Fakultetsgemensam forskarutbildningskurs 2019
Faculty common course 2019

Kursnamn på svenska Avancerad Vetenskaplig Programmering i Python
Swedish course title

Kursnamn på engelska Advanced Scientific Programming with Python
Englisk course title

Omfattning (högskolepoäng) 3
Higher education credits

Undervisningsspråk English
Language of instruction

Rekommenderade förkunskaper
Recommended prerequisites
Students should be familiar with programming but no previous knowledge of Python is required as we will provide all material necessary.

Kursens syfte och mål
General course objective/s and learning outcomes
The aim of this course is to teach best practices in scientific programming such that students become more effective programmers and eventually spend less time coding and more time doing research. They will be introduced to a range of tools that will enable to be more productive. Furthermore, with the concepts taught in this course, students will be able to produce well-documented and tested code making their work clearer, more reproducible and useful to others.

Kursinnehåll
Course contents
This course covers the best practices in scientific programming with Python. The decision to use Python is based on the fact that it is commonly used in research across many disciplines. Contents of this course are

- Introduction to the UNIX shell
- Using git repositories for organizing and sharing code
- Interactive Python programming (Jupyter notebooks)
- Test-driven software development and documentation
- Advanced Numpy/Scipy
- Data containers (HDF5, h5py, pandas)
- Performance (cython, C extensions, multiprocessing, MPI and CUDA)

Undervisning (kursens uppläggning)
Instruction (course structure)
The course will be taught as a 1 week (40 hours) seminar with many hands-on examples. Students will work in pairs on a computer/laptop.

Examination
Assessment (form of examination)
Examination is based on attendance (> 90%) and participation in an individual coding project (10 hours).

Huvudansvarig institution ICM, Laboratory of Molecular Biophysics
Department with main responsibility

Kontaktperson/er (namn, e-postadress)
Contact person (name, e-mail address)
Filipe Maia (Filipe.Maia@icm.uu.se)

Kurs datum/period Spring 2019
Course dates/period

Antal platser 30
Maximum number of participants

Anmälan om antagning till kursen ska skickas till
Application for admission to the course is to be sent to
Filipe Maia (Filipe.Maia@icm.uu.se)

Skicka anmälan senast 2019-01-31
Submit application not later than

Målgrupp/er (om möjligt, specifera ämnen/inriktningar)
Target group/s (specify, if possible, subject/specialization)
This course is targeted towards post-graduate students from all disciplines who use programming in their research on a regular basis.