Module:	**WiFi & Sensor Network Security - Tweaking Communication in Unlicensed Spectrum**
Lecturer:	Dr.-Ing. Maciej Mühleisen
Language:	English
Teaching Method:	Practical Work
Credit Points:	1 ECTS
Attendance requirements:	• Curiosity about the details of everyday technology like cell phones and WLAN • Basics in radio wave propagation • Basics in statistics
Goals / Skill:	The students will understand the protocols applied to operate communication systems in unlicensed spectrum like the Industrial Scientific and Medical (ISM) Band. They will learn how common systems like WiFi, Wireless Sensor Networks and Bluetooth apply those techniques for data transmission. Exploits are presented to manipulate the protocols in order to gain an advantage over other communicating parties.
Detailed Content:	Basics on radio propagation Communication protocols in unlicensed spectrum: IEEE 802.11 (WiFi), IEEE 802.15.4 (Low Rate Personal Wireless Network) Experiments: • How do the systems interfere with each other • Tweaking parameters: How can the protocols be changed to gain an advantage over others (Simulation and lab setup)
Media Used:	Electronic presentation, Lab setup and life network measurements by the students, Computer aided network simulation by the students
Literature:	• B. Walke: Mobile Radio Networks: Networking, Protocols and Traffic Performance. Wiley, 2001
Suggested Reading before the start of the summer school:	• M. Mühleisen, R. Jennen, M. Kirsche: Wireless Networking Use Cases, p.p. 305-325, Edited by Wehrle, Klaus and Günes, Mesut and Gross, James, Heidelberg, Germany , 2010 http://link.springer.com/chapter/10.1007/978-3-642-12331-3_13