

# Course information for continuation course in network technology

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## 1 About

This course is based upon the materials available in CCNAv7: Switching, Routing and Wireless Essentials and CCNAv7: Enterprise Networking, Security and Automation. Besides this, supplementary materials will also be given to keep the academic standard of the course. See section 3 for an overview of how this course is aligned with the CCNA curriculum.

Parts of the materials in the CCNA curriculum will not be included in the course, however, if you plan to take the CCNA certification you must read the entire CCNA curriculum.

## 2 Course Objectives

After finishing the course, the participants will know how to:

- Explain and use techniques to logically separate networks and communicate between them.
- Identify the need for Quality of Service
- Compare and apply common routing protocols used within autonomous systems
- List and explain the different standards and techniques for wireless networks.
- Discuss and apply techniques used for reduce the need for public IPv4 addresses.
- Apply and combine firewalls and ACLS in a given network scenario.
- Account for common design models for constructing computer networks.
- Discuss and apply common WAN-protocols and techniques.
- Account for common network virtualization solutions
- Explain and compare different techniques that are used for network automation.

### 3 Course outlines

The following section covers the outline of this course.

#### 3.1 Account at Cisco Network Academy

You will use the same account in Cisco Network Academy as you used in the course DT203G - Introduction course to network technology.

All course literature in this course will be provided to you from Cisco Netspace and through lectures and notes.

#### 3.2 How to study

Every lecture given in this course is based on one or several chapters from the CCNA curriculum. To prepare yourself for the lectures, make sure to read the chapters thoroughly at least once before the lecture. See section 7 to know what chapters to read.

In netacad, there are checkpoint exams that you must take. Each checkpoint exam covers 2-4 chapter. If you do not pass the assessment test<sup>1</sup>, consult the personalized feedback that is given to you after a completed test, for information about what parts you must read again before you retake the test.

This course contains a lot of materials to read, therefore make sure to follow the timetable found in section 7.

You must always finish an assessment test if you have started it, otherwise it will lock up and you won't be able to retake it. *Each assessment test can only be taken five times, therefore make sure to practice before each test.*

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<sup>1</sup>60% is considered a pass, however if you aim for a CCNA certification you should score at least 75%

### 3.3 Examination

In the end of the course there will be a written exam. This exam will be used for setting the final grade.

The written exam is provided by the University and covers the entire course, including the extra material given through the lectures.

See section 3.3 for an overview of all the assignments and exams in this course and how they corresponds to the course syllabus and credits.

*If you are taking this course off-campus, you need to book a seat at your nearest learning centre (lärcentra) for the written exam. This can be a long process, so start with this process early on in the course.*

#### 3.3.1 Assignments and Labs

There will be scheduled tutoring time for each of the modules given in this course, if you have any problems with an assignment or have any questions regarding the material or the course, use these tutoring sessions to get help from the teachers, otherwise consult your classmates in the discussion forum.

Before handing in an assignment or lab, make sure the following criteria is met.

- The assignment must be submitted in a passable state. A passable state means that:
  - The assignment is complete.
  - All questions are answered and the answer is relevant to the question. An answer that is just a rewrite of the question is not an answer!
  - Proper references are given for all answers.
  - Always show your calculations. item Motivate your answers.
- The assignment must be submitted in time.
- The assignment must be handed in as a PDF document.
- Submissions will be checked against Urkund for plagiarism. See section 6 for information about the consequences of cheating.

Failure to submit an assignment following the above criteria will result in an F. Resubmissions or late submissions will be graded during the next grading period, see section 5 for more information about this.

#### 3.3.2 Taking the exam

You can take the exams on-campus or off-campus, if you chose to take the exam off-campus, consult the following information for instructions:

Off-Campus Examination routines  
Rutiner för tentamen på annan ort

Table 1: Examination in continuation course in network technology

<b>Ladok</b>	<b>Examination</b>	<b>Grade</b>	<b>Credits</b>	<b>Comment</b>
L101	Laboratory assignment	Pass or Fail	1.5 hp	Laboratory assignments performed in Sundsvall
Q101	CCNA quizzes	Pass or Fail	3.0 hp	Checkpoint exams in Netacad
T101	Written Exam	A, B, C, D, E, Fx, F	3.0 hp	Written exam covering full course.

The following rules applies for the exam.

- You must identify yourself with a valid ID-card.
- The exam must be guarded by an approved invigilator.
- You are allowed to use an english-swedish dictionary and a blank piece of paper and a pen.
- No communication with anyone except the teacher or invigilator during the exam.
- During the time of the exam, you are not allowed to leave the exam-room the first hour. After that, once you leave the exam room you are no longer allowed in (with the exception of bathroom break of course).

See section 6 for information about what will happen if any attempts of cheating are discovered during the exam.

### 3.3.3 Written Exam Grading

To pass this exam, you must have shown sufficient knowledge in all of the intended learning outcomes (ILO) that are covered by the exam. If one third of the covered ILO's is failed, you will get the grade Fx, this means that you will, within two week from getting the exam result, get a chance to show that you have sufficient knowledge in those ILOs that you failed on the exam. If the complementary assignment given to you is passed, those ILO grade will be set to grade E. If you fail more than one third of the ILO's, you will get an F.

This can be expressed as following:

Let  $S$  be the set of ILOs covered on the exam. Let  $P$  be the set of ILO grades that you passed on the exam. Then, if

$$\begin{cases} |S| = |P| & \text{you passed the exam,} \\ |S| > |P| \geq \frac{2}{3}|S| & \text{you must complement, Fx,} \\ \text{otherwise} & \text{you must retake the exam, F.} \end{cases}$$

The final grade of the course will be set based on the average grade of the ILO's. Each ILO grade will be given a weight shown in section 3.3.3.

If the passing criteria given in 3.3.3 has been met. Let the weight table usage be defined as  $C(g) = w_g$ . Where  $g$  is the grade, and  $w$  is the corresponding weight. Let the set  $V$  contain the weight value of all the Passed ILO grades.

Then the final grade is set accordingly:

$$\begin{aligned} V &= \{v_n \mid v_n \in C(P)\} \\ FinalGrade &= C^{-1}(\lfloor \overline{V} \rfloor) \end{aligned}$$

The mean weight of the grades of each ILO is calculated. In the case the average is a real number, the mean is rounded downwards to the closest integer. That weight is then converted back to a grade, which will be set as final grade in the course.

Table 2: Weights given to grades

Grade	Weight
F	0
Fx	1
E	2
D	3
C	4
B	5
A	6

## 4 Course literature

The course literature will be available for free at Cisco Network Academy, however if you prefer to read the material in book form you can buy [2], [1].

## 5 What if I am not done in time?

Written assignments are graded twice during the course; first, at the latest shortly after the deadline of the assignment; second, before the end of the course, or shortly thereafter. After the course you are offered one more attempt within a year. This attempt will occur during the reexam week in April.

In total you have three chances for having your assignments graded over the period of a year. After that you should come back the next time the course is given.

No tutoring is planned after the end of the course, i.e. after the last tutoring session scheduled in the course schedule. If you are not done with your assignments during the course and want to be guaranteed tutoring you have to reregister for the next time the course is given. Reregistration is a lower priority class of applicants for a course, all students applying for the course the first time have higher priority — this includes students in reserve places too.

If you by the end of the course have a majority of the assignments left undone you will have to reregister for the course the next time it is given. Whether you have completed the majority of the assignments or not is up to the teacher to decide. Talk to the teacher to see if you have to reregister or can just hand in the missing assignments.

A final note, if you feel that you will not be done with the course on time, it is better to stop the course at an early stage. If you register a break within three weeks of the course start, you will be in the higher priority class of applicants the next time you apply for the course. You can register such a break yourself in the Student Portal. Please contact the Student Office for further information regarding this early break from the course.

## 6 Reprimands

There will be a zero tolerance to cheating in this course. Any attempts of cheating during an exam, that is, using unauthorized aids during the exam, will directly be reported to the disciplinary committee where you will risk suspension from your studies for a predetermined time not exceeding 6 months.

If you talk during the exam you will be asked to abort the exam and come back the next time the exam will be given.

By handing in an assignment you ensure that all the answers are written by you only, or if it is group assignment, only are written by you together with your group members. You are also responsible to make sure that there is no plagiarism in that document.

When you make references and citations to other works, correct references must be made, and in the case of citations, the cited text must be clearly marked. If any part of the document is found to be plagiarized you will risk suspension from your studies for a predetermined time, not exceeding 6 months, due to disciplinary offence.

If it is a group assignment, all group members will risk to be held accountable for the disciplinary offence if it is not clearly marked in the work who is responsible for the plagiarized part.

If the assignment has been done in cooperation without explicit instructions in the assignment that this is allowed, this will be regarded as a disciplinary offence with risk of suspension for a predetermined time, not exceeding 6 months.

## 7 Class schedule

### References

- [1] *Enterprise networking, security, and automation companion guide (CCNAv7)*. [San Jose, CA]: Cisco Press, 2020. ISBN: 9780136634324.
- [2] Mark Taub. *Switching, routing, and wireless essentials companion guide (CCNAv7)*. Hoboken, New Jersey: CISCO Press, 2020. ISBN: 0136729355.

Table 3: Timetable based on course given at 50%.

Course week	Schedule
<b>CCNAv7: Switching, Routing, and Wireless Essentials</b>	
1	Course introduction Lecture Chapter 1 Basic Device Configuration Chapter 2 Switching Concepts Chapter 3 VLANs Chapter 4 Inter-VLAN Routing Chapter 5 STP Concepts Checkpoint Exam — Switching Concepts, VLANs, and InterVLAN Routing Exam
2	Chapter 6 EtherChannel Checkpoint Exam — Redundant Networks Exam Chapter 7 DHCPv4 Chapter 8 SLAAC and DHCPv6 Chapter 9 FHRP Concepts Checkpoint Exam — Available and Reliable Networks Exam
3	Chapter 10 LAN Security Concepts Chapter 11 Switch Security Configuration Chapter 12 WLAN Concepts Chapter 13 WLAN Configuration Checkpoint Exam — L2 Security and WLANs Exam
4	Chapter 14 Routing Concepts Chapter 15 IP Static Routing Chapter 16 Troubleshoot Static and Default Routes Checkpoint Exam — Routing Concepts and Configuration Exam
<b>CCNAv7: Enterprise Networking, Security, and Automation</b>	
5	Laboratory L1 at Sundsvall Chapter 1 Single-Area OSPFv2 Concepts Chapter 2 Single-Area OSPFv2 Configuration Checkpoint Exam — OSPF Concepts and Configuration Exam Chapter 3 Network Security Concepts Chapter 4 ACL Concepts Chapter 5 ACL for IPv4 Configuration Checkpoint Exam — Network Security Exam
6	Chapter 6 NAT for IPv4 Chapter 7 WAN Concepts Chapter 8 VPN and IPSec Concepts Checkpoint Exam — WAN Concepts Exam
7	Chapter 9 QoS Concepts Chapter 10 Network Management Chapter 11 Network Design Chapter 12 Network Troubleshooting Checkpoint Exam — Optimize, Monitor, and Troubleshoot Networks Exam
8	Chapter 13 Network Virtualization Chapter 14 Network Automation Checkpoint Exam — Emerging Network Technologies Exam
9	Laboratory L2 in Sundsvall T101 Written Exam <sup>8</sup>
(10)	Reexams