component 2						
Assessment Type (Footnote B.)	**Learning Outcome (1)**	**Learning Outcome (2)**	**Learning Outcome (3)**	**Learning Outcome (4)**	**Weighting (%) of Assessment Element**	**Timetabled Contact Hours**
Clinical/ Fieldwork/ Practical skills assessment/ Debate/ Interview/ Viva voce/ Oral	✓	✓	✓	✓	15	24
Design/ Diagram/ Drawing/ Photograph/ Sketch and presentation	✓	✓	✓	✓	5	1

Component 3						
Assessment Type (Footnote B.)	**Learning Outcome (1)**	**Learning Outcome (2)**	**Learning Outcome (3)**	**Learning Outcome (4)**	**Weighting (%) of Assessment Element**	**Timetabled Contact Hours**
Unseen closed book class test	✓	✓	✓		50	2
Combined Total for All Components					**100%**	**31 hours**