Reg No: DVGC01/20242

Faculty of Health, Science and Technology
Computer Science

Syllabus

Programming Languages

Course Code:	DVGC01
Course Title:	Programming Languages *Programspråk*
Credits:	7.5
Degree Level:	Undergraduate level
Progressive Specialisation:	First cycle, has at least 60 credits in first-cycle course/s as entry requirements (G2F)

Major Field of Study:
DVA (Computer Science)

Course Approval
The syllabus was approved by the Faculty of Health, Science and Technology 2024-01-30, and is valid from the Autumn semester 2024 at Karlstad University.

Prerequisites
60 ECTS credits completed, including Data Structures and Algorithms, 7.5 ECTS credits, or equivalent

Learning Outcomes
Upoon completion of the course, students should be able to:
- give an account of different programming paradigms,
- give an account of the basic control structures ot programming languages, i.e. sequence, choice, and repetition,
- give an account of the syntax and semantics of programming languages and their description,
- give an account of the Backus Naur form (BNF) as a syntax description model,
- describe the syntax of a programming language in BNF,
- implement a syntax analysator (a parser),

- identify the basic principles of and write simple programs in an unfamiliar programming language, and
- write laboratory reports.

Content
The course introduces different programming languages with special reference to programming paradigms: imperative, functional, and declarative. Object-oriented language is also treated.

The course includes the concepts syntax, semantics, grammar, lexical analysis, syntax analysis and symbol table, implementation of runtime systems, memory management, stack management, activation posts, and the structure of language.

Exercises and laboratory work are carried out in an imperative or object-oriented language, a functional language, and a declarative language.

The course includes both theory and practice. The theoretical component is in the form of course literature supported by lectures and reading assignments. The practical component includes group exercises and laboratory work.

Reading List
See separate document.

Examination
Assessment is based on a written exam and a laboratory task completed in groups. Students may also submit an extra laboratory report or hand-in assignment.

If students have a decision from Karlstad University entitling them to Targeted Study Support due to a documented disability, the examiner has the right to give such students an adapted examination or to examine them in a different manner.

Grades
One of the grades 5 (Pass with Distinction), 4 (Pass with Some Distinction), 3 (Pass), or U (Fail) is awarded in the examination of the course.

Quality Assurance
Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate
A course certificate will be provided upon request.

Additional information
The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.