

Software Architecture (E017822)

Course size (nominal values; actual values may depend on programme)

Credits 4.0 Study time 120 h Contact hrs 60.0 h

Course offerings and teaching methods in academic year 2018-2019

A (semester 1)	English	guided self-study	5.0 h
		seminar: coached	30.0 h
		exercises	
		lecture	30.0 h

Lecturers in academic year 2018-2019

Gielen, Frank	TW05	lecturer-in-charge
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Offered in the following programmes in 2018-2019

	crdts	offering
Brugprogramma Master of Science in Bioinformatics (main subject Engineering)	4	A
Master of Science in Business Engineering (main subject Data Analytics)	4	A
Master of Science in Bioinformatics (main subject Engineering)	4	A
Master of Science in Business Engineering (main subject Finance)	4	A
Master of Science in Business Engineering (main subject Operations Management)	4	A
Master of Science in Computer Science	4	A
Master of Science in Computer Science Engineering	4	A
Master of Science in Computer Science Engineering	4	A
Exchange Programme in Bioinformatics (master's level)	4	A
Exchange Programme in Computer Science (master's level)	4	A

Teaching languages

English

Keywords

Software Architecture

Position of the course

The course on Software Architecture is a *technopreneurial* course: it provides in-depth coverage of the concepts needed to design and analyze a software architecture from a **technical and business perspective**.

Based on this course students have to be capable of solving complex technological software problems while assessing the business impact of their decisions in order to guarantee that the designed software architecture meets the technical and the business requirements. A product or service not only has to work; it also has to be sellable, affordable and usable.

Contents

Theoretical lectures:

- 1 Introduction to software architecture.
- 2 Software architecture design using the attribute driven design methodology.
- 3 Identify and define quality attributes and architectural tactics that satisfy architectural requirements.
- 4 Build and apply architectural patterns based on the selected tactics.
- 5 Documenting an architecture using different types of diagrams (scenario, component-connector and deployment).

Practical work (case study):

- 1 Stakeholder analysis, define use cases and set priorities.
- 2 Identify scenarios en quality attributes.
- 3 Select and apply architectural tactics and patterns.

Initial competences

Software design course (Bachelor level)

Final competences

- 1 Domain competences
 - 1 Translate the requirements of a software project into technical and non technical specifications.
 - 2 Design a software architecture that meets those specifications.
 - 3 Create a software architecture document that is clear, comprehensive and limited to the core elements.
- 2 Entrepreneurial competences
 - 1 Take initiative, work independent and take decisions.
 - 2 Customer oriented attitude and design.
 - 3 Work with ambiguous, incomplete and conflicting information and make trade-offs that lead to innovative and quality designs.
- 3 Know-how and scientific competences
 - 1 Design complex software systems using state-of-the-art methodologies.
- 4 Intellectual and engineering competences
 - 1 Take an independent position on a complex issue and defend your point of view.
 - 2 Apply your acquired knowledge in a focused and innovative way in research and design.
- 5 Collaboration and communication competences
 - 1 Communicate in English in your professional domain.
 - 2 Report in writing and speech about a technical subject or project.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Guided self-study, lecture, seminar: coached exercises

Extra information on the teaching methods

This course uses blended learning, flipped classroom and peer reviewed assignments. Students need to prepare classroom sessions using the online course material. Classroom sessions are mainly used to address questions related to the online course material and to discuss the exercises and the case study.

Learning materials and price

Online learning platform with all course content

References

Software Architecture in Practice 3rd ed. by Bass, Clements & Kazman
ISBN-13: 978-0321815736

Course content-related study coaching

Interactive support through Minerva.
Individual: by electronic appointment, weekly hours: after every class.

Evaluation methods

end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period

Written examination, oral examination

Examination methods in case of periodic evaluation during the second examination period

Written examination, oral examination

Examination methods in case of permanent evaluation

Participation, peer assessment

Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible

Extra information on the examination methods

During examination period: written closed-book exam.

(Approved)

During semester: based on results of the peer reviews and the score of the online tasks and activities.

Second chance: possible

Calculation of the examination mark

Semestrial work and exam. Special conditions: 70% exam and 30% semestrial work.

Students need to have a minimum score of 8/20 for each part (exam and semestrial work). If the student has less then 8/20 for any separate part, the maximum total score for this course will be 8/20.