MODULE TITLE	Programming for Business Analytics				**CREDIT VALUE**	15
MODULE CODE	BEMM458		**MODULE CONVENOR**		**David Lopez**	
DURATION	**TERM**	**1**	**2**	**3**	**Number Students Taking Module (anticipated)**	
	WEEKS	12				

DESCRIPTION – summary of the module content (100 words)

In this module you will learn fundamental programming skills that enable you to search and sort data. You will be introduced to programming in Python, and will learn how to develop and run programmes in Jupyter Notebooks. You will learn key programming principles and will practice applying them to real business problems. These skills will form the basis of your ability to address business problems using data.

MODULE AIMS – intentions of the module

This module aims to give a comprehensive introduction to the programming skills that underpin Business Analytics and Data Science. You will learn to:

- Understand the role that programming plays in a Business Analytics context
- Be confident writing, testing and debugging procedural and functional programmes in Python.
- Import and process data using Python
- Understand the principles of object oriented programming for Python

INTENDED LEARNING OUTCOMES (ILOs) (see assessment section below for how ILOs will be assessed)
On successful completion of this module **you should be able to**:

Module Specific Skills and Knowledge:	
1	P1: Demonstrate knowledge and understanding of fundamental, and domain-specific, analytics methods and tools.
2	P5: Create, manage, interrogate, interpret and visualise data from a wide range of different sources, types and including structured and unstructured forms.
Discipline Specific Skills and Knowledge:	
3	P6: Critically analyse the use of data within a business context, identifying strengths and limitations.
4	P7: Critically analyse and interpret relevant academic, technical and industry literature.
Personal and Key Transferable/ Employment Skills and Knowledge:	
5	P14: Technological and digital literacy: Our graduates are able to use technologies to source, process and communicate information.

SYLLABUS PLAN – summary of the structure and academic content of the module

The following content will be covered during the course.

- Introduction to solving problems using software programming
- Introduction to Python and Pandas library
- Functions
- Control Structures
- Sequences and iteration
- Data types and structures for Python
- Data manipulation using Python and Pandas
- Developing more complex programmes using Python
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LEARNING AND TEACHING

LEARNING ACTIVITIES AND TEACHING METHODS (given in hours of study time)					
Scheduled Learning and Teaching activities	36	Guided independent study	114	Placement/study abroad	n/a

DETAILS OF LEARNING ACTIVITIES AND TEACHING METHODS		
Category	Hours of study time	Description
Schedules Learning and Teaching Activity	12	Scheduled lectures
Schedules Learning and Teaching Activity	24	Scheduled labs and practical workshops
Guided independent study	24	Structured sessions and practical exercises via online resources, for example, Datacamp
Guided independent study	60	Guided reading and practice of technical skills
Guided independent study	30	Completion of coursework assessments

ASSESSMENT

FORMATIVE ASSESSMENT - for feedback and development purposes; does not count towards module grade

Form of Assessment	Size of the assessment e.g. duration/length	ILOs assessed	Feedback method
In class quizzes	During each class	1, 2, 3, 4, 5	Oral – in class
A bank of coding challenges to give formative feedback to students	During the week	1, 2, 3, 4, 5	Oral – in class

SUMMATIVE ASSESSMENT (% of credit)					
Coursework	0%	Written exams	70%	Practical exams	30%

DETAILS OF SUMMATIVE ASSESSMENT				
Form of Assessment	% of credit	Size of the assessment e.g. duration/length	ILOs assessed	Feedback method
In class test	30%	2 hr lab based, open-book practical exam	1, 2, 3, 4, 5	Written
Final Assignment	70%	Written assignment to be delivered two weeks after the end of the module	1, 2, 3, 4, 5	Written

DETAILS OF RE-ASSESSMENT (where required by referral or deferral)

Original form of assessment	Form of re-assessment	ILOs re-assessed	Time scale for re-assessment
In class test	In class test (30%)	1, 2, 3, 4, 5	Summer reassessment period
Final Assignment	Final Assignment (70%)	1, 2, 3, 4, 5	Summer reassessment period

RE-ASSESSMENT NOTES

Re-assessment will be in nature to the original assessment, but the topic, data, and materials must be new.

Deferral – if you miss an assessment for certificated reasons judged acceptable by the Mitigation Committee, you will normally be either deferred in the assessment or an extension may be granted. The mark given for a reassessment taken as a result of deferral will not be capped and will be treated as it would be if it were your first attempt at the assessment.

Referral – if you have failed the module overall (i.e. a final overall module mark of less than 50%) you will be required to re-take some or all parts of the assessment, as decided by the Module Convenor. The final mark given for a module where re-assessment was taken as a result of referral will be capped at 50%.

RESOURCES

INDICATIVE LEARNING RESOURCES - The following list is offered as an indication of the type and level of information that you are expected to consult. Further guidance will be provided by the Module Convenor.

The following book is a useful resource for this course. It is freely available online, and also available in printed format in the university library:

Think Python, Allen B, Downey, O'Reilly, second edition

The following book provides a gentle introduction to data analysis using pandas, a useful python module widely used by the data science community.

Pandas for Everyone: Python Data Analysis, Daniel Y. Chen, O'Reilly, first edition

There are further useful resources on the Python and R websites. Further information and resources for the Jupyter Notebook interactive development environment are available on the Jupyter website.

You will find information about how to install Python, R, and Jupyter Notebook on the module ELE pages. It also contains further information about other IDE's, code editors and other useful tools for programming.

CREDIT VALUE	15	**ECTS VALUE**	**7.5**
PRE-REQUISITE MODULES	n/a		
CO-REQUISITE MODULES	n/a		
NQF LEVEL (FHEQ)	7	**AVAILABLE AS DISTANCE LEARNING**	Yes
ORIGIN DATE	Jan 2020	**LAST REVISION DATE**	15/06/2021
KEY WORDS SEARCH	Python, Programming, Analytic, Data Science		