Module name	**Communication Systems**
Module coordinator/ Module coordinator	Prof. Dr. Carsten Roppel
Qualification goals	They understand the basic processes of digital message transmission and know important parameters. You will be able to use error correction procedures. You will master basic methods of developing communication systems. You will be able to develop and test typical algorithms for communication systems using Matlab. You will be familiar with various technologies for setting up sensor networks and will be able to evaluate them.
Module contents	1. Introduction 2. Signal transmission (impulse response and convolution, transfer function) 3. Digital message transmission in the baseband 4. Digital modulation methods (ASK, PSK, QAM) 5. Channel coding (block codes, convolutional codes) 6. Sensor networks
Teaching methods	Seminar lecture and exercise (3 SWS), practical laboratory course (1 SWS)
Requirements for participation	Knowledge of basic electrical engineering, digital signal processing and MATLAB/Simulink is recommended
Literature/ multimedia teaching and learning programs	Literature: Proakis, J. G., Manolakis, D. G.: Digital Signal Processing. Pearson Prentice Hall, 4th ed., 2007. Proakis, J. G., Salehi, M.: Digital Communications. McGraw-Hill, 5th ed., 2008 Roppel, C.: Fundamentals of digital communication technology - transmission technology, signal processing, networks. Hanser Publishing House, 2006 Stewart, R. et al: Software Defined Radio using MATLAB & Simulink and the RTL-SDR. Strathclyde Academic Media, 2015.
Textbook author	
Usability	Master's degree program in Mechatronics & Robotics
Workload/ Total workload	Attendance time 60 h + self-study 90 h = 150 h
ECTS and weighting of the grade in the overall grade	5 ECTS points
Proof of performance	Written exam 120 minutes
Semester	Summer semester
Frequency of the offer	Every academic year in the summer semester
Duration	1 semester
Type of course (compulsory, optional, etc.)	Compulsory elective module
Special	