



## COURSE SYLLABUS

### Nätverks- och systemsäkerhet Network and System Security 7.5 credits (7,5 högskolepoäng)

**Course code:** DV2636

**Main field of study:** Computer Science, Electrical Engineering

**Disciplinary domain:** Technology

**Education level:** Second cycle

**Specialization:** AIN - Second cycle, has only first cycle course/s as entry requirements

**Language of instruction:** English

**Applies from:** 2023-08-28

**Approved:** 2023-03-01

#### 1. Decision

This course is established by Dean 2022-12-21. The course syllabus is approved by Head of Department of Computer Science 2023-03-01 and applies from 2023-08-28.

#### 2. Entry requirements

Admission to the course requires completed courses in Data- and Telecommunications or Data communication 7.5 credits  
Completed course in Programming 7.5 credits. English 6.

#### 3. Objective and content

##### 3.1 Objective

The aim of the course is for students to learn how data, computer systems and networks can be protected against unauthorized access.

##### 3.2 Content

The key elements of the course are:

- Overall description of computer hacking, malicious software (malware) and denial-of-service attacks
- Introduction to crypto, key management and digital certificates
- Vulnerabilities and security functions for applications and operating systems
- Firewalls
- Authentication for data, users and systems
- Security for wireless networks
- IP security
- Virtual private network (VPN) systems
- Security for e-mail, web, and other applications
- Cloud security
- Introduction to intrusion detections systems (IDSs)

#### 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:

- Elaborate on different security threats against network equipment
- Describe different encryption methods and cryptography algorithms
- Elaborate on different types of VPN systems, such as IPsec

##### 4.2 Competence and skills

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

- Configure a firewall
- Create and administrate digital certificate

- Configure and operate a VPN system
- Configure and operate an IDS system

#### 4.3 Judgement and approach

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

- Evaluate different security solutions for systems and networks that protect against specific threats

#### 5. Learning activities

The course contains lectures and seminars where theoretical aspect of the course are presented, and lab work where practice applying the theory. The written assignments consists of various reports, announced when the course starts. The reports should help the students to perform and write descriptive text about used and learned techniques and methods in the course.

#### 6. Assessment and grading

Modes of examinations of the course

Code	Module	Credits	Grade
2310	On-campus examination[1]	4 credits	AF
2320	Written assignment	3.5 credits	GU

[1] Determines the final grade for the course, which will only be issued when all components have been approved.

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

William Stallings, "Cryptography and Network Security: Principles and Practice", 8ed, 2023 (Global Edition). ISBN: 9781292437484. 8th US edition from 2020 can also be used.

#### 10. Additional information

This course replaces the course ET2595