![Jönköping University School of Engineering logo]

COURSE SYLLABUS

Object-oriented Software Development with Design Patterns, 7.5 credits

Objektorienterad mjukvaruutveckling med designmönster, 7.5 högskolepoäng

Course Code:	TOUK18	Education Cycle:	First-cycle level
Confirmed:	Sep 01, 2025	Disciplinary domain:	Technology
Valid From:	Aug 31, 2026	Subject group:	Computer Technology
		Specialised in:	G1F First cycle, has less than 60 credits in first-cycle course/s as entry requirements
		Main field of study:	Computer Engineering

Intended Learning Outcomes (ILO)

On completion of the course the student shall:

Knowledge and understanding

- display knowledge of different methods for system development and their pros and cons
- display knowledge of system design, requirements specifications and validation
- display understanding of the most common components of the Unified Modelling Language (UML)
- display understanding of established design patterns for object-oriented analysis, object-oriented programming, and system architecture

Skills and abilities

- display the ability to, via analysis of a requirement specification, create UML-diagrams that describe an IT-system that meets said requirements
- display the ability to transform UML-diagrams into object-oriented program code
- display the ability to apply object-oriented programming with design patterns for development of IT-systems
- demonstrate the ability to use branches and merging with Git when developing software

Judgement and approach

- display the ability to, given a problem, suggest and motivate appropriate design patterns.

Content

The purpose of the course is to provide students with knowledge required to carry out object-oriented design in accordance with established practice, and to be able to implement the results of said design in program code.

The course includes the following topics:

- Introduction to system development methods: waterfall methods, iterative methods, agile methods
- Software validation and requirements specifications for software validation
- Unified Modelling Language: class diagram, sequence diagram, use-case diagram, etc.
- Design patterns: object-oriented patterns, analysis patterns, patterns for system architecture

Type of instruction

Tuition will consist of lectures and lab work.

Language of instruction is English.

Entry requirements

General entry requirements and completion of the course Object Oriented Programming, 7,5 credits (or the equivalent).

Examination and grades

The course is graded 5, 4, 3 or U.

Registration of examination:

Name of the Test	Value	Grading
Laboratory Work	3.5 credits	G/U
Written examination [1]	4 credits	5/4/3/U

[1]Determines the final grade of the course, which is issued only when all course units have been passed.

Course literature

Please note that changes may be made to the reading list up until eight weeks before the start of the course.

Title: Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development (3rd Edition)
Author: Craig Larman
Publisher: Prentice Hall
ISBN: 978-0131489066