Module Descriptor

Title	Digital Surveying & Field Experience		
Session	2025/26	**Status**	Published
Code	ENGG08015	**SCQF Level**	8
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	D 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	**On-Campus[1]** ☒	**Hybrid[2]** ☐	**Online[3]** ☐	**Work -Based Learning[4]** ☐
Campuses for Module Delivery	☐ Ayr ☐ Dumfries	☐ Lanarkshire ☐ London ☒ Paisley	☐ Online / Distance Learning ☐ Other (specify)	

Terms for Module Delivery	Term 1	☐	Term 2	☒	Term 3	☐
Long-thin Delivery over more than one Term	Term 1 – Term 2	☐	Term 2 – Term 3	☐	Term 3 – Term 1	☐

Learning Outcomes	
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.
L5	N/A

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 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 8** • Develop practical surveying skills using the level and theodolite.

[1] Where contact hours are synchronous/ live and take place fully on campus. Campus-based learning is focused on providing an interactive learning experience supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus contact hours will be clearly articulated to students.

[2] The module includes a combination of synchronous/ live on-campus and online learning events. These will be supported by a range of digitally-enabled asynchronous learning opportunities including learning materials, resources, and opportunities provided via the virtual learning environment. On-campus and online contact hours will be clearly articulated to students.

[3] Where all learning is solely delivered by web-based or internet-based technologies and the participants can engage in all learning activities through these means. All required contact hours will be clearly articulated to students.

[4] Learning activities where the main location for the learning experience is in the workplace. All required contact hours, whether online or on campus, will be clearly articulated to students

	• Be able to survey a framework, analyse and correct it as necessary and then set out works within this framework.
Generic Cognitive skills	**SCQF 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 8** • Develop transferable skills in communication especially the communication of surveying information in drawings.
Autonomy, Accountability and Working with Others	**SCQF 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.

Prerequisites	**Module Code**	**Module Title**
	Other	
Co-requisites	**Module Code**	**Module Title**

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** (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
n/a	0
n/a	0
TOTAL	200

Indicative Resources
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. (2006) Surveying for construction. 5th Edition: McGraw-Hill.

Schofield, W. (1993) Engineering Surveying. 4th Edition: Butterworth-Heinemann.

(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 Physical Sciences**
Overall Assessment Results	☐ **Pass / Fail** ☒ **Graded**
Module Eligible for Compensation	☐ **Yes** ☐ **No** **If this module is eligible for compensation, there may be cases where compensation is not permitted due to programme accreditation requirements. Please check the associated programme specification for details.**
School Assessment Board	Civil Engineering and Quality Management
Moderator	S Paudel
External Examiner	A Robinson
Accreditation Details	This module is accredited by the Joint Board of Moderators as part of BEng (Hons) Civil Engineering.
Module Appears in CPD catalogue	☐ **Yes** ☐ **No**
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.)

Component 1							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**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	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**

Clinical/ Fieldwork/ Practical skills assessment/ Debate/ Interview/ Viva voce/ Oral Design/ Diagram/ Drawing/ Photograph/ Sketch and presentation	☒	☒	☒	☒	☐	15 5	24 1

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Unseen closed book class test	☒	☒	☒	☐	☐	50	2
Combined total for all components						100%	31 hours

Change Control

What	**When**	**Who**