

Course Title	Network Fundamentals				
Course Code	ECE361				
Course Type	Elective				
Level	Bachelor (1st Cycle)				
Year / Semester	4 <sup>th</sup> Year / 8 <sup>th</sup> Semester				
Teacher's Name	TBA				
ECTS	6	Lectures / week	3 hours / 14 weeks	Laboratories / week	N/A
Course Purpose and Objectives	<p>This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP addressing, and the fundamentals of Ethernet concepts, media and operations, are introduced to provide a foundation for the curriculum. By the end of the course, students will be able to build simple LANs, perform basic configurations for routers and switches, and implement IP addressing schemes.</p>				
Learning Outcomes	<p>Upon successful completion of this course, students should be able to:</p> <ul style="list-style-type: none"> <li>• Identify and describe the devices and services used to support communications in data networks and the Internet</li> <li>• Describe the role of protocol layers in data networks</li> <li>• Explain the importance of addressing and naming schemes at various layers of data networks in IPv4 and IPv6 environments</li> <li>• Design, calculate, and apply subnet masks and addresses to fulfil given requirements in IPv4 and IPv6 networks</li> <li>• Explain fundamental Ethernet concepts such as media, services, and operations</li> <li>• Build a simple Ethernet network using routers and switches</li> <li>• Use Cisco command-line interface (CLI) commands to perform basic router and switch configurations</li> <li>• Employ common network utilities to verify small network operations and analyze data traffic</li> </ul>				
Prerequisites	CSE300	Co-requisites	None		
Course Content	<p>Exploring the Network: Globally Connected, LANs, WANs, and the Internet, The Network as a Platform, The Changing Network Environment</p> <p>Configuring a Network Operating System: IOS Bootcamp, Getting Basic, Addressing Schemes</p>				

	<p>Network Protocols and Communications: Rules of Communication, Network Protocols and Standards, Moving Data in the Network</p> <p>Network Access: Physical Layer Protocols, Network Media, Data Link Layer Protocols, Media Access Control</p> <p>Ethernet: Ethernet Protocol, Address Resolution Protocol, LAN Switches</p> <p>Network Layer: Network Layer Protocols, Routing, Routers, Configuring a Cisco Router</p> <p>Transport Layer: Transport Layer Protocols, TCP and UDP</p> <p>IP Addressing: IPv4 Network Addresses, IPv6 Network Addresses, Connectivity Verification</p> <p>Subnetting IP Networks: Subnetting an IPv4 Network, Addressing Schemes, Design Considerations for IPv6</p> <p>Application Layer: Application Layer Protocols, Well-Known Application Layer Protocols and Services, The Message Heard Around The World</p> <p>It's a Network: Create and Grow, Keeping the Network Safe, Basic Network Performance, Managing IOS Configuration Files, Integrated Routing Services</p>								
Teaching Methodology	Face- to- face								
Bibliography	<p><i>"CCNA Routing and Switching Official Cert Guide - Academic"</i> by Wendell Odom</p> <p><i>"CCENT ICND1 Study Guide"</i> by Todd Lammler</p> <p><i>"A Practical Guide to Advanced Networking and Cisco CCENT ICND1 100-101"</i> by Beasley, Nilkaew, Odom &amp; Wilkins</p>								
Assessment	<table border="1"> <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> </table>	Examinations	70%	Assignments/Lab	20%	Class Participation and Attendance	10%		100%
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Language	English								