Winter term			
Name	Level	Keywords	Lecturer
Mixed Reality	undergrad.	Virtual and augmented reality, Human-machine-interaction, Generative arts, Rapid virtual prototyping, Audio and Video processing, Tools (e.g. Processing) and devices (e.g. motion capture systems).	Gerndt
Safety and Requirements	undergrad.	Standards, Development processes, Requirement engineering, Change management for software, Robustness, Tools for requirement analysis.	Fühner
Seminar on CS topics	undergrad. and grad.	e.g. Internet of Things, Mobility, The Python ecosystem	Fuehner
Automotive Systems	grad.	Basics of automotive systems and driver assistance systems, Automotive sensors and actuators, Functional safety, Car2X-communication and infrastructure, Autonomous driving.	Pramme
Robotics	grad.	Robot Operating System (ROS), Modelling and simulation of robots, Robotic sensing and vision, Deep learning, Tools (e.g. Gazebo simulator) and devices (e.g. Turtlebot robot).	Gerndt

Summer term			
Introduction to Robotics	undergrad.	Robotics basics, Introduction to inverse and forward kinematics and dynamics, Robot Operating System (ROS) with Python programming language, Cooperative Robotics (Cobotics), Robots for automation, Social robotics, Devices (e.g. Baxter and Pepper robot) and respective tools.	Gerndt
Simulation in Production and Logistics	undergrad.	Discrete event simulation, Stochastic processes, Modelling, Plant simulation, Simulation experiments, Emulation.	Guten-schwager
Systems and Control Engineering	undergrad.	Short introduction to mechanical, electrical and software design, Rapid prototyping ('FabLab'), Signal processing, Control algorithms, Applications to Internet of Things (IoT) and Robotics, Tools (e.g. Matlab) and devices (e.g. Arduino).	Gerndt
Seminar on CS topics	undergrad. and grad.	e.g. Internet of Things, Mobility, The Python ecosystem	Fuehner
Innovative Computer Architectures	grad.	Introduction to System On Chips including application specific processors based on building blocks. Specific languages to support specific co-processor technologies like e.g. Open-CL and CUDA. Course includes lectures and practical labs.	Kreyssig
Location Based Assistance	grad.	Methods and technologies to detect accurate position (long range and short range; e.g. GPS, Galileo, RFID/NFC). Communication and security aspects regarding access and data integrity. Typical applications. Course includes lectures and practical labs.	Kreyssig
Applied Cryptography	grad.	Stream and block ciphers, asymmetric ciphers, Signatures, Hashing, Key management, Blockchain, Post-Quantum Cryptography	Schiering

Autonomous Systems	grad.	Decision making under uncertainty, Human-Robot Interaction, complex control, Mobile and humanoid robots.	Gerndt
Simulation and Verification	grad.	Basics of simulation systems, simulation languages, Modelling and assessment, Simulation for validation and test, Closed-loop simulation.	Pramme
Software Engineering Project	grad.	Software development in a team, Scrum, Source code repositories, Build tools	Mueller
Other lectures upon request - see module descriptions at www.ostfalia.de/cms/de/i (German only)	undergrad. and grad.		
https://www.ostfalia.de/cms/de/i/.content/documents/modulhandbuch/2019-11-11-Modulhandbuch-Informatik-Bachelor-Praesenz-PO2018.pdf			
https://www.ostfalia.de/cms/de/i/.content/documents/modulhandbuch/2019-09-16-Modulhandbuch-Informatik-Master-Praesenz-PO2018.pdf			