Course Title	Routing & Switching				
Course Code	ECE362				
Course Type	Elective				
Level	Bachelor (1st Cycle)				
Year / Semester	4th Year / 8th Semester				
Teacher's Name	TBA				
ECTS	6	Lectures / week	3 hours / 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	This course describes the architecture, components, and operations of routers and switches in a small network. Students learn how to configure a router and a switch for basic functionality. By the end of this course, students will be able to configure and troubleshoot routers and 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	Upon successful completion of this course, students should be able to: • Explain basic switching concepts and the operation of Cisco switches • Define the purpose, nature, and operations of a router, routing tables, and the route lookup process • Demonstrate how VLANs create logically separate networks and how routing occurs between them • Describe dynamic routing protocols, distance vector routing protocols, and link-state routing protocols • Configure and troubleshoot static routing and default routing (RIP and RIPng) • Configure and troubleshoot an Open Shortest Path First (OSPF) network • Define, configure, and troubleshoot access control lists (ACLs) for IPv4 and IPv6 networks • Configure, and troubleshoot Dynamic Host Configuration Protocol (DHCP) for IPv4 and IPv6 networks • Configure, and troubleshoot Network Address Translation (NAT) operations				
Prerequisites	ECE361		Co-requisites	None	
Course Content	Introduction to Switched Networks: LAN Design, The Switched Environment				

<table>
<tr><td></td><td>Basic Switching Concepts and Configuration: Basic Switch Configuration, Switch Security: Management and Implementation

VLANs: VLAN Segmentation, VLAN Implementations, VLAN Security and Design

Routing Concepts: Initial Configuration of a Router, Routing Decisions, Router Operation

Inter-VLAN Routing: Inter-VLAN Routing Configuration, Troubleshoot Inter-VLAN Routing, Layer 3 Switching

Static Routing: Static Routing Implementation, Configure Static and Default Routes, Review of CIDR and VLSM, Configure Summary and Floating Static Routes, Troubleshoot Static and Default Route Issues

Routing Dynamically: Dynamic Routing Protocols, Distance Vector Routing Protocols, RIP and RIPng Routing, Link-State Dynamic Routing, The Routing Table

Single-Area OSPF: Characteristics of OSPF, Configuring Single-Area OSPFv2, Configuring Single-Area OSPFv3

Access Control Lists: IP ACL Operation, Standard IPv4 ACLs, Extended IPv4 ACLs, Troubleshoot ACLs, IPv6 ACLs

DHCP: Dynamic Host Configuration Protocol v4, Dynamic Host Configuration Protocol v6

Network Address Translation for IPv4: NAT Operation, Configuring NAT, Troubleshooting NAT</td></tr>
<tr><td>Teaching Methodology</td><td>Face- to- face</td></tr>
<tr><td>Bibliography</td><td>“CCNA Routing and Switching Official Cert Guide - Academic” by Wendell Odom

“CCENT ICND1 Study Guide” by Todd Lammle

“A Practical Guide to Advanced Networking and Cisco CCENT ICND1 100-101” by Beasley, Nilkaew, Odom & Wilkins</td></tr>
<tr><td>Assessment</td><td><table>
<tr><td>Examinations</td><td>70%</td></tr>
<tr><td>Assignments/Lab</td><td>20%</td></tr>
<tr><td>Class Participation and Attendance</td><td>10%</td></tr>
<tr><td></td><td>100%</td></tr>
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<tr><td>Language</td><td>English</td></tr>
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