Prefix and Course Number	**ISIT 310**
Course Title	**ROUTING & SWITCHING IN THE ENTERPRISE**
	Last Modified: Fall 2015

Course Learning Outcomes

By the end of this course, a student should be able to:

— Demonstrate a detailed knowledge of routing and switching terminology.
— Demonstrate a detailed knowledge of the operation and configuration of switches and routers including protocols and addressing.
— Design and implement a hierarchical IPv4 and IPv6 addressing and subnetting scheme.
— Access various router components, remotely access routers, and test network connectivity.
— Understand protocols such as Spanning Tree protocol (STP), RIP and IGRP.
— Configure and understand the role of Virtual LANs (VLANs) in a switched LAN.
— Configure and understand the components and operation of a wireless LAN (WLAN).

Course Outline

1) **LAN design**
   a) Switched LAN Architecture
   b) Switch Functions
   c) Converged network

2) **Switching concepts and configuration**
   a) Ethernet 802.3 networks
   b) Key elements of Ethernet
   c) Frame Forwarding methods
   d) Switch management and configurations
      i) Command Line Interface
   e) Switch Security
      i) Passwords
      ii) Telnet and SSH
      iii) Common security attacks

3) **Virtual LANs (VLANs).**
   a) Benefits and types of VLAN
   b) VLAN membership
   c) Port membership
   d) Broadcast domain and VLAN
   e) VLANs and trunk

4) **Virtual Trunking Protocol (VTP)**
   a) VTP Domains
   b) VTP Modes

    c) VTP Pruning
    d) VTP Configuration

5) Spanning Tree Protocol (STP)
    a) Redundancy
    b) Port Types
    c) Port Roles
    d) Convergence – the election process
    e) STP and IEEE Standards

6) Inter-VLAN routing
    a) Traditional Inter-VLAN Routing
    b) Router-on-a-Stick
    c) Interfaces and Sub interfaces.

7) Wireless LAN (WLAN) concepts and configurations
    a) Wireless topologies and components
    b) Threats to wireless security
    c) Wireless security protocols
    d) Access to WLAN