

# T205 NETWORKS (CISCO ITN)

<b>Course Level</b>	<b>6</b>
<b>Credits</b>	<b>15</b>
<b>Duration</b>	<b>16 Weeks</b> <b>45 Lecturer Supported</b> <b>105 Independent learning hours</b>
<b>Pre-requisite</b>	<b>none</b>
<b>Co-requisite</b>	<b>none</b>

## Course Aim

To enable students to gain practical and technical networking knowledge that will assist them to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes.

## Learning Outcomes

On successful completion of this course students will be able to:

1. Describe the devices and services used to support communications in data networks and the internet
2. Describe the role of protocol layers in data networks
3. Describe the importance of addressing and naming schemes at various layers of data networks in IPv4 and IPv6 environments
4. Design, calculate, and apply subnet masks and addresses to fulfil given requirements in IPv4 and IPv6 networks
5. Explain fundamental Ethernet concepts such as media, services, and operations
6. Build a simple Ethernet network using routers and switches
7. Use CISCO command-line interface (CLI) commands to perform basic router and switch configurations
8. Utilise common network utilities to verify small network operations and analyse data traffic

## Content

- The CISCO Network Academy (CNA) Introduction to Networks curriculum:
  - Exploring the Network
  - Configuring a Network Operating System
  - Network Protocols and Communications
  - Network Access
  - Ethernet
  - Network Layer
  - Transport Layer
  - IP Addressing
  - Subnetting IP Networks
  - Application Layer

## Learning and Teaching Approaches

The course may be taught both on campus and through blended delivery. Timetabled classes may include, but are not limited to: theory delivery, discussion, practical application, video, web-based information, off-site visits, guest speakers and project work. Blended delivery will be supported by a Learning Management System, other web based technology, email and telephone. This will enhance the opportunity for students to access learning materials, communicate with one another and with their lecturers.

UCOL's learning philosophy is founded on its ability to provide all students with opportunities to access a wide range of support services. Students are able to access all possible assistance so that they can succeed at their chosen course of study. Learning support is intended to diminish or eliminate barriers to learning and academic success.

### **Assessment Procedures**

Assessment is standards based - criterion-referenced and achievement is described by grades. This course will have a minimum of three pieces of assessment to allow success. Every assessment must be attempted/submitted in order to be eligible for a 50% minimum pass.

The specific assessments will be specified in the Course Outline as provided by the lecturer at the beginning of the semester. Assessment activities will be selected from the following range: theory test, practical test, practical demonstration, project, assignment, exercise, interview, debate, report, portfolio, presentation, journal.

### **Off Campus Learning**

Not applicable

### **Resources and Prescribed / Recommended Texts**

The required and recommended reading material will be specified in the Course Outline as provided by the lecturer at the beginning of the semester. Students will use texts and other books, journals, CD-ROM databases, on-line databases, and the Internet to increase their knowledge and awareness of the subject material. The library is also a source of information and guidance in the use of academic referencing and writing techniques. Students engage with the library staff, throughout their studies, with the objective of learning and developing their referencing skills and their general academic writing skills.

To support students who may choose to study off campus, all of the formal material provided in face-to-face sessions will be available in a web-based format. Resource based material may also include computer-assisted instruction, print based workbooks for independent study, multimedia packages, streaming video and streaming audio.

# T206 NETWORKS (CISCO RSE)

<b>Course Level</b>	<b>6</b>
<b>Credits</b>	<b>15</b>
<b>Duration</b>	<b>16 Weeks</b> <b>45 Lecturer Supported</b> <b>105 Independent learning hours</b>
<b>Pre-requisite</b>	<b>T205</b>
<b>Co-requisite</b>	<b>none</b>

## Course Aim

To enable students to gain practical and technical networking knowledge that will allow them to configure and troubleshoot routers, switches and resolve common issues with RIPv1, RIPng, single-area and multi-area OSPF, virtual LANs, and inter-VLAN routing in both IPv4 and IPv6 networks.

## Learning Outcomes

On successful completion of this course students will be able to:

1. Describe basic switching concepts and the operation of CISCO switches
2. Describe the purpose, nature, and operations of a router, routing tables, and the route lookup process
3. Describe how VLANs create logically separate networks and how routing occurs between them
4. Describe dynamic routing protocols, distance vector routing protocols, and link-state routing protocols
5. Configure and troubleshoot static routing and default routing (RIP and RIPng)
6. Configure and troubleshoot an Open Shortest Path First (OSPF) network
7. Configure and troubleshoot access control lists (ACLs) for IPv4 and IPv6 networks
8. Configure and troubleshoot Dynamic Host Configuration Protocol (DHCP) for IPv4 and IPv6 networks
9. Configure and troubleshoot Network Address Translation (NAT) operations

## Content

The CISCO Network Academy (CNA) Routing and Switching Essentials curriculum:

- Introduction to Switched Networks
- Basic Switching Concepts and Configuration
- VLANs
- Routing Concepts
- Inter-VLAN Routing
- Static Routing
- Routing Dynamically
- Single-Area OSPF
- Access Control Lists
- DHCP
- Network Address Translation for IPv4

## Learning and Teaching Approaches

The course may be taught both on campus and through blended delivery. Timetabled classes may include, but are not limited to: theory delivery, discussion, practical application, video, web-based information, off-site visits, guest speakers and project work. Blended delivery will be supported by a Learning Management System, other web based technology, email and telephone. This will enhance the opportunity for students to access learning materials, communicate with one another and with their lecturers.

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### **Assessment Procedures**

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The specific assessments will be specified in the Course Outline as provided by the lecturer at the beginning of the semester. Assessment activities will be selected from the following range: theory test, practical test, practical demonstration, project, assignment, exercise, interview, debate, report, portfolio, presentation, journal.

### **Off Campus Learning**

Not applicable

### **Resources and Prescribed / Recommended Texts**

The required and recommended reading material will be specified in the Course Outline as provided by the lecturer at the beginning of the semester. Students will use texts and other books, journals, CD-ROM databases, on-line databases, and the Internet to increase their knowledge and awareness of the subject material. The library is also a source of information and guidance in the use of academic referencing and writing techniques. Students engage with the library staff, throughout their studies, with the objective of learning and developing their referencing skills and their general academic writing skills.

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