



Master of Science in Microsystems Engineering

Program modules

H. Zappe – Basis v.10

Modules	Semester*	ECTS
Advanced Microsystems Engineering		61
All modules must be completed		
Assembly and packaging technology	1	5
Microelectronics	1	5
Micro-mechanics	1	5
MST design laboratory I	1	3
Optical microsystems	1	5
Sensors	1	5
Signal processing	1	5
Analytics of microsystems	2	5
Biomedical microsystems	2	5
Dynamics of MEMS	2	5
Micro-actuators	2	5
Micro-fluidics	2	5
MST design laboratory II	2	3
Mathematics		5
This module must be completed		
<i>Probability and statistics</i>	2	5
Elective modules: Microsystem Concentrations		12
At least 12 ECTS must be completed in 2 concentrations		
Circuits and systems	2–4	12
Design and simulation	2–4	12
Life sciences: Biomedical engineering	2–4	12
Life sciences: Lab-on-a-chip	2–4	12
Materials	2–4	12
MEMS Processing	2–4	12
Sensors and actuators	2–4	12
Master's thesis		30
This module must be completed		
Master's thesis	3–4	30
Modules	Semester*	ECTS

* Recommended semester for completion of this module

Provisional information

Subject to change



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Microsystem Concentrations

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Module	ECTS	Module	ECTS
Circuits and systems		Materials	
Analog CMOS circuit design	3	Atomic force microscopy	3
Autonomous microsystems	3	Biomaterials	3
Circuit design for sensors and actuators	3	Ceramics for MST	3
Innovative energy systems	3	Materials testing and analysis	3
Integrated microsystems	3	Nanostructured optical surfaces	3
Optical microsystems	3	Nanotechnology	3
VLSI system design	3	Polymers for MST	3
Wireless technologies	3		
Dynamics of MEMS	3		
Design and simulation		MEMS processing	
CAD	3	Advanced silicon technology	3
Control of embedded systems	3	Applications of LIGA	3
Design of large-scale MST systems	3	Ceramics laboratory	3
FEM simulation	3	Lithography	3
Multi-scale simulation	3	Low-cost micromachining	3
Quantum mechanics for MEMS	3	Microstructured polymer components	3
Reliability	3	Thermal microsystems	3
Systems theory II	3		
Life sciences: Biomedical engineering		Sensors and actuators	
Biomedical engineering I (electrical signals)	3	Applications of micro-actuators	3
Biomedical engineering II (non-electrical signals)	3	Bionic sensors	3
Biomedical measurements and instrumentation lab	3	Lasers	3
Biomedical microtechnology	3	Micro-acoustics	3
Biotelemetry and health telematics	3	Micro-mechanical sensors	3
Fundamentals of electrical stimulation	3	Optical micro-sensors	3
Implant fabrication technology	3	Position sensors	3
MST in medicine	3	Sensors laboratory	3
Life sciences: Lab-on-a-chip			
Analytics with microsystems	3		
Bio-MEMS	3		
Computational fluid dynamics	3		
DNA analytics	3		
Micro process engineering	3		
Microfluidic platforms	3		
Molecular simulation	3		

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