

## Module: Network Development 252

<b>Module name:</b>	Network Development 252
<b>Code:</b>	NWD252
<b>NQF level:</b>	6
<b>Type:</b>	Fundamental – Diploma in Information Technology (Infrastructure stream)
<b>Contact Time:</b>	52 hours
<b>Structured Time</b>	8 hours
<b>Self-directed time</b>	60 hours
<b>Notional hours:</b>	120 hours
<b>Credits:</b>	12
<b>Prerequisites:</b>	NWD151

### Purpose

This course provides students with the fundamental networking knowledge to enable improvement and management of today's modern networks. The course will equip students to validate their ability to install, configure, operate and troubleshoot medium-sized routed networks. The course further introduces the architecture, structure, functions components and models of the internet and other networks.

### Outcomes

Upon successful completion of this module, the student will be able to:

- Demonstrate detailed understanding of routing and switching including key terms, concepts, facts and current network technologies.
- Select and apply appropriate tools and methods for configuring and verifying connectivity devices including remote access management.
- Identify and solve network connectivity issues in unfamiliar context using technologies to optimise and enhance network communication.
- Analyse performance of switched and routed network system against given criteria, and accurately identify and address the task-specific learning needs.
- Evaluate various communication protocols and how they support application requirements within a switched and routed telecommunication system.

### Assessment

- Continuous evaluation of theoretical work through two written assignments, one project, two formative tests, and a summative test.
- Continuous evaluation through tracking of progress, offering support, guidance and provision of constant stream of opportunities and activities to prove mastery of subject material and pursuing more challenging work as they master the basics.
- Final assessment through a written examination.

## Teaching and Learning

### Learning materials

Lecturer hand-outs, samples and lab exercises.

#### Prescribed Book

- Cisco (2014) IT without frontiers series
- Simulation Software (GNU and Packet Tracer)

#### Additional Material

- 📖 Contador, Nicolás, C.N.A., (2010). *Fundamentals of data communication (Routing and Switching Essentials)*. CCNA 2 V5 675.

### Learning activities

Learning will be facilitated by the lecturer with student centred activities that involve problem based learning where students are presented with challenges that replicate the situation in the real world environment. This will be achieved through a combination between presentation of theoretical concepts, guided exercises, group work and discussions together with two mandatory assignments and a project to complete during the module.

### Notional learning hours

Activity	Units	Contact Time	Structured Time	Self-Directed Time
Lecture		40.0		24.0
Formative feedback		8.5		
Project	1	3.5		6.0
Assignment	2			6.0
Test	3		6.0	11.0
Exam	1		2.0	13.0
		<b>52</b>	<b>8.0</b>	<b>60.0</b>

### Syllabus

- Subnetting calculations
- Basic IOS Command Line Interface configurations
- Advanced IOS Management
- LAN switching technologies
- Configure, verify and troubleshoot inter-switch connectivity.
- Configuration of VLANs and Inter-VLAN routing
- Switch port security
- Configure and troubleshoot STP protocols.
- IP Static Routing and verification.
- RIP routing and verification
- EIGRP routing and verification
- OSPF configuration and verification
- Advanced TCP/IP Access-list with NAT
- Network Address Translation

- Introduction of IP version 6 addressing