Module Specification

The Professional Mathematical Scientist 2

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Contents

Part 1: Information

Module title: The Professional Mathematical Scientist 2

Module code: UFMFQV-15-2

Level: Level 5

For implementation from: 2021-22

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Environment & Technology

Department: FET Dept of Engineering Design & Mathematics

Partner institutions: None

Delivery locations: Frenchay Campus

Field: Engineering, Design and Mathematics

Module type: Standard

Pre-requisites: None

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: The goal of this module is to further develop students' professional skills, preparing them for graduate employment or post-graduate study in a mathematical field. It will focus on developing essential problem-solving skills and team-working skills, through exposure to unstructured problems that replicate the challenges faced by professional mathematicians in a wide variety of professional contexts. This

module will also develop student's awareness of the ethical issues relating to the how mathematics impacts the world through case studies and field trips.

Features: Not applicable

Educational aims: Students will enhance their professional skills through participation in workshops, active learning and team projects. They will be expected to present solutions to problems of varying complexity, to both an expert and non-expert audience, communicating their findings through a variety of appropriate media. The module will be enhanced by sessions run by professional services, employers, researchers and alumni.

Outline syllabus: This module will complement the material taught on other modules, where challenges and active learning help students to further develop their skills in mathematical modelling, computational thinking and statistical reasoning.

It will also develop their transferrable skills such as critical and creative thinking, communication, innovation, problem solving, and collaboration. The overall aim is to help students become innovative mathematical scientists who not only have the technical knowledge and experience to participate in key emerging industries or continue onto post-graduate study in a mathematical discipline, but possess the ability to assess the human and global impact of their discipline.

Part 3: Teaching and learning methods

Teaching and learning methods: The module content will be delivered through seminars and workshops with students expected to follow-up themes and topics presented each week with independent study tasks.

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

> **MO1** Implement the Modelling cycle to solve a variety of unstructured problems using mathematical methods. On successful completion of this module students will achieve the following learning outcomes.

MO2 Plan and conduct a mathematical enquiry in a professional fashion. On successful completion of this module students will achieve the following learning outcomes.

MO3 Write programs in an appropriate computer language, and apply appropriate software, to solve various unstructured mathematical problems. On successful completion of this module students will achieve the following learning outcomes.

MO4 Reflect on the cultural, ethical or sustainability impact of mathematical applications and demonstrate an awareness of the career pathways open to mathematics graduates. On successful completion of this module students will achieve the following learning outcomes.

MO5 Communicate the findings of a mathematical investigation to a specified audience.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

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

Part 4: Assessment

Assessment strategy: The module will be assessed by two components designed to encourage students to reflection on their development of personal attributes and professional skills as related to the professional mathematical scientist.

Component A
Students will continue to develop an awareness of how they are developing core skills across their programme by completing a skills portfolio. This will require them

to identify where they have acquired these skills, as well as providing evidence, and reflecting on what they need to do in order to further improve their skills.

Students will be expected to develop these skills outside of their core programme by attending activities, which will include (but is not limited to) library workshops, field trips, seminars, talks, programming courses, career awareness and development.

Students will be expected to reflect critically on activities, through a written reflection which will form part of the portfolio.

Component B
Students undertake a group project design from a selection, designed to reflect the interest of students and varied role of the mathematical scientist in a commerical or research environment.

Presentations will include an individual component and peer assessment.

Assessment components:

Project - Component A (First Sit)
Description: Written group report plus group presentation (max 8 page report + 20 minute group presentation)
Weighting: 75 %
Final assessment: No
Group work: Yes
Learning outcomes tested: MO1, MO2, MO3, MO5

Portfolio - Component B (First Sit)
Description: Completion of tasks set out in a module workbook equivalent to 1500 words (max)
Weighting: 25 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO4

Project - Component A (Resit)

Description: Individual report plus presentation (6 page report plus 10 minute presentation)

Weighting: 75 %

Final assessment: No

Group work: No

Learning outcomes tested: MO1, MO2, MO3, MO5

Portfolio - Component B (Resit)

Description: Completion of tasks set out in a module workbook equivalent to 1500 words (max)

Weighting: 25 %

Final assessment: No

Group work: No

Learning outcomes tested: MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Mathematics [Sep][FT][Frenchay][3yrs] BSc (Hons) 2020-21

Mathematics [Sep][SW][Frenchay][4yrs] BSc (Hons) 2020-21