

**SYLLABUS**

# **Advanced Networking 15 credits W0016E**

**Avancerade datornätverk**

**Course syllabus admitted: Autumn 2023 Sp 1 - Present**

**DECISION DATE  
2021-02-16**

# Advanced Networking 15 credits W0016E

## Avancerade datornätverk

### First cycle, W0016E

Education level	Grade scale	Subject	Subject group (SCB)
First cycle	G U 3 4 5	Datateknik	Computer Technology

### Main field of study

Computer Science and Engineering

## Entry requirements

In order to meet the general entry requirements for first cycle studies you must have successfully completed upper secondary education and documented skills in English language and Basic theoretical and practical knowledge in configuration of routers and switches, be oriented in common routing protocols and how to design a network (OSI-reference model, TCP/IP, IP addresses/subnets) e.g. D0007E Computer networks and D0024D Routing and switching or equivalent.

## Selection

The selection is based on 1-165 credits.

## Course Aim

The course will provide in dept knowledge in routing and switching as well as Software Defined Networking.

After course completion, the student should be able to demonstrate:

- knowledge in planning large computer networks
- ability to explain network virtualization
- good knowledge of configuration of advanced functions in switches and routers
- good theoretical and practical knowledge in the configuration of routing between administrative domains
- knowledge of software defined networking
- ability to describe functionality in data plane and control plane
- ability to describe the components of virtualized network functions and how they work together

## Contents

The course deals with in-depth concepts in routing and switching as well as software-based network technology for larger campuses / corporate networks.

Advanced Switching: VLAN Implementation, Multilayer Switching, Spanning Tree Protocol, Layer 2 Security, First Hop Redundancy

Advanced routing: Multi Area OSPF, BGP

Software Defined Networking: MPLS, Policy based routing, Routing update manipulation, Queueing, QoS, QoE, OpenFlow, Network Function Virtualization

## Realization

Each course occasion's language and form is stated and appear on the course page on Luleå University of Technology's website.

The course consists of lectures and laborations.

## Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided. Written exam. Compulsory laboratory assignments.

## Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term "unauthorized aids" refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

## Course offered by

Department of Computer Science, Electrical and Space Engineering

## Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0001	Advanced Switching	U G#	3	Mandatory	S22	
0002	Advanced Routing	U G#	4.5	Mandatory	S22	
0003	Software Defined Networking	U G#	4.5	Mandatory	S22	
0004	Written exam	G U 3 4 5	3	Mandatory	S22	

## Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

## Syllabus established

by Jonny Johansson, HUL SRT 2021-02-16