Computing Workshop (1100-1006)

45 hours (15 lecture hours, 30 lab classes hours), winter semester

Students who complete the course will know:

- how computers and computer networks work
- standard representations of data and common data file formats
- how to operate the command line in a Linux system, how to use OpenOffice.org and how to create function graphs and process experimental data with the help of generally available software

Main topics:

- 1. How computers and networks work
 - a) Basic principle of computer design processor, memory, I/O devices
 - b) Execution of a computer program, instructions and data
 - c) Multitasking, operating systems and users
 - d) Mass storage of data, file systems
 - e) Access rights and authentication
 - f) Exchanging data over a distance, computer networks
- 2. Data representations
 - a) Integers, unsigned and two's complement integers
 - b) Non-integer numbers and floating point representations
 - c) Characters, character sets, ASCII, ISO-8859, code pages and Unicode
 - d) Data file formats and standard document formats (ODF, PDF, JPEG, PNG itd.)
- 3. Command line in a Linux system
 - a) Shell as a command interpreter
 - b) Running programs and basic system tools
 - c) File and directory management, access rights management
 - d) Processing text data simple editors, streams, pipes and filters
 - e) Controlling processes, signals
- 4. OpenOffice.org basics
 - a) Text documents in OpenOffice.org, formatting, references, indexes and tables
 - b) Spreadsheets in OpenOffice.org, processing experimental data
 - c) Equation editor in OpenOffice.org
- 5. Function graphs
 - a) The tools: qtiplot and gnuplot
 - b) Graphs of functions given as formulas and data sets
 - c) Fitting functions to experimental data