



## MODULE SPECIFICATION

Part 1: Information			
Module Title	Engineering and Society		
Module Code	UFMFCL-15-3	Level	Level 6
For implementation from	2019-20		
UWE Credit Rating	15	ECTS Credit Rating	7.5
Faculty	Faculty of Environment & Technology	Field	Engineering, Design and Mathematics
Department	FET Dept of Engin Design & Mathematics		
Module type:	Standard		
Pre-requisites	None		
Excluded Combinations	Business Environment 2019-20		
Co- requisites	None		
Module Entry requirements	None		

Part 2: Description
<p><b>Overview:</b> This module provides a broad comprehension of the importance of professional development, lifelong learning and the competencies and social responsibilities required for 'engineering citizenship' in order to be a professional engineer.</p> <p>This module will introduce students to how engineering and wider Science, Technology, Engineering and Mathematics (STEM) concepts are viewed and communicated within society.</p> <p><b>Educational Aims:</b> Successful completion of this module will enable students to communicate engineering concepts to a variety of audiences in the future. Communication skills are essential both within a professional work context, and also to engage with communities and publics that are impacted by engineering projects and developments.</p> <p><b>Outline Syllabus:</b> Students are expected to demonstrate professional demeanour in all their dealings with external audiences, as would be expected in working towards Chartered Engineer status. In doing this, they will have exposure to a range of topics including the following:</p> <p>Science Communication and Public Engagement. Contemporary societal contexts for engineering. Pedagogical theories for teaching Science, Technology, Engineering and Mathematics in primary schools.</p>

## STUDENT AND ACADEMIC SERVICES

Relating at least two taught modules specific to their own academic programme of study (generally at level 2) to societal contexts appropriate for teachers and pupils, and vice-versa. Comparative analysis of engagement strategies for technologies and projects in different contexts in society.

Teamwork, partnership working and professional relations.

Relationships between academe and practice.

Project and time management.

Codes of practice, professional standards and workplace ethics.

Reflective practice and professional development. The practitioner as methodologist – lifelong learning in choosing, using, evaluating methods, techniques, tools and technologies.

Identification of career and personal goals to support employability.

**Teaching and Learning Methods:** Students will learn about a variety of engagement strategies utilised by professional organisations and Chartered Engineers. Students will get the opportunity to be taught by Professional Teaching Academics to explore pedagogical strategies to enable them to help others learn about engineering and STEM. The variety of audiences with which these skills can be practiced and explored will be outlined.

Engineering students are given the opportunity to pair with a fellow student professional (pre-service teachers BA Ed) in order to mentor each other on complementary skills and expertise. The paired peers will be given existing teaching materials to develop a lesson plan which is co-presented to primary school children. The students then experience a school placement in order to coach school pupils in the Engineering Design Process. Finally, the engineering students then work in groups to reflect on their experiences and apply their knowledge to other public engagement activities.

This module will combine class-based interactive lectures and workshops with experience in professional practice. It is expected students will enhance this with self-directed study.

**Scheduled Learning:**

Interactive lectures will outline key skills and considerations in science communication, teaching and on placement. Workshops will enable students to plan, develop and practice their communication skills.

**Placements:**

Students will work with a paired peer to deliver their STEM materials in primary schools. Students are expected to mentor the pupils to present their own material at a conference at UWE.

Feedback on the STEM materials and communications skills, plus in-class and online discussion of their reading and experiences will encourage peer review and critical analysis of the placements.

**Independent Learning:**

Students will be expected to read key texts to develop their skills, as well as watching experienced professionals deliver similar materials in their own time.

### Part 3: Assessment

The submission components have been designed to enable students to demonstrate, for the purposes of assessment, their acquisition of the skills, knowledge, understandings and experiences that will enable them to meet the learning outcomes for this module. These forms of assessment enable the student to build and demonstrate their understanding of some of the professional skills needed to communicate their work and ideas in appropriate professional formats.

The summative assessment will provide feedback on personal development for professional engineering competency achievements, whilst also reflecting on the benefits to the social responsibility aspects of being an engineer. These will consist of:

Group presentation (4-5 engineering students per group) to consider the communication and impact of engineering on society:

15 minute presentation in class-time to fellow students.

## STUDENT AND ACADEMIC SERVICES

Presentation submitted and group mark awarded (resit presentations will be individual) .

Individual final report and portfolio logbook - This will be a critical reflection of the student's placement and experience. This must include:

Report on placement and learning (2000 words)

Portfolio: Log book from placement submitted (consisting of e.g. research notes, lesson plans, photos and lesson notes); UK SPEC Skills Matrix to research competency development; Initial career plan.

Formative feedback takes place during the module and considers the quality of the student's reflective thinking and placement feedback on professional standards and achievements.

An individual log book is maintained over the whole module as a 'container' for academic outputs at regular intervals, as evidence of professional work in progress, and to track and reflect on professional and personal development.

Formative feedback:

Between peers within the teacher / engineer partnership.

Placement feedback from professional within the school context.

Feedback from engineers through a presentation to the class to share learning.

First Sit Components	Final Assessment	Element weighting	Description
Report - Component B		35 %	Report (2000 words)
Portfolio - Component B		35 %	Portfolio
Presentation - Component A	✓	30 %	Group presentation
Resit Components	Final Assessment	Element weighting	Description
Report - Component B		35 %	Report (2000 words)
Portfolio - Component B		35 %	Portfolio
Presentation - Component A	✓	30 %	Individual Presentation

STUDENT AND ACADEMIC SERVICES

<b>Part 4: Teaching and Learning Methods</b>																							
Learning Outcomes	<p>On successful completion of this module students will achieve the following learning outcomes:</p> <table border="1"> <thead> <tr> <th style="text-align: left;"><b>Module Learning Outcomes</b></th> <th style="text-align: left;"><b>Reference</b></th> </tr> </thead> <tbody> <tr> <td>Understand and critique science communication and public engagement strategies</td> <td>MO1</td> </tr> <tr> <td>Understand and critique pedagogical theories and strategies</td> <td>MO2</td> </tr> <tr> <td>Demonstrate an ability to design, plan, communicate and deliver STEM concepts to two different audiences (paired teachers and primary school pupils)</td> <td>MO3</td> </tr> <tr> <td>Develop an awareness of ethics and risk assessment when in professional practice</td> <td>MO4</td> </tr> <tr> <td>Critically reflect on the strategies used and the experiences undertaken</td> <td>MO5</td> </tr> <tr> <td>Action plan for their future career and personal goals in employment</td> <td>MO6</td> </tr> </tbody> </table>	<b>Module Learning Outcomes</b>	<b>Reference</b>	Understand and critique science communication and public engagement strategies	MO1	Understand and critique pedagogical theories and strategies	MO2	Demonstrate an ability to design, plan, communicate and deliver STEM concepts to two different audiences (paired teachers and primary school pupils)	MO3	Develop an awareness of ethics and risk assessment when in professional practice	MO4	Critically reflect on the strategies used and the experiences undertaken	MO5	Action plan for their future career and personal goals in employment	MO6								
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Reading List	<p><i>The reading list for this module can be accessed via the following link:</i></p> <p><a href="https://uwe.rl.talis.com/modules/ufmfcl-15-3.html">https://uwe.rl.talis.com/modules/ufmfcl-15-3.html</a></p>																						

<b>Part 5: Contributes Towards</b>
This module contributes towards the following programmes of study: