

# Course Specifications

From the academic year 2019-2020 up to and including the

## Advanced Software Development (E630044)

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

Credits	6.0	Study time	180 h	Contact hrs	60.0 h
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Course offerings and teaching methods in academic year 2020-2021

A (semester 1)	Dutch	project	20.0 h
		lecture	20.0 h
		seminar	20.0 h

Lecturers in academic year 2020-2021

Volckaert, Bruno	TW05	lecturer-in-charge
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Offered in the following programmes in 2020-2021

	crdts	offering
<a href="#">Bachelor of Science in Engineering Technology (main subject Electronics and ICT Engineering Technology)</a>	6	A
<a href="#">Linking Course Master of Science in Electronics and ICT Engineering Technology (main subject Embedded Systems)</a>	6	A

Teaching languages

Dutch

Keywords

polymorphism, design patterns, graphical user interfaces, program, Java

Position of the course

The course advanced software development aims to learn students an advanced knowledge on object oriented programming, more specifically polymorphism, design patterns, and graphical interfaces are covered in detail.

Contents

- Fundamentals Java
- Fundamentals UML
- Graphical user interfaces via JavaFX
- Polymorphism
  - Composition vs inheritance
- Design patterns (list is indicative and not exhaustive)
  - Strategy pattern
  - Observer pattern
  - Decorator pattern
  - Factory pattern
  - Singleton pattern
  - Adapter pattern
  - Facade pattern
  - Template method pattern
  - Iterator pattern
  - Composite pattern
  - State pattern
  - MVC pattern

Initial competences

Object oriented programming

Final competences

- 1 Knows important architectural and software design patterns
- 2 Understands and is able to draw UML diagrams
- 3 Recognizes situations where design patterns are beneficial, and is able to implement these patterns (in Java)

- 4 Is able to program graphical user interfaces (in Java)
- 5 Modelling before implementation
- 6 Using design patterns where appropriate
- 7 Design of modular software / software with loose coupling between components

#### 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

Lecture, project, seminar

#### Learning materials and price

Head First Design Patterns, Freeman  
Slides on the electronic learning environment

#### References

#### Course content-related study coaching

Interactive support through the electronic learning environment forums and mailing list, personal appointments

#### Evaluation methods

end-of-term evaluation and continuous assessment

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

Written examination with open questions

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

Written examination with open questions

#### Examination methods in case of permanent evaluation

Participation, assignment, report

#### Possibilities of retake in case of permanent evaluation

examination during the second examination period is possible in modified form

#### Extra information on the examination methods

Exam is closed book, written exam, open questions  
Permanent evaluation: graded on participation and assignments/projects. The evaluation of the according deliverables is based on the accuracy, completeness, efficiency and effectiveness of the source code and the reports submitted for assignments and projects

#### Calculation of the examination mark

- 45% exam
- 20% assignments (deliverables and participation)
- 35% project (deliverables and participation)

In order to pass the course, the student must obtain at least 8/20 for the exam and the permanent evaluation (both project and assignments). If this condition is not met, the final score will deviate from the calculated score if 10 or more was obtained and the student will receive score 9/20.