

Liverpool John Moores University

Title: PROGRAMMING FOR ENVIRONMENTAL SCIENTISTS
Status: Definitive
Code: **7120NATSCI** (125687)
Version Start Date: 01-08-2020

Owning School/Faculty: Biological and Environmental Sciences
Teaching School/Faculty: Biological and Environmental Sciences

Team	Leader
Ian Walkington	Y

Academic Level: FHEQ7 **Credit Value:** 20 **Total Delivered Hours:** 40

Total Learning Hours: 200 **Private Study:** 160

Delivery Options

Course typically offered: Semester 2

Component	Contact Hours
Lecture	10
Practical	26
Workshop	4

Grading Basis: 50 %

Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Portfolio	Portfolio	Portfolio of Matlab code	50	
Portfolio	Portfolio	Portfolio of Python code	50	

Aims

To provide students with program comprehension and program-generation skills in both Matlab and Python coding languages and the knowledge and understanding of the usefulness of programming in environmental science.

Learning Outcomes

After completing the module the student should be able to:

- 1 Interpret and evaluate Matlab code (program comprehension)
- 2 Interpret and evaluate Python code (program comprehension)
- 3 Develop code in Matlab to solve a problem (program-generation)
- 4 Develop code in Python to solve a problem (program-generation)
- 5 Evaluate the usefulness and importance of programming languages in environmental science applications

Learning Outcomes of Assessments

The assessment item list is assessed via the learning outcomes listed:

Portfolio of Matlab code	1	3	5
Portfolio of Python code	2	4	5

Outline Syllabus

Matlab:

Basic concepts (syntax, variables, arrays, arithmetic calculations), plotting and 2D images, script files and functions, decision making, loops, data processing and visualisation

Python:

Syntax, variables and types, lists, basic operators, string formatting, basic string operations, conditions, functions, loops, classes and objects, dictionaries, modules and packages, managing the operating system, automated data retrieval, data visualisation

Learning Activities

The module will be taught by a combination of lectures, workshops and computer practical sessions. The coding portfolio assessments will relate to practicals in which students will need to produce their own code. The final part of the coding portfolios will involve students manipulating data for a specific environmental science application.

Notes

Students will be taught mainly by practical Matlab and Python coding sessions. They will be assessed via submission of individual code associated with practicals sessions with the final piece of code being centred around an environmental science application.