

Course number: SET 11120 (lecture) SET 11121 (lab)

Programming Study Level: Bachelor / Undergraduate

Prof. Dr. Michael Fröhlich Language of Instruction: English ECTS Credits: 5

Subject-specific competencies:

- The students have an insight into the historical development of programming languages.
- They know the relationship between data types and memory requirements and their relevance for programming.
- The participants know the importance of standard library functions like input, output and math functions. They understand that computer languages require multiple operators, priorities and flow control elements.
- Students can define data structures such as arrays, matrices and structs.

Methodological competencies:

- The students know and master the subject-specific terms of computer science.
- They can handle an Integrated Development Environment (IDE) and use it to create, debug, compile and execute computer programs.
- The participants can interpret and draw Nassi-Shneiderman diagrams and structure algorithms programmatically.
- They know the language elements to achieve this structuring and to discuss it professionally.

Personal competencies:

- The students have basic knowledge and background information on computer science.
- They know the basic elements of a "von Neuman architecture" and the relevance of intelligent memory management.
- The participants have a first insight into data structures that lead to object-oriented languages by extension.

Teaching content:

- Historical Development
- Programming development environments
- Data types, variables and constants
- Nassi Shneiderman diagrams (structograms)
- Input and output
- Operators and priorities
- Detailed consideration of language elements
- Arrays and Matrices
- Structures and data type definitions
- Functions
- Introduction to pointers
- Applications of pointers