



Course syllabus

Projekt i trådlös kommunikation Project in Wireless Communication

EITN21, 7,5 credits, A (Second Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED E

Date of Decision: 2023-04-11

General Information

Main field: Communication Systems.

Compulsory for: MWIR2

Elective for: C5, D5, E5-ks

Language of instruction: The course will be given in English

Aim

The aim is to, through project work, give a comprehensive view of how the different building blocks in a wireless communication system work and interact. The students should after the course be able to simulate a communication system built from different sub-blocks including both the physical layer and basic control mechanisms. They should thereby get a good understanding of how the performance of a communication system can be evaluated through simulations and how these simulations can be used in the system design process.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- have an understanding of the properties of the building blocks and their interaction in a complete wireless communication system. An important part is the understanding that different technology choices often lead to compromises where all desired properties not can be achieved simultaneously.
- be familiar with different techniques for simulating or by other means evaluating the performance of system proposals in comparative studies.

Competences and skills

For a passing grade the student must

- be able to analyze and describe the properties of a sub-block in a wireless communication system, and from this suggest a suitable implementation method.
- be able to construct a radio communication system by using these blocks.
- be able to design a communication system in a simulation environment from a given project description.

Judgement and approach

For a passing grade the student must

- Have a comprehensive view of how the different sub-blocks in a wireless communication link interact with other.
- Feel confident in the ability to understand, analyse and describe the properties of a communication system in order to evaluate and verify their performance.

Contents

The main part of the course is a simulation project where the students in groups analyse, implement, simulate and test a communication system. The project requires that knowledge from other courses in the same area is combined and contains literature studies of both recommended and external material, implementation, simulation and test. The lectures and exercises work like a direct introduction to the project, while the main part of the course consists of project work. At the end of the course the project is disseminated both orally and through a project report.

Examination details

Grading scale: UG - (U,G) - (Fail, Pass)

Assessment: Assignments, written project report and oral presentation of the project work.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts

Code: 0118. **Name:** Project in Wireless Communication.

Credits: 4,5. **Grading scale:** UG. **Assessment:** Approved project report and oral presentation **Contents:** Oral project presentation and written project report

Code: 0218. **Name:** Assignment.

Credits: 3. **Grading scale:** UG. **Assessment:** Approved assignments and oral presentation **Contents:** Assignments, computer simulations

Admission

Admission requirements:

- EITG05 Digital Communications or ETT051 Digital Communications

The number of participants is limited to: No

The course overlaps following course/s: EITN15, EITN20

Contact and other information

Course coordinator: Fredrik Tufvesson, fredrik.tufvesson@eit.lth.se

Course homepage: <http://www.eit.lth.se/course/eitn21>