



Module Specification

Sustainable Engineering for Global Challenges [TSI]

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Contents

Module Specification	1
Part 1: Information	2
Part 2: Description	2
Part 3: Teaching and learning methods	4
Part 4: Assessment.....	5
Part 5: Contributes towards	6

Part 1: Information

Module title: Sustainable Engineering for Global Challenges [TSI]

Module code: UFMFSY-6-M

Level: Level 7

For implementation from: 2023-24

UWE credit rating: 6

ECTS credit rating: 3

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: Transport and Telecommunication Institute

Field: Engineering, Design and Mathematics

Module type: Module

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: By studying this module, students will be equipped with advance knowledge, tools and techniques to identify social-economic impact of global challenges and identify appropriate strategies that delivers long-term benefits for both their business and the world as a whole.

Through engaging in project work and real sustainable engineering case studies, this module will prepare students to:

Recognise the complexity of our interconnected world

Understand the socioeconomic impact of global challenges

Recognise their role as technology/engineering managers in providing solutions to global challenges

Understand the ethical, moral and legal responsibilities of their decision and conduct towards providing sustainable engineering solutions to global challenges

Solve complex global challenges through innovative engineering and entrepreneurship

Develop global mind-set by working in diverse and multicultural teams

Features: Not applicable

Educational aims: The aim of this module is to ensure students are aware of the major global issues facing society and organisations and the potential for engineering-based solutions.

Outline syllabus: This module will cover the following themes:

Global Sustainable Development goals

Engineering innovation and the future

The global challenges of carbon emissions

Environmental impact analyses

Data management and sustainable development goals

Ethics and sustainable development for engineering solutions

Part 3: Teaching and learning methods

Teaching and learning methods: The module is made up of 2 teaching and learning components: scheduled lectures and tutorials which involve activity based learning via workshops and discussions.

During tutorials, students will consider real-world sustainability challenges through case study analysis and group presentations. Through the evidence from case analysis, students will take the role of either middle, a senior manager or an engineer and make recommendations on the best approach to align organisation strategy to support sustainability initiatives.

Case method teaching immerses students into realistic global challenges and help them to analyse current global issues and at the same time work in a team and apply critical thinking skill in creating innovative engineering solutions that supports the creation of a better world.

Module Learning outcomes: On successful completion of this module students will achieve the following learning outcomes.

MO1 Conduct, synthesise and critically evaluate professionally relevant information, arguments and assumptions of a selected global challenge

MO2 Apply theoretical knowledge, critical thinking and problem solving skills and analyse complex information in a specific global context

MO3 Demonstrate systematic knowledge and critical understanding of your chosen topic in a form of practical yet sustainable recommendations

MO4 Demonstrate independent leadership qualities via planning, monitoring and evaluating significant constraints, barriers and opportunities

MO5 Demonstrate the requirements of professional standards of consultancy report and presentations

Hours to be allocated: 60

Contact hours:

Independent study/self-guided study = 56 hours

Face-to-face learning = 24 hours

Total = 80

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link

<https://rl.talis.com/3/uwe/lists/ECD104EB-7A09-3369-52AB-BB97DD633F56.html?lang=en-GB&login=1>

Part 4: Assessment

Assessment strategy: Group presentation

A controlled assessment consists of 15 minutes group presentation to the tutors to demonstrate managerial level of communication of a complex multifaceted problem.

Group Report

Students will identify one sustainable development goal and analyse where an organisation, of their choice, is today in delivering the sustainable development goal. The students will identify the key elements and factors that hinder or facilitate the achievement of the identified sustainable goals and make recommendations on the way forward using engineering and innovative solutions.

Both assessments are designed to encourage students to evaluate the theoretical concepts encountered within the module and apply them to a real-world problem.

Assessment tasks:**Presentation (First Sit)**

Description: Presentation

Weighting: 25 %

Final assessment: No

Group work: Yes

Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Written Assignment (First Sit)

Description: Written assignment

Weighting: 75 %

Final assessment: Yes

Group work: Yes

Learning outcomes tested: MO1, MO2, MO3, MO5

Presentation (Resit)

Description: Presentation

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested:

Written Assignment (Resit)

Description: Written assignment

Weighting: 75 %

Final assessment: No

Group work: No

Learning outcomes tested:

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Aviation Management and Sustainability {Double Degree} [TSI] MSc 2023-24