



AF1766 Parametric Programming and Design 7.5 credits

Parametrisk programmering och design

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Completed course:

AF1763 Mathematics 1, Linear Algebra 5.0 credits

Intended learning outcomes

Upon completion of the course, the student shall be able to:

- describe interfaces, environments, data types and nodes in scripts within a software development environment

- read and write data, create geometry, functions and components
- write code that uses components in an external application
- describe Python syntax and the development environment
handle variables, data types, expressions and assignment
implement conditional and iterative control structures
- use functions and parameter passing
- describe strings and string handling
- use lists and tuples
- handle modules and packages, sets and mappings
- describe object-oriented programming and classes, inheritance
- modify components and their properties in external applications using Python code via scripts.

Course contents

The course aims to provide basic knowledge of working with scripts in parametric design, modelling and the flow of information to and from the digital model, as well as basic knowledge of programming in Python. The course comprises the following components:

- Programming environments, basic syntax and data types for various software development environments.
- Design and implementation of scripts that model parameter-controlled building and structural components, building shells and infrastructure such as bridges and tunnels.
- Scripts for cost estimation, material quantification and presentation of data regarding the digital model.
- Code that utilises components in external applications.
- Conditional and iterative control structures.
- Functions and parameter passing.
- Strings and string handling.
- Lists and tuples.
- Modules and packages, sets and mappings.
- Object orientation and classes, inheritance.

Examination

- LAB1 - Computer assignment, 3.0 credits, grading scale: P, F
- LAB2 - Computer assignment, 2.0 credits, grading scale: P, F
- LAB3 - Computer assignment, 1.0 credits, grading scale: P, F
- TEN1 - Written exam, 1.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.