Course information for Network Technology A

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Contents

1 About

This course consists of two parts, the first part of the course is based upon the CCNA – Introduction to Networks curriculum (commonly referred to as CCNA1), and the second part of the course is based upon the CCNA – Routing and Switching Essentials curriculum (commonly referred to as CCNA2). Supplementary materials will also be given to keep the academic standard of the course. See section 4 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.

If you choose to, you will, after finished course able to take the CCNA – ICND1 (CCENT) Certification.

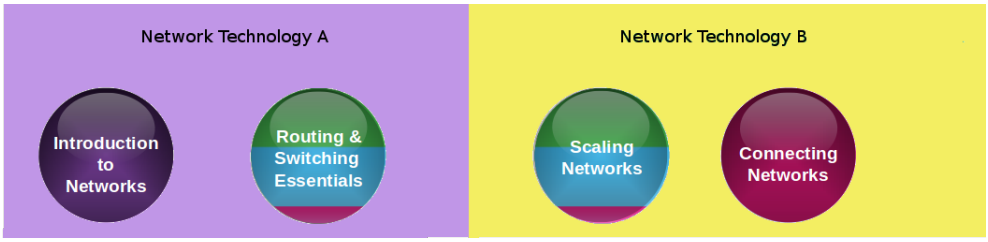

Figure 1: Overview of the Network Technology courses aligned with the CCNA-curriculum

2 Course Objectives

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

- Identify what protocol and what equipment that is situated in which layer in the TCP/IP and OSI models.
- decide in which situations it is better to use a hub, a switch or a router,
- connect together switches and routers according to to a given network design,
- configure switches and routers to support a specified list of protocols and technologies,
- choose ip addresses and subnet masks,
- configure access lists to control access to the networking functions and segments, as well as the network traffic in general, and
- verify whether the switches and routers provide the configured network services and that protocols operate as expected according to a given network specification.

2.1 Specific aims for assignments

After you have completed all the assignment in this course you will have shown that you:

- have knowledge about the basic tools used for network troubleshooting.
- know how different configurations affect the network.
- have knowledge about what each layer do during a network establishment.
- have the knowledge about the different bandwidth meassurements.
- have the knowledge to setup and configure a network containing VLAN, Routing Protocols, Access Controll Lists, NAT and DHCP.
- Configure a switch to perform the same functionality as is usually performed by routers.

3 Reading instructions and prerequisites

Before starting laboratory assignment 1, you should have first finished homework assignment I.

Before starting laboratory assignment 2, you should first have finished homework assignment II.

4 Course outlines

The following section covers the outline of this course.

4.1 Account at Cisco Network Academy

Shortly after the course starts you will receive an email containing the login credentials for Cisco Network Academy. This email contains a temporary login ID and password for Cisco Network Academy. As soon as you have received this email, you must login and activate your account. If you have not received an email within the first week of the course, notify your teacher immediately.

Once you have activated your account you will be enrolled in the class *Introduction to Networks*.

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

4.2 How to study

Every lecture given in this course is based on 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 8 to know what chapters to read. Once you have read a chapter you should take the corresponding chapter test to ensure that you have understood the chapter you just read. If you do not pass the assessment test[1], 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. The assessment tests will *not* affect your final grade in this course.

This course contains a lot of materials to read, therefore make sure to follow the timetable found in section 8.

After you have read all the chapters and passed the assessment tests, you will get access to a practice final exam. This exam covers all the chapters and is very similar to the final exams (Q104, Q204 – Final Exam).

You should have passed all the assessment tests and practice final exam before taking the final exam.

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.*

4.3 Examination

Each part of this course consists of a web based test and one laboratory assignment. In the end of the course there will be one written exam that will cover both parts of the course. This exam will be used for setting the final grade.

The Final Exams are the Web-based tests provided by Cisco, and corresponds to the each CCNA-course. The written exam is provided by the University and covers the entire course, including the extra material given through the lectures.

See section 4.3 for an overview of all the assignments and exams in this course and how they corresponds to the course syllabus and credits.

You cannot start the second part of this course before finishing the first part of the course.

If you are taking this course off-campus, you need to book a seat at your nearest learning centre (lärcentra) directly when the course starts for the Cisco provided CCNA1 test (Q104)

4.3.1 Three-week rule

To show that you are actively participating in this course you must within the first three weeks of the course take the first two chapter assessment tests in CCNA – Introduction to Networks. If you haven't passed these assessments with a minimum of 60% by the end of the third course week, you will be deregistered from this course and your place will be open for other applicants.

[1] 60% is considered a pass, however if you aim for a CCNA certification you should score at least 75%

Table 1: Examination in Network Technology A

Ladok	**Examination**	**Grade**	**Credits**	**Comment**
Q001	Chapter assessment 1 & 2, CCNA 1	Pass or Fail	0.0 hp	See section 4.3.1
Q104	Final Exam CCNA 1	Pass or Fail	0.0 hp	Prerequisite for starting second part of the course
Q204	Final Exam CCNA 2	Pass or Fail	0.0hp	
T102	Written Exam	A, B, C, D, E, Fx, F	6.0 hp	Written exam covering full course.
L102	Assignment L1 – Lab Assignment L2 – Lab	Pass or Fail Pass or Fail	1.5 hp	Assignments for full course

4.3.2 Assignments and Labs

There will be scheduled tutoring time for each of the assignments given in this course, if you have any problems with an assignment, use this tutoring session 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 7 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 6 for more information about this.

4.3.3 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

The following rules applies for the exam.

- You must identify yourself with a valid ID-card.
- You are allowed to use your own laptop during the web-based exam.
- While taking the web-based exam you are only allowed to have a web browser running with one tab open containing the exam, all other non-essential applications must be closed.
- 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 7 for information about what will happen if any attempts of cheating are discovered during the exam.

4.3.4 CCNA Final Exam Grading

The Web-based CCNA Final Exam is graded Pass or Fail. If you get more than 60%[2] you have passed this part of the exam and can continue on to take the written exam.

This exam requires that you have Packet Tracer and Java installed on your computer.

4.3.5 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

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

[2]If you aim to take the CCNA certification it is recommended that you score at least 75%

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 4.3.5.

Table 2: Weights given to grades

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

If the passing criteria given in 4.3.5 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:

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

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.

5 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 [1] for Introduction to Networks and [2] for Routing and Switching Essentials.

6 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 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.

7 Reprimands

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.

8 Class schedule

References

[1] Mark A. Dye and Allan D. Reid. *Introduction to Networks – Companion Guide*. Cisco Press, 2014. ISBN: 978-1-58713-316-4.

[2] Scott Empson and Cheryl Schmidt. *Routing and Switching Essentials – Companion Guide*. Cisco Press, 2014. ISBN: 978-1-58713-320-6.

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

Course week	**Schedule**
1	Introduction lecture (Lenfra) Lecture 1 – Introduction and protocols (Mageri)
2	Lecture 2 – Physical and Datalink layer (Mageri)
3	Lecture 3 – Network and Transport layer (Mageri)
4	Lecture 4 – IP-subnetting (Mageri) Tutoring session – Subnetting (Mageri) Deadline – Practice Final exam Laboratory session at campus (optional) (Mageri) Deadline – L1
5	Q104 Test (Dugga) Final Exam CCNA–1 Lecture 5 – Introduction and Datalink protocol (Lenfra) Lecture 6 – Virtual Networks (Lenfra)
6	Lecture 7 – Routing (Lenfra) Tutoring session – Routing (Lenfra)
7	Lecture 8 – Routing II (Lenfra) Lecture 9 – Routing III (Lenfra)
8	Lecture 10 – Wildcards (Lenfra) Laboratory session at campus (optional) (Lenfra) Deadline Practice Final Exam Deadline L2
9	Q204 Test (Dugga) Final exam CCNA–2 T102 Written Exam (Lenfra)
(10)	Reexams