

Basic details

UID		Cohorts covered	Earliest cohort 2025-26
Long title	Fundamentals of Python		
New code	ELEC70137	New short title	
Brief description of module (approx. 600 chars.)	This module introduces the theory, state-of-the-art algorithms, and some of the applications of machine learning. You learn to explore the assumptions needed to learn concepts from past observations and then learn about some of the most popular supervised and unsupervised learning schemes. The module also discuss applications in finance and healthcare. This module also serves as an introduction to the Python programming language, with the goal of becoming proficient in organising and writing medium-sized programmes for practical problem-solving via machine learning. Accordingly, this module also covers debugging and good programming practices, including the Git/GitHub approach to version control and integration		
Available as a standalone module/ short course?	N		

Statutory details

	ECTS	CATS	Non-credit	HECOS codes
Credit value	5	10	N	
FHEQ level	Level 7			

Allocation of study hours

	Hours	
Lectures	20	
Group teaching	5	<i>Incl. seminars, tutorials, problem classes.</i>
Lab/ practical	0	
Other scheduled	0	<i>Incl. project supervision, fieldwork, external visits.</i>
Independent study	100	<i>Incl. wider reading/ practice, follow-up work, completion of assess</i>
Placement	0	<i>Incl. work-based learning and study that occurs overseas.</i>
Total hours	125	
ECTS ratio	25.00	

Project/placement activity

Is placement activity allowed?	No
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Module delivery

Delivery mode	Taught/ Campus	Other	
Delivery term	Term 1	Other	

Ownership

Primary department	Imperial College Business School
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Additional teaching departments	

Delivery campus	White City
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Collaborative delivery

Collaborative delivery?	N
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External institution	N/A
External department	N/A
External campus	N/A

Associated staff

Role	CID	Given name	Surname
Module Leader		Ryan	Cory-Wright

Learning and teaching

Module description

Learning outcomes	On successful completion of the module, you will be able to: •Understand basic algorithms (such as search, sorting, and shortest paths) and data structures (such as arrays, lists, and graphs) and their representation in a programming language. •Summarise why and how we analyse the efficiency of algorithms and data structures, as well as the workings of basic algorithms for problems like sorting, sorting and shortest paths. •Describe the process of moving from a problem statement to formulating a computational solution method. •Read, design, and implement medium-sized programs in Python.
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Module content	This module will cover: -Algorithms and computational thinking -Search and sorting algorithms; -Data structures such as arrays, lists and graphs -Representing networks with graph data structures; shortest-path problems -Core programming concepts in Python including operators, variables, types, conditions, loops, functions, collections, file operations, exceptions, classes and object-oriented programming, the Python standard library -Good programming practices and debugging -Python data analytics libraries including numpy, pandas, matplotlib.
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Learning and Teaching Approach	Teaching is delivered by 10 x 2 hour interactive lectures focused on ensuring the acquisition of knowledge and facts, as well as the development of critical appreciation of the learnt theory and concepts and how these can be applied to real-world contexts. Lectures will be supported by TA led tutorials designed to regularly check and enhance your understanding of material, provide guided practice problem solving and generally support your achievement of the learning outcomes.
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Assessment Strategy	This module is assessed by a individual problem set (25%), individual completion of Python notebooks participation in tutorials (25%) and a 2-hour in-class quiz (50%).The quiz will include a mixture of multiple choice and written questions, and will usually form the most substantive piece of work for the module. All assessment components aim to assess the achievement of specific learning outcomes.
Feedback	During the lectures and lab sessions/tutorials, teaching assistants will be available to answer questions and give feedback. There will also be detailed feedback given on the coursework assignments, and the exams. Feedback on the exams will be provided in the form of comments on common mistakes and the general strengths and weaknesses of the answer after the exams have been marked. The comments represents a form of cohort level feedback.
Reading list	A reading list will be given in the lectures.

Quality assurance

Date of first approval

Date of last revision

Date of this approval

Office use only

QA Lead

Department staff

Date of collection

Module leader

Date exported

Date imported

Notes/ comments

Assessment details

Grading method

Numeric

Pass mark

50%

Assessments

[illegible]

100%