Module title		SM Code
Fiber Optic Communication		**FOC**
Module lecturer	**Faculty**	
Prof. Dr. Thomas Fuhrmann	Electrical Engineering and Information Technology	
Module language	**Number of SWS / WSH**	**ETCS credits**
English	4 SWS / WSH	5
Teaching format		
Seminar-based teaching with practical experiments		

Semester according to the study plan	
1st, 2nd semester (Master)	
Attendance/classroom hours	**Additional independent study**
56 hours	Preparation and follow-up work: 56 hours Exam preparation: 38 hours
Type of examination / Requirements for the award of the credit points	
Written exam: 90 minutes	

Teaching content

- Basics of Optical Fibers: Single Mode Fibers, Multimode Fibers, Special Fibers, Polymer Optic Fibers, Photonic Crystal Fibers, Modes, Attenuation, Dispersion, Polarization Mode Dispersion, Manufacturing technologies
- Principles of Fiber Optic Communication Systems: DWDM Systems, CWDM Systems, PON Systems
- Components for Fiber Optic Communication Systems: Connectors, Lasers, Photodiodes, Modulators, Amplifiers, Attenuators, Filters, Switches, Add-Drop-Multiplexers, Dispersion Compensators
- Principles and Components of Integrated Optics

- Modulation Formats, Bit Error Detection and Forward Error Correction
- Electronic circuits for Lasers and Photodiodes
- Fiber Optics Measurement Technology: Optical Power Meter, OTDR, OSA, Wavelength Meter

Learning objective: Professional competence

After successfully completing this module, students will be able to

- understand principles of fiber optic communication systems (2)
- know various types of fibers, their properties and usage (1)
- know important components and their functions in fiber optic communication systems (1)
- know principles and basic components in integrated optics (1)
- know modulation formats and bit error handling (1)
- know electronic circuits for lasers and photodiodes (1)
- know principles and devices for fiber optic measurment (1)
- calculate important parameters of fiber optic communication systems (2)
- analyse fiber optic communication systems (3)
- design simple fiber optic communication systems according to required applications (3)

Learning objective: Personal competence

After successfully completing this module, students will be able to

- read and understand technical texts about fiber optic communication written in English (3)
- analyse technical problems in the field of fiber optic technologies (3)
- discuss with colleagues about technical aspects of fiber optic technologies and communication systems (3)

The numbers in brackets indicate the levels to be achieved: (1)-know | (2)-can | (3)-understand and apply