



**LUND**  
UNIVERSITY

School of Economics and Management

## **SYSA14, Informatics: IT Architecture and Software Systems, 30 credits**

*Informatik: IT-arkitektur och mjukvarusystem, 30 högskolepoäng*  
**First Cycle / Grundnivå**

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### **Details of approval**

The syllabus was approved by The Board of the Department of Informatics on 2013-09-20 and was last revised on 2020-10-22. The revised syllabus applies from 2021-01-17, spring semester 2021.

### **General Information**

The course makes up the fourth semester of the BSc programme in Design of Information Systems and can also be taken as a freestanding course.

*Language of instruction:* Swedish and English  
Required reading in English is included.

*Main field of studies*

Information Systems

*Depth of study relative to the degree requirements*

G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements

### **Learning outcomes**

On completion of the course, the student shall have obtained specialised knowledge of and skills in the architectural structuring of software systems, integration and configuration of software components, and systematic quality input in software development and delivery of IT-based services.

### **Knowledge and understanding**

For a pass on the course, students shall demonstrate knowledge and understanding of

- different quality properties and quality definitions for the assessment and description of software,
- testing as a means of determining and achieving software quality,

- how integration technologies can support the level of technology in Enterprise Architecture (EA),
- modern software architectures for distributed and component-oriented systems,
- component-oriented development of distributed software systems,
- plug-in development as a configuration of software systems,
- 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**

For a pass on the course, students shall demonstrate competence and skills individually or in groups to

- analyse software configuration of standard systems and design change through supplementary programming,
- design architectures for software systems that achieve certain quality properties,
- utilise some or several integration technologies for the technology level in EA,
- use web technologies for the design and realisation of IT architecture,
- plan assignments 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 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**

For a pass on the course, students shall demonstrate the ability to

- compare models, methods and tools for the design of software systems and how they complement, overlap or contradict each another,
- 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 for EA
- software system quality
- modern object-oriented programming languages
- modern component and web service technologies

- IS project, throughout the course

### *Modules*

Software Architecture,  
Integration and Configuration of ERP Systems,  
Quality Assurance of Software Systems,  
Program Design,  
Web Architecture,  
Integration Technologies,  
IS/IT Governance,  
Software Process Improvement,  
IS Project.

## **Course design**

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

The course includes compulsory components, which are stated in the schedule.

## **Assessment**

The assessment is based on written exams, written assignments and an IS 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).

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.

*Subcourses that are part of this course can be found in an appendix at the end of this document.*

## **Grades**

Marking scale: Fail, E, D, C, B, A.

**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.

**F** (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 students must have been awarded the grade of E or higher.

### **Grading rules and definitions**

Grades are awarded according to a graded scale from A (highest) to F (lowest), with E as the minimum passing grade.

When the exam/assignment is not graded, the grades G (Pass) or F (Fail) will be applied.

#### *Course grades*

When calculating course grades, the graded components will be weighted according to the following formula:

The number of credits for the exam is multiplied with the exam score. The total value is then divided by the total number of credits for the exams/assignments included. The resulting average is then rounded off to the nearest whole number. The number indicates the relevant course grade in accordance with the grading definitions above.

For exams/assignments which are graded and scored, the grades A to F will be used in accordance with the grading definitions above. The exam score will be used directly in the calculation.

For exams/assignments which are graded but not scored, the grades A to F will be used and converted as follows: A = 92, B = 80, C = 70, D = 60, E = 52.

Exams/assignments which are not graded but awarded with G (Pass) or F (Fail) will not be included in the calculation of the course grade.

### **Entry requirements**

To be admitted to the course, the student must have passed the general requirements and the courses: "Informatics: Introduction to Information Systems, 1-30 cr" and "Information Systems: IS and Business Development, 31-60 cr" or the equivalent.

### **Further information**

SYSA14 may not be included in a degree together with SYSA04 or the equivalent.

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 his/her 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.

#### *Amendments*

2013-01-18: Updated reading list.

2015-12-04: Added that the course includes compulsory components and that attendance on the introduction meeting is compulsory.

2016-06-03: New grading rules from Autumn term 2016.

2016-11-23: Updated reading list from Spring term 2017.

2018-11-14: General editorial changes.

2019-04-04: Updated teaching language to Swedish and English.

2020-10-22: New set of exams from Spring term 2021.

## Subcourses in SYSA14, Informatics: IT Architecture and Software Systems

Applies from V21

- 2101 Software Architecture, Assignments, 3,0 hp  
Grading scale: Fail, E, D, C, B, A
- 2102 Software Architecture, Written Exam, 3,0 hp  
Grading scale: Fail, Pass
- 2103 Integration and Configuration of ERP Systems, Assignments, 3,0 hp  
Grading scale: Fail, Pass
- 2104 Quality Assurance of Software Systems, Assignments, 2,0 hp  
Grading scale: Fail, E, D, C, B, A
- 2105 Program Design, Assignments, 3,0 hp  
Grading scale: Fail, Pass
- 2106 Program Design, Written Exam, 1,5 hp  
Grading scale: Fail, E, D, C, B, A
- 2107 Web Architecture, Assignments, 4,5 hp  
Grading scale: Fail, E, D, C, B, A
- 2108 Integration Technologies, Assignments, 3,0 hp  
Grading scale: Fail, Pass
- 2109 IS/IT Governance, Assignments, 1,5 hp  
Grading scale: Fail, Pass
- 2110 Software Process Improvement, Assignments, 1,5 hp  
Grading scale: Fail, Pass
- 2111 IS Project, Report, 3,0 hp  
Grading scale: Fail, Pass
- 2112 Learning Portfolio, 1,0 hp  
Grading scale: Fail, Pass

Applies from V12

- 1101 Software Architecture, Assignments, 3,0 hp  
Grading scale: Fail, Pass  
Individual and group assignment.
- 1102 Software Architecture, Written Exam, 3,0 hp  
Grading scale: Fail, E, D, C, B, A  
Individual exam.
- 1103 Integration and Configuration of ERP Systems, Assignments, 3,0 hp  
Grading scale: Fail, Pass  
Individual and group assignment.
- 1104 Quality Assurance of Software Systems, Assignments, 2,0 hp  
Grading scale: Fail, Pass  
Individual and group assignment.
- 1105 Program Design, Assignments, 3,0 hp  
Grading scale: Fail, Pass  
Individual and group assignment.
- 1106 Program Design, Written Exam, 1,5 hp  
Grading scale: Fail, E, D, C, B, A  
Individual exam.
- 1107 Web Architecture, Assignments, 4,5 hp  
Grading scale: Fail, Pass  
Individual and group assignment.
- 1108 Integration Technologies, Assignments, 3,0 hp  
Grading scale: Fail, Pass

- Individual and group assignment.
- 1109 IS/IT Governance, Assignments, 1,5 hp  
Grading scale: Fail, Pass  
Individual and group assignment.
- 1110 Software Process Improvement, Assignments, 1,5 hp  
Grading scale: Fail, Pass  
Individual and group assignment.
- 1111 IS Project, Report, 3,0 hp  
Grading scale: Fail, E, D, C, B, A  
Individual and group assignment.
- 1112 Learning Portfolio, 1,0 hp  
Grading scale: Fail, Pass  
Individual assignment.