



Ruhr Master School
of Applied Sciences

Dieses Wahlpflichtmodul ist ein Angebot der:

**Fachhochschule
Dortmund**

University of Applied Sciences and Arts

**Master Embedded Systems for
Mechatronics**

Scientific & Transversal Skills

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Fachhochschule
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Westfälische
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University of Applied Sciences

STIFTUNG
MERCATOR



Scientific & Transversal Skills (MOD1-05)					
Code Number	Workload	Credits	Semester	Frequency	Duration
10160/61	180 h	6	Sem. 1	annually	1 Semester
1	Course Title Scientific & Transversal Skills	Contact hours 4 SWS / 60 h	Self-Study 120 h	Planned Group Size 25 students	
2	Course Description <p>This module is tailored for new students with different levels of proficiency from their bachelor programmes. It is intended to close the gaps to the knowledge required for the master programme. Students select a minimum of 4 out of 7 compact courses on basic topics relevant for the further study programme. These compact courses will enable students with different backgrounds to get a smooth start into the master programme.</p>				
3	Course Structure <p>The programme offers a selection of about 7 compact courses. More compact courses might be added according to the needs of the individual student group:</p> <ol style="list-style-type: none"> 1. Compact Programming Course (Java) 2. Modeling of Embedded Systems (UML) 3. Embedded Systems Lab Project 4. Mini Project 5. Research Methods and Tools A (RMT-A) 6. Engineering Communication 1 (German) 7. Engineering Communication 1 (other language) 				
4	Case Studies <p>None – courses contain small labs</p>				
5	Parameters <ul style="list-style-type: none"> • Course characteristics: compulsory, students have to choose a minimum of 4 out of 7 courses, based on assessment of their prior knowledge • Course frequency: every year - winter semester • Capacity: 25 students • Course admittance prerequisites: none • Skills trained in this course: methodological, practical and scientific skills • Assessment of the course: tests (60 min) for each compact course, graded project work, compact course results are summarized for overall module grade • Teaching staff: Prof. Dr. Rolf Schuster, professors + tutors for each compact course 				
5	Learning outcomes <p>5.1 Knowledge</p> <ul style="list-style-type: none"> • Knows the foundations of each topic at least up to a bachelor level <p>5.2 Skills</p> <ul style="list-style-type: none"> • Can apply the knowledge in the upcoming master courses <p>5.3 Competence - attitude</p> <ul style="list-style-type: none"> • Can assess the gaps in own knowledge • Can use a variety of tools, online-courses, tutorials to close the gaps through self-study 				

6	Teaching and training methods <ul style="list-style-type: none">• Lectures introducing concepts, methods and tools• Labs to train practical skills• Group work to train concepts and methods, to develop skills and to work on projects• Literature review and essay writing• Homework to contribute to projects as group work• Presentations to communicate and demonstrate homework / project work
7	Course mapping <p>Input for: All other courses</p>
8	References <p>Peter Marwedel, Embedded System Design, Springer (2nd Edition, 2011)</p> <p>Herbert Schildt, Java: A Beginner's Guide, McGraw-Hill Education (6th Edition, 2014)</p> <p>Joshua Bloch, Effective Java: A Programming Language Guide, Addison-Wesley (2nd Edition, 2008)</p> <p>Martina Seidl, Marion Scholz, Christian Huemer, Gerti Kappel: UML @ Classroom: An Introduction to Object-Oriented Modeling (Undergraduate Topics in Computer Science), Springer (2015)</p>