Blekinge Institute of Technology
Department of Computer Science

Revision: 1
Reg.no: BTH-4.1.14-0839-2021

COURSE SYLLABUS

Avancerad nätverksteknik

Advanced Networking

7.5 credits (7,5 högskolepoäng)

Course code: DV2601
Main field of study: Computer Science, Electrical Engineering
Disciplinary domain: Technology
Education level: Second cycle
Specialization: A1N - Second cycle, has only first cycle course/s as entry requirements

Language of instruction: English
Applies from: 2022-01-17
Approved: 2021-09-01

1. Decision

This course is established by Dean 2020-06-09. The course syllabus is approved by Head of Department of Computer Science 2021-09-01 and applies from 2022-01-17.

2. Entry requirements

Admission to the course requires at least 7.5 credits completed in Data- and Telecommunications or Data communication and at least 7.5 credits completed in Programming.

3. Objective and content

3.1 Objective

The aim of the course is to provide in-depth theoretical and applied knowledge in advanced and complex network technologies. This includes understanding of methods, protocols and mechanisms so that the student can explain and compare advanced and basic networking technologies.

3.2 Content

- Repetition of basic network and Internet concepts
- Foundation of public telephone networks (including cellular mobile networks) and the Internet
- Advanced IP-based multimedia protocols
- Introduction into data center networking
- Introduction into 3/4/5G mobile networks and their components
- Introduction into Cloud networking
- Overview on concept for the Future Internet
- Performance metrics for communication networks
- Design pattern for communication network architectures
- Testing and operation of network

4. Learning outcomes

The following learning outcomes are examined in the course:

4.1 Knowledge and understanding

On completion of the course, the student will be able to:

- describe the fundamental principles of link, network and communication protocols
- describe in general the differences between wired and wireless networks
- describe different communication network architectures, as well as their advantages and disadvantages
- explain and describe different data transmission quality metrics for link, network and communication protocols.

Skills and Abilities

- determine which protocols are appropriate for multimedia communication in wired and wireless networks
- make decisions regarding the choices for network architectures
- select and suggest network architectures, link and communication protocols.

Judgement and Approach

- discuss the advantages and disadvantages of different wired and wireless networks technologies
- match simple requirements from applications to network functionality.

5. Learning activities

The course is organized around a number of lectures in which the theoretical part of the course is presented. There are also a number of exercises with assignments where the students deepen and apply the knowledge from the lectures.

6. Assessment and grading

Modes of examinations of the course

Code	Module	Credits	Grade
2205	Written assignment	2.5 credits	GU
2215	Written examination	5 credits	AF

The course will be graded A Excellent, B Very good, C Good, D Satisfactory, E Sufficient, FX Fail, supplementation required, F Fail.

The information before a course occasion states the assessment criteria and make explicit in which modes of examination that the learning outcomes are assessed.

An examiner can, after consulting the Disability Advisor at BTH, decide on a customized examination form for a student with a long-term disability to be provided with an examination equivalent to one given to a student who is not disabled.

7. Course evaluation

The course evaluation should be carried out in line with BTH:s course evaluation template and process.

8. Restrictions regarding degree

The course can form part of a degree but not together with another course the content of which completely or partly corresponds with the contents of this course.

9. Course literature and other materials of instruction

Huvudlitteratur

Computer Networking: A Top-Down Approach (2017), Seventh Edition, Global Edition. Författare: James F. Kurose and Keith W. Ross Förlag: Pearson, ISBN 978-1-292-15359-9.

Referenslitteratur

I. Grigorik: High Performance Browser Networking: What every web developer should know about networking and web performance", O'Reilly & Associates, 2013; ISBN-10: 1449344763; ISBN-13: 978-1449344764.

A. Tanenbaum, D. Wetherall, "Computer Networks", Pearson, 5th edition, 2010, ISBN-13: 9780133072624.

M. Olsson, C. Mulligan: EPC and 4G Packet Networks: Driving the Mobile Broadband Revolution, Academic Pr Inc; 2nd Edt., 2012; ISBN-10: 012394595X, ISBN-13: 978-0123945952.

R. Seifert, J. Edwards: The All-New Switch Book: The Complete Guide to LAN Switching Technology, Wiley Publishing, 2008, ISBN:0470287152 9780470287156.

10. Additional information

This course replaces the course ET2597