Module Descriptor

Title	Introduction to Engineering		
Session	2025/26	**Status**	Published
Code	ENGG07023	**SCQF Level**	7
Credit Points	20	**ECTS (European Credit Transfer Scheme)**	10
School	**Computing, Engineering and Physical Sciences**		
Module Co-ordinator	A Uzzaman		

Summary of Module

This module is designed to provide a foundation in general engineering, specifically in two broad areas, engineering science and engineering technical communications.

Engineering Science encompasses a significant breadth of content, and it is the intention of this module to introduce/consolidate the students' knowledge. Depending on the programme of study this content will possibly be expanded in later study. If this is the case, then it will provide a consistent platform from which all engineering programmes can appropriately extend from.

Materials Science: - properties and applications of engineering materials. Corrosion and corrosion protection.

Flow and Heat: - gas laws, thermodynamic laws, condensation; energy conservation.

Electricity: electromagnetic spectrum, electric charge, current, voltage, resistance; Ohm's law; circuits; AC circuits; magnetic effects of current; power; earthing; safety transistors; integrated circuits; difference between analogue and digital systems.

Properties of fluids; pressure, viscosity, density, buoyancy, the Archimedes effect and hydrostatic forces, and flow regimes.

Accurate and timely technical communication of ideas is critical to all engineering disciplines. Technical communication can take the form of oral, written and pictorial (manually or digitally created) for both technical and non-technical audiences. This module develops the technical communication knowledge, understanding and skills in the context of the specific engineering degree the students are undertaking. Due to the multidisciplinary nature of the module i.e. all engineering degree students undertake the module, students are made aware of the concept and implications of 'professional' (chartered) engineers and the role of Professional Engineering Institutions.

During the course of this module students will develop their UWS Graduate Attributes (https://www.uws.ac.uk/current-students/your-graduate-attributes/). Universal: Academic attributes - critical thinking and analytical & inquiring mind; Work-Ready: Academic attributes - discipline of deadlines in document submission; Successful: autonomous, driven and resilient. Workshops and sessions over the two terms will give students background in Intellectual Property, Innovation, Employability and Enterprise

This module has been reviewed and updated, taking cognisance of the University's Curriculum Framework principles. Examples of this are found within the module such as active and engaging laboratory and tutorial activity, module assessment which reflects industry problems/activities, development of digital intelligence meta-skills, recorded lecture content supporting students to organise their own study time, the use of integrated group activities supporting learning communities- particularly useful as this is a programme entry level module and the use of practical engineering workshops to provide authentic environments for assessment.

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	Select, critically evaluate and produce technical documentation using effective oral and written technical presentations whilst utilising appropriate toolsets for both technical and non-technical audiences.
L2	Summarise and apply knowledge of essential underpinning engineering science.
L3	Evaluate the environmental and societal impact of solutions to complex problems (to include the entire life cycle of a product or process) in order to minimise adverse impacts.
L4	Demonstrate technical, ethical and inclusive practice to ensure a projects positive environmental, social and economic impact.
L5	Identify the principal techniques, operations, equipment and potential safety concerns within engineering workshops & laboratories.

Employability Skills and Personal Development Planning (PDP) Skills

[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

SCQF Headings	During completion of this module, there will be an opportunity to achieve core skills in:
Knowledge and Understanding (K and U)	**SCQF 7** Knowledge and understanding of the basic principles of producing technical documentation in a number of forms. Knowledge and understanding of techniques, operations, equipment and potential safety concerns within workshops and laboratories. Knowledge and understanding of technical and ethical practices related to positive environmental, social and economic impact. Knowledge and understanding in the use of relevant materials, equipment and processes..
Practice: Applied Knowledge and Understanding	**SCQF 7** Demonstrate practical engineering presentation skills acquired through individual and group project work and the use of digital design packages for both technical and non- technical audiences. Interpret and produce technical literature/other information sources. Select and critically evaluate technical literature and other sources of information to solve complex problems. Evaluate the environmental and societal impact of solutions to complex problems (to include the entire life cycle of a product or process) and minimise adverse impacts. Demonstrate appropriate behaviours in a range of settings. Undertake risk assessments before carrying out basic laboratory and workshop activities.
Generic Cognitive skills	**SCQF 7** Develop transferable skills that will be of value in problem solving. Be able to apply appropriate engineering drawing skills to basic problems. Ability to read and interpret complex technical literature. Be able to apply appropriate quantitative science and engineering tools to complex problems.
Communication, ICT and Numeracy Skills	**SCQF 7** Develop transferable skills in oral and written communication the use of IT facilities and information retrieval skills. Be able to apply computer software relevant to engineering, construction and related disciplines. Awareness of security related to software and systems. Develop transferable skills in communication by presenting formative and summative assessments.
Autonomy, Accountability and Working with Others	**SCQF 7** Exercise autonomy and initiative in carrying out the defined activities at a professional level. Develop transferable skills that will be of value in a working with others. Function effectively as an individual, and as a member or leader of a team and be able to evaluate effectiveness of own and team performance.

	Adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion. Exercise autonomy and initiative in carrying out the defined activities at a professional level.

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. The learning and teaching for this module comprises a series of lectures, laboratories (practical and software) and tutorials.	
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	30
Tutorial / Synchronous Support Activity	6
Laboratory / Practical Demonstration / Workshop	1
Independent Study	163
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: The following materials form essential underpinning for the module content and ultimately for the learning outcomes: Manual Drawing Instruments and Drawing Boards Fundamentals of Material Science and Engineering, 10th edition SI Version, Callister, W.D. and D.G.Rethswisch, J. Wiley (2020). Fundamentals of Thermal-Fluid Sciences, 6th Edition, Cengel, Y. A, J M Cimbala and R H Turner, McGraw-Hill (2021). Principles of Electric Circuits: Pearson New International Edition: Conventional Current Version, 9/E by Thomas L Floyd (2013)
(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:** The School of Computing, Engineering and Physical Sciences considers attendance and engagement to mean a commitment to attending, and engaging in, timetabled sessions. Students will scan their attendance, via the attendance scanners, each time they are on-campus, they will have their attendance recorded in class and they will be expected to login to the VLE several times per week. Students who are unable to attend a timetabled session, due to illness or other circumstance, should notify their Programme Leader. Across the School an 80% attendance threshold is set. Students who fall below this, will be referred to the Student Success Team to see how they can be best supported in their studies.

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. Aligned with the University's commitment to equality and diversity, this module supports equality of opportunity for students from all backgrounds and learning needs. Using the VLE, material will be presented electronically in formats that allow flexible access and manipulation of content. This module complies with University regulations and guidance on inclusive learning and teaching practice. This module has lab-based teaching and as such you are advised to speak to the Module Co-ordinator to ensure that specialist assistive equipment, support provision and adjustment to assessment practice can be put in place, in accordance with the University's policies and regulations.
(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	Design
Moderator	O Obeid
External Examiner	B Bryant
Accreditation Details	This module is accredited by the Joint Board of Moderators (JBM) as part of the BEng (Hons) Civil Engineering, and BEng GA (Hons) in Civil Engineering. This module is also accredited by the IMechE as part of the MEng/BEng (Hons) in Mechanical Engineering, and the MEng/BEng (Hons) in Aircraft Engineering.

Module Appears in CPD catalogue	☐ **Yes** ☒ **No**
Changes / Version Number	1.01 Revised Module Descriptor copied to 2025/26 template, Attendance and Engagement and EDI statements updated. MM updated to O Obeid.

Assessment (also refer to Assessment Outcomes Grids below)
Assessment 1
Assessment Category 1: Class Test (Unseen, Closed Book), Weight – 50%
Assessment 2
Assessment Category 2: Design/Drawing (20%) and Laboratory (10%)
Assessment 3
Assessment Category 3: Group Report 10% and Group Presentation 10%
(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**
Unseen Closed Book (Class Test)	☐	☒	☐	☐	☐	50	2

Component 2							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Design/ Diagram/ Drawing/ Photograph/ Sketch/Laboratory/	☒	☐	☐	☐	☒	30	1

Component 3							
Assessment Type	**LO1**	**LO2**	**LO3**	**LO4**	**LO5**	**Weighting of Assessment Element (%)**	**Timetabled Contact Hours**
Report of practical/ field/ clinical work & Presentation	☒	☐	☒	☒	☐	20	0

Combined total for all components	100%	3 hours

Change Control

What	When	Who
Revised Module Descriptor copied to 2025/26 template, Attendance and Engagement and EDI statements updated.	March 2025	A. Uzzaman