Model Driven Engineering

2025 - 2026

Is part of the next programmes:

- M0012004 Master of Computer Science: Software Engineering
- M0012005 Master of Computer Science: Data Science and Artificial Intelligence
- M0012006 Master of Computer Science: Computer Networks
- M0048004 Master of Computer Science: Software Engineering
- M0048005 Master of Computer Science: Data Science and Artificial Intelligence
- M0048006 Master of Computer Science: Computer Networks
- M0090004 Master of Teaching in Science and Technology: Computer Science
- U0001008 Courses open to exchange students in Sciences

Course Code:	2001WETMTR
Study Domain:	Computer Science
Semester:	1E SEM
Sequentiality:	

Contact Hours:	45
Credits:	6
Study Load (hours):	168
Contract Restrictions:	Exam contract not possible
Language of Instructions:	ENG
Lecturer(s):	T Hans Vangheluwe C Moharram Challenger
Examperiod:	exam in the 1st semester

1. Prerequisites *

speaking and writing of:

- English

specific prerequisites for this course

You have successfully completed a number of more complex programming projects, and you have a basic knowledge of software engineering concepts, specifically you have seen a few examples of one or more formal modeling languages, such as Petri Nets or Statecharts. Note that these languages are also introduced in the co-requisite course Modelling of Software Intensive Systems (MoSIS). Note that you cannot take this course *before* MoSIS.

2. Learning outcomes *

- You should be able to do modelling language engineering in its various forms, as introduced in the course.

- You should be able to explain the pros and cons of the various (meta-)modelling techniques.

3. Course contents *

The course is an introduction to Model-Based Systems Engineering (MBSE), with as ultimate goal to increase the quality of the systems we build and the speed at which we build them. The course goes beyond the mere use of models to specify system requirements, designs (architecture, behaviour), and their deployment, to the explicit modelling of modelling languages. This meta-modelling not only gives deeper insight in exisiting modelling languages, but also allows one to design new, Domain-Speficific Modelling Languages (DSMLs). Syntax as well as Semantics of languages need to be specified. Graphs and their (rule-based) transformation play an important role in modelling and modelling language engineering as any kind of model can always be symbolically represented as a typed attributed graph. The many techniques (meta-modelling, model transformation, physics of notation, ...) and issues (trace-ability, debugging, modelling language evolution, ...) will be studied. In addition, the modelling of product families, by means of feature models, will be covered.

4. International dimension *

- This course stimulates international and intercultural competences.
- Students use course materials in a foreign language.
- The lecturer invites international guest lecturers.
- Students give presentations in a foreign language.
- Students write papers in a foreign language.
- The lecturer collaborates with an international partner (fe. joint course materials, joint case studies).

5. Teaching method and planned learning activities

5.1 Used teaching methods *

Class contact teaching

- Lectures
- Practice sessions
- Laboratory sessions

Personal work

- Exercises

Assignments

- Individually
- In group

Project

- Individually

5.2 Planned learning activities and teaching methods

5.3 Facilities for working students *

6. Assessment method and criteria *

6.1 Used assessment methods *

Examination

- Written examination without oral presentation

Continuous assessment

- Assignments

Other assessment methods

- Written assignment

6.2 Assessment criteria *

10% Micro theory exam written
50% Assignments (50/5)% per assignment
40% Project part (10% on report, 20% on work, 10% on presentation)
Note that you need to pass (i.e., obtain a score of at least 50%) all parts of the course to pass. If not, your grade will be "AFW" - absent. If you do attend/submit every part, you still need an overall score of 50% to pass the course. Additionally, if for at least one part your score is strictly below 40%, your overall grade will be min(7, your_score). your_score is the score you would get when applying the weights given above.

For the supplemental exam period, partial exemptions for specific parts of the course may be given. This is discussed individually.

7. Study material

7.1 Required reading *

For each of the modeling languages discussed a number of papers and/or books are made available on the course website.
http://msdl.uantwerpen.be/people/hv/teaching/MSBDesign/

7.2 Optional reading

The following study material can be studied voluntarily :

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8. Contact information *

lecturers: Prof. Hans Vangheluwe, Prof. Moharram Challenger

assistant: Joeri Exelmans, Lucas Albertins

9. Tutoring

The teacher is available for further questions