Module Specification

Sustainable Engineering for Global Challenges

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Contents

Part 1: Information

Module title: Sustainable Engineering for Global Challenges

Module code: UFMFBM-30-M

Level: Level 7

For implementation from: 2023-24

UWE credit rating: 30

ECTS credit rating: 15

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: None

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: Students will experience 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 that will convince a critical mass of key employees 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: 300

Contact hours:

Independent study/self-guided study = 230 hours

Face-to-face learning = 70 hours

Total = 300

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link https://uwe.rl.talis.com/modules/ufmfbm-30-m.html

Part 4: Assessment

Assessment strategy: The assessment for this module is as follows:

A controlled element consists of 15 minutes individual presentation to the tutors to demonstrate managerial level of communication of a complex multifaceted problem. It provides an opportunity for individuals to develop independent leadership qualities through demonstrating critical understanding of the challenge.

A group report of 3000 words in length. Students will identify one sustainable development goal and analyse where the world, a region or a country 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.

A transparent published method is in place for identifying students' contribution to group work. This peer assessed process is moderated by the module leader.

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

A peer review process will be applied to group work assessment in accordance with the Department Group Work Policy.

Resit is the same as the first sit

Resit deliverable(s) will be scaled appropriately to group size and task complexity

Assessment tasks:

Presentation (First Sit)
Description: Individual presentation (15 minutes)
Weighting: 25 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Report (First Sit)
Description: Group report (3000 words)
Weighting: 75 %
Final assessment: No
Group work: Yes
Learning outcomes tested: MO1, MO2, MO3, MO5

Presentation (Resit)
Description: Individual presentation (15 minutes)
Weighting: 25 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2, MO3, MO4, MO5

Report (Resit)
Description: Group report (3000 words)

Resit deliverable(s) will be scaled appropriately to group size and task complexity
Weighting: 75 %
Final assessment: No
Group work: Yes
Learning outcomes tested: MO1, MO2, MO3, MO5

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Engineering Management [Frenchay] MSc 2023-24

Engineering Management [GCET] MSc 2023-24

Engineering Management [Frenchay] MSc 2022-23

Engineering Management [GCET] MSc 2022-23