

Course Description: Network Principles

1a Course name: Network Principles 1b Course code: UC1NPR052 1c Previous course code: N1S_NETPR_05_V01 1d Date written: 16/01/2009 1e Date revised: 01/04/2011, 09/01/2015, 16/02/16, 28/06/17, 01/08/2018, 01/06/2020 1f Current Status: Part of NOKUT approved study program
2 Target group: <ul style="list-style-type: none"> • Level 1 NUC Undergraduates, • Core for the following degrees: <ul style="list-style-type: none"> ○ Digital Forensics ○ Applied Data Science ○ Cyber Security • May be offered as a separate course. • International course • May be offered as classroom based or online
3a ECTS credits: 05.0 3b Estimated student workload in hours: Nominally 125 student hours. Full time study (Approximately 40 hours pr/wk). 3c Online (Internet) time estimate in hours of the total student workload As 3b above 3d Delivery Pattern Lecture / Tutorial / Supported Study: 36 hours Group / Individual Self Study: 56 hours Assessment time: 33 hours
4 Prerequisites Secondary school. (English: Refer NUC program entry requirements).
5a Duration Block Mode Delivery 5b Semester 1st or 2nd
6 Type Online, On-campus, tutor-supported.
7 Language English
8 Developing institutions Noroff University College.
9 Offering institutions Noroff University College.
10 Course leader NUC Academic Staff
11 Authors/Teaching group NUC Academic Staff
12 Academic responsibility Dean of Faculty – Applied Computing and Technology
13 Copyright Noroff University College.
14 Aims The course will equip students with practical knowledge of general network theory. In particular it will address network structures and topology and explore key protocols. The course will also provide the students with knowledge of how to implement networks within business.
15 Learning resources (<i>Learning material, learning support</i>) Learning resources will include an appropriate selection of: <ul style="list-style-type: none"> • textbooks and online reading material

- video conferencing and communications platforms
- tools and software

Full details will be available in the LMS.

16 A) Objectives and B) Learning outcomes of the course

(Sets of competences, expressing what the student will know, understand or be able to do after completion of a process of learning, and products of this process.)

Students who have successfully completed this course will have gained the following:

A) Course Objectives

The student will be able to assess and construct appropriate network configurations.

B) Learning outcomes of the course

Students should have **knowledge** of:

- General theoretical network models
- Network devices.
- Forms of network communication.

Students will be able to demonstrate the following **skills**:

- To understand how the interaction between network components enable communication via local and global networks
- To implement and configure network devices.
- To construct and configure a network and subnet.
- To reflect upon learning and network skills development

General Competence: The students will have developed or strengthened attitudes in relation to

- Be aware of issues of reliability and responsibility to users
- Be aware of the need for 'fit for purpose' networks

17 Content description *(Content in each learning unit)*

This course will provide students with an introduction to the general network theory, how networks and devices on a network communicate with each other. Practical examples will be used to illustrate the key concepts.

General networking technology

This section will address key network infrastructure concepts in the form of key network technology

This section consists of the following topics:

- History and development of networking
- The concept of network models
- Core network technologies and devices

Network structures and topology

In this section students will examine how networking technology can be assembled to form functioning networked systems.

This section consists of the following topics:

- Network Types and Topologies
- OSI model
- Internet communication

Key protocols

In this section students will learn the key networking protocols for information transfer on a network.

This section consists of the following topics:

- TCP / IP protocol stack
- IP addressing and subnetting
- Routing protocols

Networks within business

This section will address the issues associated with implementing networks in a business environment ensuring systems developed are appropriate and fit for purpose.

This section consists of the following topics:

- Network Requirements
- Network reliability
- Evaluate network traffic

18 Infrastructure needed (*Broadband capacity, intranet, proxy server etc*)

Students require access to appropriate broadband internet connection, suitable hardware and a compatible platform (to be specified). All learning resources, including lecture streaming and recordings and the Digital Library, will be available via the LMS. For accessing live streams and virtual laboratories a minimum broadband connection of 2Mbps is required (4Mbps recommended). Online students will also require appropriate communications software and a Webcam.

19 Teaching methods (*Instructional, constructivist, socio-cultural, mix, etc*)

This course will focus on both theory and practice and will have a strong hands-on component. Teaching will be based on supporting practical learning, with an element of student interaction required between peers. Tutor support will be provided for practical sessions.

20 Assessment of participants (*Portfolio, home exam, participation, on-campus exam etc*)

The assessment strategy for this course follows the general rules for examinations, as stated in the NUC Regulations. This course will use grading system A-F, with A as the highest and E as the lowest passing grade.

Summative assessment:

This course will be assessed through in-course assessment, typically comprising the following components:

- 80% Assessment 1: Term paper
- 20% Assessment 2: Continuous assessment, in the form of a reflective journal

The assessment strategy for course referrals may differ from the standard assessment strategy.

Formative feedback is provided throughout the course.

21 Bibliography (*Books and articles chosen by the course writers*)

The following course bibliography is indicative of resources relevant to this course. The most recent list of essential and recommended reading material is maintained in the course page within the LMS.

Essential Reading Resources

- Lammle, T. (2016) CCNA Routing and Switching Complete Study Guide: Exam 100-105, Exam 200-105, Exam 200-125, 2nd Edition, Sybex.
- Study guide for Network Infrastructure (material provided via Moodle)

Recommended and Additional Reading Resources

- Stamper D.A., (2001) *Local Area Networks*, Prentice Hall, 3rd Edition.

<ul style="list-style-type: none"> Tanenbaum A.S., (2010) <i>Computer Networks</i>, Pearson Education, 5th International Edition.
22 Course evaluations (<i>Student feedback evaluation form, tutors' evaluation, etc</i>) End of Course Student Evaluation Questionnaire. End of Course Staff Evaluation. End of Semester Student Survey.
23 Other remarks None