School of Economics and Management

SYSB24, Informatics: IT Architecture and Software Systems, 30 credits

Informatik: IT-arkitektur och mjukvarusystem, 30 högskolepoäng

First Cycle / Grundnivå

Details of approval

The syllabus was approved by The Board of the Department of Informatics on 2024-05-29 and was last revised on 2024-09-18. The revised syllabus comes into effect 2024-09-18 and is valid from the spring semester 2025.

General information

The course is compulsory within the Bachelor's Programme in Design of Information Systems. It is also given as a freestanding course.

Language of instruction: Swedish and English
The course is given in Swedish but there may also be teaching in English. The course literature is mainly in English.

Main field of study	*Specialisation*
Information Systems	G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements
Informatics	G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements

Learning outcomes

Upon completing the course, the student will have acquired specialised knowledge of and skills in the architectural structuring of software systems, integration and configuration of software components, and systematic quality approaches in software development and delivery of IT-based services.

Knowledge and understanding

To pass the course, the student must demonstrate knowledge of and understanding of

- different quality attributes and definitions for assessing and describing software
- testing as a means of determining and achieving software quality
- how integration technologies can support the technology level in enterprise architecture
- modern software architectures for distributed and component-oriented systems
- component-oriented development of distributed software systems
- integration technologies and architecture for web services
- Software Process Improvement (SPI) as a paradigm and model for software development
- models and frameworks for SPI
- advantages and disadvantages of SPI within software development
- IS/IT governance as an approach to service delivery
- standards for IS/IT governance and their advantages and disadvantages

Competence and skills

To pass the course, the student must demonstrate competence and skills individually or in groups to

- design architectures for software systems that achieve certain quality attributes
- utilise one or several integration technologies for the technology level in enterprise architecture
- use integration technologies to integrate a software application with an external system
- use web technologies for the design and realisation of IT architecture
- apply and explain the use of techniques based on artificial intelligence in the development and realisation of software systems
- plan work projects for development projects
- present concepts and support for service delivery within IS (IS/IT governance) and provide examples of how they can be used for improvements
- present problems and solutions in speech and in writing
- design and present models and plans as documentation for change management
- draw up their own design proposals in accordance with the standard/s for IS/IT governance

Judgement and approach

To pass the course, the student must demonstrate the ability to

- compare models, design patterns, methods and tools for the design of software systems and how they complement, overlap or contradict each other
- assess different architectures for the realisation of component-oriented and distributed software systems
- assess different technologies for the realisation of component-oriented and distributed software systems

- assess design proposals from different quality perspectives
- assess plans for project work and the working group's internal process
- assess, reflect on and document their own learning process and goal attainment

Course content

The course includes:

- the SPI paradigm
- frameworks for SPI
- frameworks for IS/IT governance
- delivery of IS/IT services
- integration technologies
- software system quality
- modern object-oriented programming languages
- modern component and web service technologies
- Information Systems project, throughout the course

Modules

- IS/IT Governance
- Software Process Improvement
- Program Design
- Integration Technologies
- Systems Integration
- Software Architecture
- Quality Assurance of Software Systems
- Web Architecture
- Information Systems Project

Course design

The teaching consists of lectures, lessons, seminars and laboratory exercises.

Assessment

The assessment is based on on-campus written exams, assignments and a project report.

Assessed components including documentation and written reflections are compiled in the student's learning portfolio.

Re-examinations are offered in close conjunction with the first examination.

The test and course grades are determined by the course examiner. The examiner is entitled to change the grades given by the teachers on the course if this does not violate Chapter 6, Section 24 of the Higher Education Ordinance (1993:100).

Academic misconduct such as cheating, plagiarism, fabrication and falsification is considered a serious offence in higher education (see Chapter 10 of the Higher Education Ordinance). The disciplinary measures that may be taken as a result of such offences are caution or suspension for a limited period of time from the university (and all the faculties of the university).

Examinations

- IS/IT Governance, Assignments, 1.5 cr, grading scale: U-G, individual and group examination
- Software Process Improvement, Assignments, 1.5 cr, grading scale: U-G, individual and group examination
- Program Design, Assignments, 2.0 cr, grading scale: U-G, individual and group examination
- Program Design, On-Campus Written Exam, 4.0 cr, grading scale: U-A, individual examination
- Integration Technologies, Assignments, 2.0 cr, grading scale: U-G, individual and group examination
- Systems Integration, Assignments, 2.5 cr, grading scale: U-G, individual and group examination
- Software Architecture, Assignments, 2.0 cr, grading scale: U-G, individual and group examination
- Software Architecture, On-Campus Written Exam, 4.0 cr, grading scale: U-A, individual examination
- Quality Assurance of Software Systems, Assignments, 2.0 cr, grading scale: U-G, individual and group examination
- Web Architecture, Assignments, 4.5 cr, grading scale: U-G, individual and group examination
- Information Systems Project, Report, 3.0 cr, grading scale: U-G, individual and group examination
- Learning Portfolio, 1.0 cr, grading scale: U-G, individual examination

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Grades

Grading scale includes the grades: U=Fail, E=Sufficient, D=Satisfactory, C=Good, B=Very Good, A=Excellent

Grade (Definition) Points or percentage out of maximum points. Characteristic.

A (Excellent) 85-100. A distinguished result that is excellent with regard to theoretical depth, practical relevance, analytical ability and independent thought.

B (Very good) 75-84. A very good result with regard to theoretical depth, practical relevance, analytical ability and independent thought.

C (Good) 65-74. The result is of a good standard with regard to theoretical depth, practical relevance, analytical ability and independent thought and lives up to expectations.

D (Satisfactory) 55-64. The result is of a satisfactory standard with regard to theoretical depth, practical relevance, analytical ability and independent thought.

E (Sufficient) 50-54. The result satisfies the minimum requirements with regard to theoretical depth, practical relevance, analytical ability and independent thought, but not more.

U (Fail) 0-49. The result does not meet the minimum requirements with regard to theoretical depth, practical relevance, analytical ability and independent thought.

To pass the course, the student must have been awarded the grade of E or higher.

Grading rules and definitions

Examination grades

Examinations are graded according to the grading scale U-A or the grading scale U-G (Fail-Pass).

Course grade

A passing grade on all examinations is required to pass the course.

1. For each examination with the grading scale U-A, the obtained points are multiplied by the number of credits for the examination. Grades without points are converted as follows: A = 92, B = 80, C = 70, D = 60, E = 52.
2. The products of the included examinations are summed up and divided by the total number of credits of the included examinations.
3. This results in a weighted average which determines the course grade. 85–100 gives the grade A, 75-84 gives the grade B, 65-74 gives the grade C, 55–64 gives the grade D, 50–54 gives the grade E.

Examinations with the grading scale U-G are not included in the calculation of the course grade.

Entry requirements

Admission to the course requires general requirements and the courses: ”Informatics: Introduction to Information Systems, 1-30 cr” and ”Informatics: Information Systems and Business Development, 31-60 cr” or the equivalent.

Further information

SYSB24 may not be included in a degree together with SYSA14 or the equivalent.

Costs for course literature and minor costs for online services for personal use may arise.

It is compulsory to attend the introduction meeting, where a roll call will be taken. Absence without notification means that the admitted student will lose their seat on the course.

For transitional provisions with regard to previous courses, please contact the study adviser for an individual assessment.

If the course is discontinued, there may be limited opportunities for re-examination. Please contact the study adviser for information.