



IK2514 Wireless Infrastructure Deployment & Economics 7.5 credits

Dimensionering och ekonomi för trådlösa bredbandsnät

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for IK2514 valid from Spring 2019

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Electrical Engineering

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

The course will enable the students to describe, design and analyze wireless systems not only from a pure technical functionality and performance perspective but also taking into account the architecture, deployment, operation, service delivery, market, cost structure and revenue aspects.

The objective of the course is that the students should be able to:

- describe and analyze telecom markets in terms of services, market segments and market actors
- describe basic regulatory tools and the impact on competition & pricing
- make a network design given demand, dimensioning principles, cost and performance figures
- model and analyze the cost structure of an operators infrastructure and service delivery chain
- use business modeling concepts to analyze operator markets, services offers and value networks.

Course contents

Introduction to tele-economics;

- Market structure, type of actors and business relations at telecom markets.
- Telecom regulation and type of regulated markets and services.
- History of mobile communication (phases, technology, standardization).

Spectrum regulation

- Spectrum Management Regimes (Licensed/Unlicensed - market/command&control).
- Market based spectrum allocation: spectrum auctions.
- Dynamic/opportunistic/"White Space" spectrum access.

Wireless Broadband Network dimensioning and deployment

- Deployment strategies and dimensioning principles, demand, spectrum and capacity aspects
- Cost structure of telecom and broadband networks, operator examples
- Capital & operational expenditure (CAPEX & OPEX), Net present value, price erosion

Mobile operator business

- Overview and pricing of mobile services, charging and billing, subscriptions
- Mobile Service Regulation, Mobile operator competition and strategic planning
- Financing, investments and risk, revenue streams, willingness to pay, decision making factors.

Specific prerequisites

- IK2510 Wireless Networks
- documented proficiency in English B or equivalent.

Course literature

- Anteckningar
- Forskningsartiklar och utdelat material

Examination

- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F
- PRO1 - Project, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Written Assignment, 3.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Other requirements for final grade

- Homeworks INL1 3,0 HEC (P/F)
- Lab on Operator business LAB1 1,5 HEC (P/F)
- Small project including report and presentation PRO1 3,0 HEC (A-F)

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.