

## NW-101: Networking, IP Routing & Security Concepts

<b>Course Number</b>	<b>NIS</b>
<b>Level</b>	<b>n/a</b>
<b>Duration</b>	<b>1 Day</b>

<input checked="" type="checkbox"/>	<b>Classroom</b>
<input checked="" type="checkbox"/>	<b>Virtual Classroom</b>
<input type="checkbox"/>	<b>Self Paced</b>

### Course Description

The Networking, IP Routing & Security Concepts class is designed as an introduction to the various technical concepts of Ethernet Networking, IP Routing and IP Security. It consists of a series of lectures and hands-on exercises which provides the student with the confidence and understanding to be able to design and implement a real world network.

### Intended Audience

This course is designed for individuals who are new to data networking and require a solid understanding of Networking, IP Routing and IP Security principles.

### Course Prerequisites

- Familiarity with a Windows based PC system
- Ability to perform simple configurations on a Windows Operating System

### Course Objectives

- To understand the basics of data networking
- To understand the TCP/IP model and the communications stack
- To gather a clear idea of which protocol and device works at which layer
- To be familiar with the most fundamental networking concepts
- To understand the concepts of routing
- To acquire familiarity with L3 addressing concepts
- To recognise the elements of the routing table and their meaning
- To understand how a Routing Protocol works and the purpose it fulfils
- To become aware of the modern day threats present on a network
- To understand the different methods of Network and Host Intrusion
- To be able to configure a basic Firewall Access Control List

### Course Outline

- **Networking**
  - Communications Basics

*Language; Encoding; Communication Mechanisms; Bits & Bytes; Network Types.*

- Network Characteristics  
*Reliability; Addressing; Standard Bodies; OSI Reference Model.*
- Data Communications in Practice  
*The Communications Stack; Network Aware Applications; TCP/IP Overview & Architecture..*
- Network Devices  
*Hubs; Bridge; Switch; Router; Routing Switch*
- **IP Routing**
  - IP Fundamentals  
*The IP address; Host Address & Network Address; The Subnet Mask.*
  - IP Routing  
*Broadcast Domains; The mechanism of routing*
  - The Routing Table  
*The Destination Network; Subnet Mask; Next Hop Address; Interface ; Metric; Static Routes; The Default Route (Default Gateway).*
  - IP Routing Protocols  
*Benefits of implementing a Routing Protocol; Distance Vector Routing Protocol: RIP; Link State Routing Protocol: OSPF; Policy Based Routing Protocol: BGP.*
- **Security**
  - Modern Day malware  
*Viruses; Trojan horses; Worms; Potentially Unwanted Programs.*
  - Threats and Attacks  
*System Vulnerabilities; Human vulnerability (Social Engineering); Passive attacks; Active attacks.*
  - Introduction to Network Security  
*Intrusion Protection; Securing the environment: Tools and Methodologies.*
  - Firewalls and Access Control Lists (ACLs)  
*Stateful Firewall; Packet Filtering Firewall; Building an effective Access Control List; The Demilitarized Zone (DMZ).  
Benefits of implementing a Routing Protocol, A Distance Vector Routing Protocol: RIP, A Link State Routing Protocol: OSPF, A Policy Based Routing Protocol: BGP*