Course syllabus

GIT-projekt med Pythonprogrammering GIT Project with Python Programming

EXTP40, 7,5 credits, A (Second Cycle)

Valid for: 2023/24
Faculty: Faculty of Engineering, LTH
Decided by: PLED L
Date of Decision: 2023-04-20

General Information

Elective for: L5-gi
Language of instruction: The course will be given in English on demand

Aim

The aim of the course is to establish and develop the student's knowledge in the form of a combination of, for the student a new but within GIT commonly used programming language, and a practical project. The project contains several of the typical phases in a GIT project: modelling, identification, analysis, synthesis, and computer implementation.

Learning outcomes

Knowledge and understanding
For a passing grade the student must

- have developed new knowledge in Python programming and its application within GIT
- motivate in what situations, from a GIT perspective, Python is a suitable language to use
- understand and motivate how Python can be linked to a geographical information system, regarding vector- as well as raster operations
- have deepened his/her knowledge of programming and project implementation within the area of the chosen GIT project

Competences and skills
For a passing grade the student must

- be able to communicate, in written text and orally, using the scientific terminology within the subject, in a balanced and understandable way
- be able to apply Python programming including executing flow and object oriented programming
- be able to apply Python programming in a GIS environment regarding standard operations and scripts, within vector as well as raster GIS
- be able to perform, with Python programming, several of the phases in a typical GIT project: modelling, identification, analysis, synthesis and computer implementation
- present the results in both written and oral form

Judgement and approach
For a passing grade the student must

- be able to assimilate, critically evaluate and discuss scientific publications within the area of Python programming, as well as summarize the material

Contents

Utilization of and knowledge about programming languages used in development of, and communication with, today's GIS-software and application environments is of utter importance for students who want to direct their studies towards these specializations.

Effectuation of a project always requires searching for and obtaining special knowledge and information. In this project course that can be achieved by participating in and perform some programming laboratory practical within a distance course in Python programming in GIS. This contains lectures as well as other distance learning resources. The project, which runs in parallel, is some GIT related application. For this part the teaching consists of some project meetings with discussion and supervision.

The projects results and experiences are reported both in written and oral form.

Examination details

Grading scale: UG - (U,G) - (Fail, Pass)
Assessment: Accepted project.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Admission

Admission requirements:

- at least two of the GIT specialization courses: EXTQ05, EXTN10, EXTN70 or EXTN75
- EXTF80 Geographic Information Technology
- EDAA20 Programming and Databases
- FMA430 Calculus in Several Variables or FMAB30 Calculus in Several Variables

The number of participants is limited to: No
The course overlaps following course/s: GISN24

Reading list

- Mark Lutz: Learning Python, 4th ed. O'Reilly Media, 2009, ISBN: 978-0-596-15806-4.
- Hans Petter Langtangen: Python Scripting for Computational Science, 3 ed. Springer Verlag, 2008, ISBN: 978-3-540-73915-6. Reference.

Contact and other information

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