

Modules:

physics70a **Elective Advanced Lectures: Experimental Physics**

physics70b **Elective Advanced Lectures: Applied Physics**

Course:

Scientific Programming with Python (E/A)

Course No.: physics725

Category	Type	Language	Teaching hours	CP	Semester
Elective	Lecture with exercises	English	2+1	6	ST

Requirements for Participation:**Preparation:**

Prior knowledge of any programming language (C/C++, Java, Python, ...)

Form of Testing and Examination:

Successful implementation of scientific projects in Python during the semester

Length of Course:

1 semester

Aims of the Course:

Effective and flexible program solving with the easy-to-learn, high-level programming language Python. The course addresses master and PhD students with prior programming knowledge as taught in the bachelor course physics131.

Contents of the Course:

In-depth introduction to the Python programming language; Introduction to numpy arrays (primary Python data structure for scientific computing); Introduction to scientific-Python modules (scipy, astropy); Interactive work / development with Python (ipython); Web interaction with Python (jupyter notebooks, web and database queries); Plotting with Python (the matplotlib module), Introduction to writing own scientific Python-modules and Object-oriented programming, Collaborative code development and version control (git, github)

Recommended Literature:

All necessary materials are made available online via the eCampus platform

Credit points can only be earned from one exam out of physics718 and physics725