



Course Title: Network Basics
Course Code: CSIT127
Credit Units: 4
Level: UG

L	T	P/ S	SW/F W	TOTAL CREDIT UNITS
3	-	2	0	4

Course Objectives:

- This course is aimed to provide a fundamental understanding of Computer Networking, Operating System, Connecting to the networks, network addressing, network services and Wireless technologies etc.
- After the completion of the course you will understand the core concepts around which computer networks revolve.

Pre-requisites: Basic knowledge of computers.

Student Learning Outcomes: After completion of this course students should able to

- Set up a personal computer system including operating system, interface card and peripheral devices.
- Plan and install a home and small business network and connect to the internet. Verify and troubleshoot network and internet connectivity. Configure basic IP services via GUI interface.
- Recognize and mitigate security threats to the home network.
- Configure and verify basic internet application.
- Configure and verify basic router and switches.
- Troubleshooting of basic network problems.

Course Title	Weightage
Course Contents / Syllabus:	

1	<p>Module I: Exploring the Network</p> <p>Introduction, Communicating in a Network-Centric World, The Network as a Platform, Converged Networks, LANs, WANs, and the Internet, The Expanding Network, Network Architectures</p>	5
2	<p>Module II : Configuring a Network Operating System</p> <p>Configuring a Network Operating System, IOS Bootcamp, Limiting Access to Device Configurations, Address Schemes</p>	10
3	<p>Module III : Network Protocols and Communications</p> <p>Introduction, Network Protocols and Standards, Reference Models, Using Requests for Comments, Moving Data in the Network,</p>	10
4	<p>Module IV: Application Layer and Transport Layer</p> <p>Introduction, Application Layer Protocols, How Application Protocols Interact with End-User Applications, Well-Known Application Layer Protocols and Services, Transport Layer, Transport Layer Protocols, Introducing TCP and UDP, TCP Communication, UDP Communication</p>	15
5	<p>Module V: Network Layer, IP Addressing and Subnetting</p> <p>Network Layer Protocols, Characteristics of the IP Protocol, IPv6 Packet, Routing, Routers, Configuring a Cisco Router, IPv4 Network Addresses, Types of IPv4 Addresses, IPv6 Network Addresses, Types of IPv6 Addresses, Subnetting IP Networks, Subnetting an IPv4 Network, Addressing Schemes, Design Considerations for IPv6, Subnetting an IPv6 Network</p>	25
6	<p>Module VI: Network Access and Ethernet Technology</p> <p>Data Link Layer, Layer 2 Frame Structure, Media Access Control, Topologies, WAN Topologies, Physical Layer, Network Media, Ethernet, Ethernet Protocol, Address Resolution Protocol, LAN Switches</p>	25
7	<p>Module VII: It's a Network</p>	10

	Introduction, Create and Grow, Devices in a Small Network, Growing to Larger Networks, Keeping the Network Safe, Basic Network Performance, Managing IOS Configuration Files											
8	Pedagogy for Course Delivery: <ul style="list-style-type: none"> • Class lectures, interactive presentation, discussion and practice • Hands-on labs with router and switch • Additional software for in-class activities • Packet Tracer simulation tool 											
9	Assessment/ Examination Scheme: <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 33%;">Theory L/T (%)</td> <td style="width: 33%;">Lab/Practical/Studio (%)</td> <td style="width: 33%;">Total</td> </tr> <tr> <td>75</td> <td>25</td> <td>100</td> </tr> </table>					Theory L/T (%)	Lab/Practical/Studio (%)	Total	75	25	100	
Theory L/T (%)	Lab/Practical/Studio (%)	Total										
75	25	100										
10	Continuous Assessment/Internal Assessment				End Term Examination							
	Components	Attendance	Mid Term	Assignment	VIVA	EE						
	Weightage (%)	5	10	10	5	70						
11		Continuous Assessment/Internal Assessment				End Term Examination (EE)						
	Components	Attendance	Mid Term	Lab Record	Performance	Viva	Practical Evaluation/Experiment	Viva	Total			
	Weightage (%)	5	10	10	10	5	40	20	60			

LAB/EXPERIMENTS:

Lab1 : Researching Network Collaboration Tools
Lab2 : Researching Converged Network Services
Lab3 : Packet Tracer - Network Representation Instructions
Lab4 : Packet Tracer - Navigating the IOS Instructions
Lab5 : Establishing a Console Session with Tera Term
Lab6: Configuring Initial Switch Settings Instructions
Lab7 : Building a Simple Network
Lab8: Implementing Basic Connectivity Instructions
Lab9: Configuring a Switch Management Address
Lab10: Researching Networking Standards
Lab11 : Investigating the TCP/IP and OSI Models in Action Instructions
Lab12: Using Wireshark to View Network Traffic
Lab13 : Observing DNS Resolution
Lab14: Exploring FTP
Lab15 : Using Wireshark to Observe the TCP 3-Way Handshake
Lab16 : Using Wireshark to Examine a UDP DNS Capture
Lab17 Viewing Host Routing Tables
Lab18 : Configure Initial Router Settings Instructions
Lab19: Connect a Router to a LAN Instructions
Lab20 : Identifying IPv4 Addresses
Lab21 : Configuring IPv6 Addresses on Network Devices
Lab22 : Troubleshooting IPv4 and IPv6 Addressing Instructions
Lab23: Implementing a Subnetted IPv6 Addressing Scheme Instructions
Lab24 : Connecting a Wired and Wireless LAN Instructions
Lab25 : Configure Layer 3 Switches Instructions
Lab26 : Managing Device Configuration Files Using TFTP, Flash, and USB

Text Books:

- Network Basics companion guide by Cisco Networking Academy, Cisco Press, Edition 1, December 2013
- Mark Dye , Rick McDonald , Antoon Ruffi “**Network Fundamentals, CCNA Exploration Companion Guide**”, Cisco Press; Edition 1 December 2011

References:

- Behrouz Forouzan., “Data Communication and Networking” McGraw-Hill Higher Education; 4 edition,2006
- William Stallings “ Data and Computer Communication” Prentice Hall; 10 edition, 2013
- Andrew S. Tanenbaum “ Computer Networks” Prentice Hall; 5 edition ,2010

Web References:

- <https://cisco.netacad.com/>
- <http://10.0.2.19/ccna4.html>