AMERICAN UNIVERSITY
OF CYPRUS

Course Code MNC 362	**Course Name** Scalling Networks	**ECTS Credit** 7.5
Pre-Requisite MN573	**Course Type** Major Elective	**Language of Instruction** English
Year of Study 3rd / 6th	**Level of Course** BSc/1st Cycle	**Mode of Delivery** On Campus

Course Objectives:

This course describes the architecture, components, and operations of routers and switches in larger and more complex networks. Students learn how to configure routers and switches for advanced functionality. By the end of this course, students will be able to configure and troubleshoot routers and switches and resolve common issues with OSPF, EIGRP, and STP in both IPv4 and IPv6 networks. Students ill also develop the knowledge and skills needed to implement a WLAN in a small-to-medium network.

Learning Outcomes:

Upon successful completion of this course students should be able to:

• Define, configure and troubleshoot enhanced switching technologies such as VLANs, Rapid Spanning Tree Protocol (RSTP), Per VLAN Spanning Tree Plus Protocol (PVST+), and EtherChannel

• Configure, and troubleshoot first hop redundancy protocols (HSRP) in a switched network

• Arrange, configure, and troubleshoot wireless routers and wireless clients

• Apply and troubleshoot routers in a complex routed IPv4 or IPv6 network using single-area OSPF, multiarea OSPF, and Enhanced Interior Gateway Routing Protocol (EIGRP)

Teaching Methodology:

Lectures 42 Hours

Labs 30 Hours

Course Content

Introduction to Scaling Networks: Implementing a Network Design, Selecting Network Devices

LAN Redundancy: Spanning Tree Concepts, Varieties of Spanning Tree Protocols, Spanning Tree Configuration, First-Hop Redundancy Protocols, Link Aggregation Concepts, Link Aggregation Configuration

Wireless LANs: Wireless LAN Concepts, Wireless LAN Operation, Wireless LAN Security, Wireless LAN Configuration

Adjust and Troubleshoot Single-Area OSPF: Advanced Single-Area OSPF Configurations, Troubleshooting Single-Area OSPF Implementations

Multiarea OSPF: Multiarea OSPF Operation, Configuring Multiarea OSPF

EIGRP: Characteristics of EIGRP, Configuring EIGRP for IPv4, Operation of EIGRP, Configuring EIGRP for IPv6

EIGRP Advanced Configurations and Troubleshooting: Advanced EIGRP Configurations, Troubleshoot EIGRP

Assessment Method

Final Exams

Labs/Assignment

Mid term

Required Textbooks/Reading:

Title	Author(s)	Publisher	Year
LAN Switching and Wireless, CCNA Exploration Companion	Wayne Lewis		
LAN Switching and Wireless, CCNA Exploration Labs and Study Guide	Allan Johnson		
CCNA Cisco Certified Network Associate Study Guide	Todd Lammle		
CCNA IOS Commands Survival Guide	Todd Lammle's		