Del 29 de juny
al 24 de juliol

Autoria del cartell: Èric Puig Mor García

Patrocinadors

Diputació de Lleida
La força dels municipis

Universitat de Lleida
Consell Social

Universitat de Lleida
Universitat d'Estiu

http://estiu.udl.cat

ONLINE COURSE
From 13th to 24th July 2026

649V

PYTHON PROGRAMMING FOR SOLVING MATHEMATICAL, PHYSICAL AND CHEMICAL PROBLEMS

2 ECTS credits recognised by the UdL:
20 contact hours guided by teaching team
+ 30 hours of independent study

The use of computational tools and data processing has become an essential element of university education in the fields of experimental sciences, engineering, and health sciences. In this context, the Python programming language has established itself as a de facto standard in scientific and technological research, both for its versatility and its vast ecosystem of libraries optimised for scientific computing and data analysis. This course addresses this educational need by offering a structured and applied introduction to Python, focused on solving real-world problems within the scientific field.
From an academic perspective, this course supplements the formal training of undergraduate and postgraduate studies by providing increasingly in-demand transversal skills, such as efficient data processing, scientific visualisation, and workflow automation. Its practical approach, based on Python/Jupyter notebooks, facilitates active learning and allows students to immediately integrate the knowledge acquired into other subjects, academic papers, or research papers.
The course content is based on the teaching experience gained from the international course Python: Solving Mathematical, Physical and Chemical Problems, which has been taught for several years at the Charles University in Prague. The course is taught in English due to the participation of international teaching staff, a factor that also encourages the participation of international students.
The course is aimed at undergraduate and postgraduate students, faculty members, and professionals in the fields of science and technology, as well as members of the public interested in using computational tools to solve scientific problems.

Observations
The course will be taught entirely in English. No official English language certificate is required to enrol; however, a sufficient level of listening and reading comprehension is necessary to follow the course properly. Likewise, advanced prior training in programming is not required, but a scientific or technical foundation is.

Mode
Online course delivered via the University of Lleida's Virtual Campus. The course will be conducted in real-time.

Methodology
The course has a practical approach and is structured around Python/Jupyter notebooks, available on the subject's Virtual Campus. These allow participants to apply concepts explained during the sessions. At the end of each class, students will have access to a notebook containing each example, which can serve as a foundation for their own scientific work.
Assessment will be conducted through continuous evaluation, based on completing and submitting practical exercises after each session. For undergraduate students requesting ECTS credit recognition, the assessment will also include an individual assignment based on the course content, which can be submitted after classes conclude. This assignment validates the learning outcomes associated with the awarded ETCS credits. Optionally, a final exam is available for students who do not meet the continuous evaluation criteria.

Language of delivery
English

Coordination
Pablo Miguel Blanco Andrés (Department of Chemistry, Physics and Environmental and Soil Sciences at the UdL)

Teaching team
Pablo Miguel Blanco Andrés (UdL) and Miroslav Slouf (Institute of Macromolecular Chemistry of the Czech Academy of Sciences, IMC-CAS)

Duration
a) 20 hours
b) 50 hours (20 guided by the teaching team + 30 independent study). This version is recognised with 2 ECTS credits by the UdL

Price
€35.38 for UdL students, PTGAS and PDI / €90.00 for others

Programa

Monday 13th

Pablo M. Blanco and Miroslav Slouf

9 a.m. – 2 p.m.
Introduction and Basic Concepts of Python.

Wednesday 15th

Miroslav Slouf and Pablo M. Blanco

10 a.m. - 1 p.m.
NumPy: Efficient Data Processing and Manipulation.

Friday 17th

Pablo M. Blanco and Miroslav Slouf

10 a.m. - 1 p.m.
Matplotlib: Creation of Graphics Suitable for Scientific Publication.

Monday 20th

Pablo M. Blanco and Miroslav Slouf

10 a.m. - 1 p.m.
SciPy: Application of Optimised Algorithms for Scientific Computing.

Wednesday 22nd

Miroslav Slouf and Pablo M. Blanco

10 a.m. - 1 p.m.
Pandas and Seaborn: Managing Large Datasets.

Friday 24th

Pablo M. Blanco and Miroslav Slouf

10 a.m. - 1 p.m.
Data File Management: Reading, Processing and Analysis.

INSTITUTE OF MACROMOLECULAR CHEMISTRY
CZECH ACADEMY OF SCIENCES

INFORMATION AND REGISTRATION

Please register by email.

Please send the registration form available at http://estiu.udl.cat to estiu@udl.cat

Registration will remain open while places are available and until the day before the course begins. All courses have limited places. The organisation reserves the right to cancel Universitat d'Estiu (Summer University) courses that do not reach the required number of enrolments. Those already registered will be informed as soon as possible and offered the chance to switch to another course or receive a full refund.

FOR MORE INFORMATION

Universitat d'Estiu

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http://estiu.udl.cat

UNIVERSITAT DE LLEIDA
ESTIU 2026

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