Course		Course Acronym
Wireless Sensor/Actuator Networks		WSAN
Responsible		Faculty
Prof. Dr. Martin Schubert		Elektro- und Informationstechnik
Lecturer		Offer Frequency
Prof. Dr. Martin Schubert		Every semester
Teaching Methode		
50% seminar teaching and 50% practical training		

Semester according to Curriculum	Teaching Scope (SWS or UE)	Lehrsprache (Teaching Language)	Arbeitsaufwand (ECTS-Credits)
2. oder 3.	4 SWS	Deutsch, English on demand, Documents English	5

Campus Program	Self-Study
56 h	Preparation and review: 62 h, Exam preparation: 32 h

Study and Examination Conditions
see -> Studienplantabelle

Approved Aids for Exam
see -> Studienplantabelle

Contents

Theory:
1. Transmission Fundamentals
2. Physical Level
3. Data Link Level
4. Network Level
5. Transport Level
6. Current Topics (guest lecturer)

Practical:
a) Get familiar with the microcontroller part.
b) Getting started with the wireless part
c) Student projects concerning wireless transmission.

Knowledge/Skills/competences

Knowledge:
1. Fundamentals
    + Theory
       ISO Layer Model
       Most important IEEE standards
    + Practical: basic C language needs
2. Physical Level
    + Theory
       ISM frequency bands,
       Wirelss physics (FSPL, ERP vs. range, Fresnel zone)
    + Practical: Getting startet with programming the hardware
3. Data Link Level
4. Network Level
5. Transport Level
6. Routing strategies

Skills:
Students learn by means of exercises and examples the
    + application of knowledge gained by understanding the course,
    + analysis of wireless requirements and to relate them to wireless network topologies.

Competences:
By means of a self-chosen group-dependent project examples students will
    + evaluate which wireless components and topologies meet requirements
       of particular situations best, based on understanding gained in point knowledge,
    + create an wireless network solution meeting the given requirements, based on
       knowledge and understanding listed under Headline "knowledge".

Offered Teaching Materials
Script and instructions for practical training

Teaching Media
Blackboard and beamer, electronics laboratory with experimental setups

References

[1]   Thomas Watteyne, eZWSN – Exploring Wireless Sensor Networking, available:
       http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.468.2103&rep=rep1&type=pdf

[2]   Robert Faludi: Building Wirelss Sensor Networks, O'Reilly Media, 2010

[3]   F. Zhao, L.J. Guibas: Wireless Sensor Networks, Morgan Kaufmann, 2004

[4]   Chiara Buratti: An Overview on Wireless Sensor Networks, OPEN ACCESS

Further Information About the Course (optional)
Documents English, teaching language is German or English depending on students.