

**Module catalog Systems Engineering for Micro-Electro-Mechanical Systems or Biomedical Micro Engineering**  
**PO2022**

Status: 18.01.2024	Professor	ECTS	PL/SL <sup>6)</sup>	Exam <sup>6)</sup>	Winter- semester			Summer-semester			Weight factor		
					German only	German or English	English only	German only	German or English	English only	Major MEMS	Major BME	
<b>Elective lecture modules</b> <sup>1) 2) 3)</sup>													
<b>Campus Zweibrücken in the master programs Systems Engineering, Applied Life Sciences, Computer Science</b>													
MEMS - From Basics to Fabrication	Trautmann	5	PL	PF								1	4
Microfluidics - From Basics to Applications	Trautmann	5	PL	PF								2,5	2,5
From digital data acquisition to automation	Kehrbusch / Baller	10	PL	PF								6	4
Science Module	Möbius	10	PL	H								5	5
Semiconductor Physics & Technologies	Trautmann	10	PL	H								8	2
Capture and visualize biosignals	Kehrbusch	5	PL	P								3	2
Nanostructuring: Selected Methods and their Applications	Saumer	5	PL	K								2,5	2,5
Chip-based Biosensors Workshop	Tarasov	5	PL	H/KP								1	4
Theorie und Praxis der Grenzflächen	Tarasov	5	PL	K/M								1	4
Pharmakologie und Pharmazie	Rabe / Buße	5	PL	K								1	4
Nanopharmazie und -medizin	Baller / Scheler	5	PL	K								2,5	2,5
Mobilkommunikation	Zimmermann	5	PL	PF								4	1
(MEMS in) Semiconductor Industry	Trautmann / Braun	10	PL	M								9	1
COMSOL Multiphysics Projekt	Braun	5	PL	P								3	2
Hands-On Experience in Development, Manufacturing and Testing of Microsystems	Trautmann	10	PL									5	5
Bio MEMS Engineering	Trautmann	5	PL	PF								2,5	2,5
Replacement & Reduction of animal experiments	praktisch (2 ECTS) theoretisch (3 ECTS) Hittinger	5	PL	KP								1	4
KI-unterstützte Computertomographie	Schorr	5	PL	M								1	4
Modellierung und Simulation	Klär	5	PL	K								3	2
Regenerative Medizin	Buße / Rabe	5	PL	M								1	4
Moderne Molekularbiologische Methoden	Müller	5	PL	K								1	4
<b>Modules at Campus Kaiserslautern in the master programs mechanical engineering/mechatronics and electrical engineering/information technology</b>													
Fluid mechanics: CFD and measurement techniques	Gilbert / Niebergall	10	PL	P								8	2
Numeric methods	Kiss / ...	10	PL	K or P								5	5
Product development: from need to market	Helmstädter/Kilb/Meij	10	PL	P								5	5
Software Engineering for Embedded Systems	praktisch (4 ECTS) theoretisch (6 ECTS) Schütz	10	PL	KP								8	2
Advanced Power Electronics	Schumann	5	PL	K or M								4	1
<b>Additional modules / courses from other programs</b> <sup>3)</sup>													
Additional elective courses 5 ECTS		5	PL										
Additional elective courses 10 ECTS		10	PL										
<b>Further elective modules</b> <sup>2) 3)</sup>													
R&D-Module 10 ECTS <sup>4)</sup>		10	PL										
R&D-Module 20 ECTS <sup>4)</sup>		20	PL										
R&D-Module 30 ECTS <sup>4)</sup>		30	PL										
Mobility Module trimester		20	PL										
Mobility Module semester		30	PL										
<b>Pflichtmodule, Compulsory modules</b>													
Scientific writing and attending seminar series	Scientific writing (3 ECTS) Attending seminar series (2 ECTS)	Tarasov / Saumer	5	SL								2,5	2,5
Master thesis and Colloquium <sup>5)</sup>			30	PL PL	MA KOL	x x	x x					Individuell Individuell	

<sup>1)</sup> 15 ECTS have to be achieved through lecture modules.

<sup>2)</sup> Prerequisites see detailed Module descriptions.

<sup>3)</sup> Not all modules must offered, depending on the number of participants and the planning of the semester. // Maximum number of participants may be limited. // Modules in different programs / departments or at another campus will most likely result in schedule collisions, which cannot be avoided.

<sup>4)</sup> According to §8, paragraph 6 in the subject examination regulations (german Fachprüfungsordnung FPO).

<sup>5)</sup> 30 ECTS divided into 25 ECTS for the thesis, 5 ECTS for the colloquium, the module grade is determined weighted according to the ECTS points.

<sup>6)</sup> Relevant are the entries in the subject examination regulations (german Fachprüfungsordnung FPO) or the module descriptions. (PL) Prüfungsleistung = Exam Performance, (SL) Studienleistung = Study Performance, (H) Hausarbeit = Term paper, (K) Klausur = Written Exam, (KOL) Kolloquium über die Masterarbeit = Colloquium Master Thesis, (KP) Kombinierte Prüfung = Combined Exam, (M) Mündliche Prüfung = Oral Exam, (MA) Masterarbeit = Master Thesis, (P) Projektarbeit = Project Work, (PF) Portfolioprfung = Portfolio Exam