

MODULE SPECIFICATION • ELECTIVE

Programming in Python

This course introduces programming in Python. It covers the basics of programming skills, including data types, variables, loops and functions. Further, the course covers common Python libraries and frameworks for data manipulation, visualisation and machine learning.

10 CREDITS	15h CONTACT HOURS	85h PRIVATE STUDY	100h TOTAL STUDY
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COURSE CONVENOR

NAME Professor Régis Amichia

OFFICE By appointment — please email to arrange a convenient time

COURSE STRUCTURE

Econ 7921 is a 10-credit course and students are expected to input approximately 100 hours of study. The total number of contact hours is 15 hours, leaving 85 hours for private study. Delivery is by lectures — 15 hours across the first three weeks of term, comprising 10 hours of lectures and 5 hours of tutorials. Optional clinics run on the last day of the course.

During private study, balance the course material (the primary source) against the recommended textbooks: think critically about how these fit into the body of knowledge, perform the exercises, complete coursework and revise. You can expect to perform well only by working consistently through the year.

MODULE PROGRAMME

LECT.	TOPIC	SESSION CONTENT
01	Introduction to Python	- Introduction to Python - Python installation - Introduction to Shell / Google Colab - Instructions and indenting
02	Data Structures	- Data types in Python: numbers, strings, lists, sets, tuples and dictionaries - Defining and using variables in Python - Basic operations and manipulations on data types - Introduction to DataFrames
03	Control Structures and Loops	- Conditional statements - Control structures - For and while loops - Imbricated loops
04	Functions and modular programming	- Defining and using functions and classes in Python - The importance of modularity and code organisation - Importing and using modules and libraries
05	Introduction to Data Visualization and Machine Learning	- Introduction to the scikit-learn library for machine learning in Python - Pandas and Matplotlib - Simple examples of data science with Python

KEY SKILLS

By the end of this course, students should have some knowledge and understanding of:

- Python proficiency.** Mastery of Python programming for data science.
- Data science basics.** Fundamental concepts and skills for data science in Python.
- Library competence.** Efficient use of key Python libraries for data science.
- Practical application.** Applying Python to real-world data science tasks.
- Versatile Python use.** Adapting Python for diverse data science applications.
- Effective coding practices.** Writing efficient and effective Python code.

DESIRED OUTCOMES

By the end of this course, students should be able to:

- Present, interpret and analyse information in numerical form and use econometric and other packages effectively
- Master the programming tools and important libraries for data science

ASSESSMENT

WEIGHTING	100% coursework
ISSUED	End of week 6
DUE	End of week 10 — four weeks for completion
SUBMISSION	Electronically via the Moodle site for this course



FEEDBACK Returned within 4 weeks of the deadline, as marker's notes appended to the PDF of your coursework

Marking criteria and penalties are set out in the Economics Undergraduate Handbook and the general course information paper, available via the Current Student page of the university website under Academic Regulations.

COURSE TEXT & RECOMMENDED READING

Copies of the lecture slides are made available on the course web pages, together with additional material and course announcements.

- Python Data Science Handbook: Essential Tools for Working with Data. O'Reilly
- Chollet, F. Deep Learning with Python. Simon and Schuster