Module Specification

Further Programming for Data Science

Version: 2026-27, v1.0, Approved

Contents

Part 1: Information

Module title: Further Programming for Data Science

Module code: UFCEKG-15-2

Level: Level 5

For implementation from: 2026-27

UWE credit rating: 15

ECTS credit rating: 7.5

College: College of Arts, Technology and Environment

School: CATE School of Computing and Creative Technologies

Partner institutions: None

Field: Computer Science and Creative Technologies

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: In this module we will build on the knowledge and skills from the Introduction to Programming for Data Science module. We will study programming and software development techniques which can help us investigate data science problems.

Features: Not applicable

Educational aims: This module aims to introduce further programming and software development skills in the context of data science.

Outline syllabus: This module builds on the knowledge and skills from the module Introduction to Programming for Data Science (or equivalent).

The list below is indicative of the kind of topics that could be covered.

Programming concepts such as: exceptions, modules and packages, classes and object oriented programming, functional programming, recursion.

Computational complexity analysis, profiling, accuracy of numerical computations, convergence of iterative methods, conditioning of problems and stability of numerical methods.

More sophisticated use of functions, data structures.

Further exploration of libraries that are useful for solving data science problems.

Software development tools and techniques, such as version control, debuggers, unit testing, property-based testing, integrated development environments, iterative development.

Part 3: Teaching and learning methods

Teaching and learning methods: Weekly workshops in computer labs. The workshops may include demonstrations, group discussion of programs and students working on problems.

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

> **MO1** Explain, use, analyse and compare programming language concepts, data structures and programming approaches for data science problems.

MO2 Design, write, test and document programs for solving data science problems.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

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/289F8A45-E6D0-82E5-FE99-CE9F64938653.html?lang=en-GB&login=1

Part 4: Assessment

Assessment strategy: The assessment for this module is a single assignment in which students will demonstrate that they can write code to solve data science problems.

The assessment will be a set of exercises and problems. The student will submit a report that uses a prescribed format (typically a Jupyter Notebook file) containing solutions with explanations, code and documentation.

The resit assessment will have the same format as the first sit assessment.

Assessment tasks:

Report (First Sit)
Description: A report summarising a set of programming exercises (2000 - 3000 words)
Weighting: 100 %
Final assessment: Yes
Group work: No
Learning outcomes tested: MO1, MO2

Report (Resit)

Description: A report summarising a set of programming exercises (2000 - 3000 words)

Weighting: 100 %

Final assessment: Yes

Group work: No

Learning outcomes tested: MO1, MO2

Part 5: Contributes towards

This module contributes towards the following programmes of study:

Data Science [Frenchay] BSc (Hons) 2025-26