MODULE SPECIFICATION

This module is a compulsory module of the new MSc Health Data Science. The module specification has been provisionally agreed as part of the validation process for the MSc. Module Organisers are currently developing the details of the teaching to ensure the best possible learning experience and therefore some changes may still be made. We anticipate that the final module specifications will be published by the end of the summer.

1. Overview

Academic Year (student cohort covered by specification)	2020-21			
Module Code	2486			
Module Title	Programming			
Module Organiser(s)	Antonio Gasparrini and Nicholas Furnham			
Faculty	Epidemiology & Population Health			
FHEQ Level	Level 7			
Credit Value	CATS	10	ECTS	5
HECoS Code	100956			
Term of Delivery	Term 1			
Mode of Delivery	Face-to-face			
Mode of Study	Full-time			
Language of Study	English			
Pre-Requisites	None, over and above the pre-requisites for the programme MSc Health Data Science			
Accreditation by Professional Statutory and Regulatory Body	None			
Module Cap (Maximum number of students)	In first year of delivery: max 20 students.			
Target Audience	This module is compulsory for the MSc Health Data Science			

Module Description	An introduction to the concepts and practicalities of programming as implemented in two popular programming languages, Python and R.
Duration	15 x 0.5 day sessions
Timetabling slot	Term 1
Last Revised (e.g. year changes approved)	December 2019

2. Programme(s) that this module is part of

Programme(s) This module is linked to the following programme(s)	Status
MSc Health Data Science	Compulsory

3. Module Aim and Intended Learning Outcomes

Overall aim of the module
The overall module aim is to: • introduce students to the concepts and practicalities of programming in Python and R.

Module Intended Learning Outcomes
Upon successful completion of the module a student will be able to: 1. critically evaluate the strengths and limitations of R and Python; 2. examine the core features of good programming practice and implement them in both R and Python; 3. devise solutions to complex programming problems using help facilities and on-line resources in R and Python; 4. analyse the steps needed to solve a given programming problem and construct programs to address the problem using both R and Python.

4. Indicative Syllabus

Session Content
The module is expected to cover the following topics: • An introduction to the general concepts of programming. • An introduction to the statistical package R. • An introduction to Python programming language.

5. Teaching and Learning

Notional Learning Hours		
Type of Learning Time	**Number of Hours**	**Expressed as Percentage (%)**
Contact time	40	40
Directed self-study	30	30
Self-directed learning	20	20
Assessment, review and revision	10	10
Total	**100**	**100**

Teaching and Learning Strategy
Each session will consist of a series of short presentations followed by supervised computer work. The computer work will involve material that the students can work through at their own pace during each session followed by exercises.

Indicative Breakdown of Contact Time:

Type of delivery	Total (hours)
Lecture	10
Seminar	0
Tutorial	0
Computer Practical	30
Laboratory Practical	0
Fieldwork	0
Project Supervision	0
Total	**40**

6. Assessment

Assessment Strategy
The summative assessment will be via an individual assignment to re-write and extend one of the example exercises in R and implement it in Python. The assessment will be marked based on both the quality of the written code as well as the successful implementation of the assignment.

Formative assessment provided by individual feedback during the supervised computer work sessions. These sessions will explore the example exercise that the summative assessment is based on. |

Summative assessment			
Assessment Type	**Assessment Length (i.e. Word Count, Length of presentation in minutes)**	**Weighting (%)**	**Intended Module Learning Outcomes Tested**
Coursework	~200 lines of python code and documentation	100	1- 4

Resitting assessment		
Resits will accord with the LSHTM's [Resits Policy in Chapter 8a, PGT Regulations, of the Academic Manual](#) For individual students resitting a group assessment there will be an approved alternative assessment as detailed below.		
Assessment being replaced	**Approved Alternative Assessment Type**	**Approved Alternative Assessment Length** (i.e. Word Count, Length of presentation in minutes)
NA – no assessed group work		

7. Resources

Indicative reading list
Data Science from Scratch: First Principles with Python, Joel Grus, O'Reilly, 2nd Ed.   Population Health Data Science with R. Transforming data into actionable knowledge, Tomas J Aragon. [Free online] https://bookdown.org/medepi/phds/   **Other resources**   Module information, including timetables, lecture notes, practical instructions and key literature for each session will be made available via the Virtual Learning Environment (Moodle).

8. Teaching for Disabilities and Learning Differences

All module information, including example datasets and practical instructions, will be made available on the Virtual Learning Environment (Moodle) in advance of each session. Materials will be checked for accessibility following the LSHTM Technology Enhanced Learning guidance.