Module title: Model-Driven Development

Module ID	Workload	Credits	Semester	Frequency of Offering	Duration
MI14	150 h	5	1	yearly	1 semester

Workload	Attendance	Preparation and Follow-Up	Private Study	Preparation for Exam and Exam	Total
SU	30 h / 2 SWS	15 h	20 h	25 h	
P	30 h / 2 SWS	30 h			
Total	60 h / 4 SWS	45 h	20 h	25 h	**150 h**

1	**Scheduled Group Size:** *SU: 35 students, P: 15 students*
2	**Subject Knowledge / Skills** *Students understand the process of model-driven development. Theay are able to apply and customize it (including development and customization of according tools). Hence they follow the historic paradigm shift: moving from the idea that everything is an object to the more abstract idea that everything is a model.* *In detail they are able to* • *explain the significance of preciseness and completeness of models.* • *define and work with visual as well as textual domain specific languages,* • *develop model transformations and implement code generation* • *apply and implement refactorings in different development stages* • *work with complex original specifications*
3	**Content / Syllabus** • *Object Constraint Language (OCL)* • *Definiton of concrete and abstract syntax of visual as well as textual domain specific langugages, i.e. meta modeling, (meta) EBNF* • *Customizing a general purpose modeling language (UML profiles)* • *Formal and endogeneous approaches to define semantics of modeling languages* • *Modeling spaces as a general underlying framework* • *Model transformations using frameworks like QVT* • *Code generation using frameworks like Xpand and/or JET* • *Usage and implementation of refactorings on the level of OCL, model and code* • *Model exchange standards like XMI*
4	**Teaching Format** *Lecture with integrated exercises, accompanying practical work (group work with individual preparations), partially performed in a laboratory*
5	**Prerequisites** *None*

6	**Recommended Qualifications for the Participation** *Experienced in modeling (using UML, E/R or process modeling); basic knowledge of formal language theory; profound knowledge of object-oriented programming in Java and object-oriented design*
7	**Assessment** *Written exam*
8	**Prerequisites for Granting ECTS Credits** *Exam passed*
9	**Usage of this Module in Other Degree Courses** *None*
10	**Contribution to Final Score** 5,56 %
11	**Convenor** Professor of Automata Theory and Formal Languages
12	**Language of Instruction** *English*
13	**Reading List** The course relies on the current version of established specifications of the OMG: http://www.omg.org/spec/UML/ http://www.omg.org/spec/OCL/ http://www.omg.org/spec/QVT/ *Further references will be provided in class.*