

Elective modules

Module number	Module name	1 st semester	2 nd semester	3 rd semester	Credits
		Lecture (Lecturer) (L/E/P)	Lecture (Lecturer) (L/E/P)	Lecture (Lecturer) (L/E/P)	
Eui-NES-E-GLC	German Language and Culture	<i>German Language and Culture</i> (TUDIAS) (4 language courses)			5
Eui-NES-E-OSO	Organic Semiconductors for Optoelectronics	<i>Organic Semiconductors for Optoelectronics</i> (Murawski, Saggari) (2/0/0, 1 seminar)			5
Eui-NES-E-PlaTe	Plasma Technology	<i>Plasma Technology</i> (Hauff, Žukauskaitė) (4/2/0)			7
INF-NES-E-SE	Systems Engineering	<i>Systems Engineering</i> (Fetzer) (2/2/0)			6
Eui-NES-E-StSig	Stochastic Signals and Systems	<i>Stochastic Signals and Systems</i> (Schaefer) (2/2/0)			6
NES-Eui-E-BioSem	Current Trends in Biomedical Electronics	<i>Current Trends in Biomedical Electronics</i> (Bahr) (0/0/0, 2 hours per week seminars)	also offered in summer semester		5
Eui-NES-E-NNMHA	Neural Networks and Memristive Hardware Accelerators	<i>Neural Networks and Memristive Hardware Accelerators</i> (Schroedter) (2/0/2, 2 project)			7
Eui-NES-E-LSer	Requirements and methodologies for design of integrated circuits from industrial production perspective		<i>Requirements and methodologies for design of integrated circuits from industrial production perspective</i> (Schulz) (4/0/0)		5
WIWI-NES-E-ResM	Resource Management		<i>Ressource Management</i> (Günther) (2/0/0, 2 project)		5
PHY-NES-E-NanSc	Nanoscience		<i>Nanotechnology</i> (Eng) (2/0/0) <i>Scanning Probe Microscopy</i> (Eng) (2/0/0)		6
MW-NES-E-NSM	Nanostructured Materials		<i>Nanostructured Materials</i> (Cuniberti) (2/2/2)		7
NES-E-AdLsy	Adaptive Laser Systems		<i>Laser Metrology and Quantum Technology</i> (Czarske) (2/1/0) <i>Laser Sensor Technology Lab</i> (Czarske) (0/0/1)		5
Eui-NES-E-ARS	Antennas and Radar Systems		<i>Antennas and Radar Systems</i> (Plettmeier) (4/2/0)		7
Eui-NES-E-Comms	Communications		<i>Communications</i> (Fettweis) (2/1/1)		5
INF-NES-E-SFT	Software-Fault Tolerance		<i>Software Fault Tolerance</i> (Fetzer) (2/2/0)		6
INF-NES-E-WSN	Wireless Sensor Networks		<i>Wireless Sensor Networks</i> (Dargie) (2/2/0)		6
INF-NES-E-ACSR	Adaptive Computing Systems for Robotics		<i>Adaptive Computing Systems for Robotics</i> (Göhringer) (2/2/0)		6
Eui-NES-E-CSD	Circuit and System Design		<i>Circuit and System Design</i> (Mayr) (2/1/0, 2 hours per week projects)		5
Eui-NES-E-DNNH	Deep Neural Network Hardware		<i>Deep Neural Network Hardware</i> (Mayr) (2/2/0)		5
INF-NES-E-EMA	Design and Programming of Embedded Multicore Architectures		<i>Design and Programming of Embedded Multicore Architectures</i> (Göhringer) (2/2/0)		6
Eui-NES-E-ICDBS	Integrated Circuit Design for Biomedical Sensors		<i>Integrated Circuit Design for Biomedical Sensors</i> (Bahr) (2/0/2)		7
Eui-NES-E-ONC	Introduction to Optical Nonclassical Computing: Concepts and Devices		<i>Introduction to Optical Nonclassical Computing: Concepts and Devices</i> (Jamshidi) (4/2/0)		7
Eui-NES-E-NVLSI	Neuromorphic VLSI Systems		<i>Neuromorphic VLSI Systems</i> (Mayr) (4/2/0)		7
Eui-NES-E-PD	Physical Design		<i>Physical Design</i> (Fettweis/ Sen/ Haas) (2/0/1)		6
Eui-NES-E-VLSI	VLSI Processor Design		<i>VLSI Processor Design</i> (Mayr) (2/2/2)		7
Eui-NES-E-3DSI	Materials for the 3D System Integration		<i>Micro-/Nanomaterials and Reliability Aspects</i> (Panchenko) (2/0/1, one day excursion)	<i>System Integration Technologies</i> (Panchenko) (2/0/0)	7
Eui-NES-E-MemTe	Memory Technology		<i>Memory Technology 1</i> (Mikolajick) (2/0/0, 1 seminar)	<i>Memory Technology 2</i> (Mikolajick) (2/0/0, 1 seminar)	7
PHY-NES-E-NanOp	Nano&Optics			<i>Modern Optics</i> (Reineke) (2/0/0) <i>NanoOptics</i> (Eng) (2/0/0)	6
Eui-NES-E-ICAND	Innovative Concepts for Active Nanoelectronic Devices			<i>Materials for Nanotechnology</i> (Richter) (2/0/1) <i>Innovative Semiconductor Devices</i> (Mikolajick) (2/1/0)	7
MW-NES-E-MoEI	Molecular Electronics			<i>Molecular Electronics</i> (Cuniberti/Moresco) (2/2/0)	5
Eui-NES-E-OPTO	Optoelectronic Devices and Systems			<i>Optoelectronic Devices and Systems</i> (Lakner) (2/1/1)	5

PHY-NES-E-QMNE	Quantum Mechanics for Nanoelectronics			<i>Semiconductor Quantum Structures</i> (Helm) (2/0/0) <i>Quantum and Solid State Physics</i> (Scholz) (3/1/0)	7
EuI-NES-E-FCN	Future Communication Networks			<i>Communication Networks 3</i> (Fitzek) (2/1/1)	5
EuI-NES-E-ComLS	Computational Laser Systems			<i>Digital Holography and Image Processing</i> (Czarske) (1/1/0) <i>Biomedical Laser Systems and Optogenetics</i> (Czarske) (2/0/0)	5
EuI-NES-E-FED	Fundamentals of Estimation and Detection			<i>Fundamentals of Estimation and Detection</i> (Fettweis) (2/2/0)	6
EuI-NES-E-HJCAS	Joint Communication and Sensing RF Hardware			<i>Joint Communication and Sensing RF Hardware</i> (Fettweis/ Sen) (2/0/0, 1 tutorial)	5
INF-NES-E-IoT	IoT Communication			<i>IoT Communication</i> (Wählisch) (2/2/0)	6
INF-NES-E-DS	Distributed Systems			<i>Distributed Systems</i> (Springer) (2/2/0)	6
EuI-NES-E-EMNet	Electromechanical Networks			<i>Electromechanical Networks</i> (Marschner) (2/1/1)	5
EuI-NES-E-FCPL	Foundations of Certified Programming Language and Compiler Design			<i>Foundations of Certified Programming Language and Compiler Design</i> (Ertel) (2/2/0)	6
INF-NES-E-HMS	Hardware Modelling and Simulation			<i>Hardware Modelling and Simulation</i> (Göhringer) (2/2/0)	6
EuI-NES-E-HwSwC2	Hardware/Software Codesign Advanced			<i>Hardware/Software Codesign Advanced</i> (Fettweis) (2/2/0)	5
EuI-NES-E-ICBC	Integrated Circuits for Broadband Optical Communications			<i>Integrated Circuits for Broadband Optical Communications</i> (Ellinger) (3/1/2)	7
EuI-NES-E-IPD	Integrated Photonic Devices for Communications and Signal Processing			<i>Integrated Photonic Devices for Communications and Signal Processing</i> (Jamshidi) (4/0/2)	7

Last updated: 12th of March, 2026

- L Lecture in hours per week (2 = 90 minutes)
- E Exercise in hours per week (2 = 90 minutes)
- P Practical lab course in hours per week (2 = 90 minutes)

Key areas:

Technology

Design

Applications