1.	**Course Title**	**Advanced Networking**		
2.	**Course Code**	**CNET1034**		
3.	**Status**	Major		
4.	**Credit Hour**	4 (3+1) 3 for lecture (3 hours per week x 14 weeks) 1 for lab (2 hour per week x 14 weeks)		
5.	**Semester/Year**	2/3		
6.	**Prerequisites**	Nill		
7.	**Teaching method:**	Distance Learning (Electronic)		
8.	**Evaluation**	**Assessment and Marking Percentage:** Quizzes 10 % Assignments 10 % Interactions through discussion board 10 % Mid-Semester Exam 20 % Final Examination 50 %		
9.	**Lecturer**			
10.	**Objective of the Subject**	This subject is designed to enable students to: • Identify and correct common network problems at layers 1, 2, 3, and 7 using a layered model approach • Interpret network diagrams • Select the appropriate media, cables, ports, and connectors to connect switches to other network devices and hosts • Explain the technology and media access control method for Ethernet networks • Describe the impact of Voice Over IP and Video Over IP applications on a network • Identify and correct common network problems at layers 1, 2, 3, and 7 using a layered model approach • Interpret network diagrams • Describe the components required for network and Internet communications • Implement basic switch security measures such as port security, trunk access, and management of VLANs.		
11.	**Learning Outcomes**	Upon completion of this subject, students should be able to: • Apply the concept of LAN and WAN technologies to facilitate the organisations. • Identify the current LAN and WAN technology in industry • Help the organization to develop Lan and WAN networking infrastructure that is of high quality and consistent with organisational business goals.		
12.	**Synopsis**	This subject discusses the LAN and WAN technologies and network services required by converged applications in Enterprise networks, this will includes a comprehensive, theoretical, and practical approach to learning the technologies and protocols needed to design and implement a converged switched network. The course uses the Cisco Network Architecture to introduce integrated network services and explains how to select the appropriate devices and technologies to meet network requirements. Students learn about the hierarchical network design model and how to select devices for each layer. The course explains how to configure a switch for basic functionality and how to implement Virtual LANs, VTP, and Inter-VLAN routing in a converged network. The different implementations of Spanning Tree Protocol in a converged network are presented, and students develop the knowledge and skills necessary to implement a WLAN in a small-to-medium network, as well as they learn how to implement and configure common data link protocols and how to apply WAN security concepts, principles of traffic, access control, and addressing services. Finally, students learn how to detect, troubleshoot, and correct common enterprise network implementation issues.		
13.	**Topics**	Details	Lecture (Hrs)	Lab (Hrs)
	Topic 1	**LAN Design** • Introduction to LAN Design and Concepts • Switched LAN Architecture • Matching Switches to Specific LAN Functions	3	--

	Topic 2	**Basic Switch Concepts and Configuration** • Introduction to Ethernet/802.3 LANs • Forwarding Frames Using a Switch • Switch Management Configuration • Configuring Switch Security **VLANs** • Introducing VLAN • VLAN Trunking • Configure VLANs and Trunks • Troubleshooting VLANs and Trunks	4	--
	Topic 3	**VTP** • VTP Concepts • VTP Operation • Configure VTP **STP** • Redundant Layer 2 Topologies • Introduction to STP • STP Convergence • PVST+, RSTP and Rapid PVST+	3	2
	Topic 4	**Inter-VLAN Routing** • Inter-VLAN routing • Configuring Inter-VLAN Routing • Troubleshooting Inter-VLAN Routing **Basic Wireless Concepts and Configuration** • The Wireless LAN • Wireless LAN Security • Configure Wireless LAN Access • Troubleshooting Simple WLAN Problems	4	2
	Topic 5	**Introduction to WANS** • Providing Integrated Services to the Enterprise • WAN Technology Concepts • WAN Connection Options	3	2
	Topic 6	**PPP** • Serial Point-to-Point Links • PPP Concepts • Configuring PPP • Configuring PPP with Authentication	3	2
	Topic 7	**Frame Relay** • Basic Frame Relay Concepts • Configuring Frame Relay • Advanced Frame Relay Concepts • Configuring Advanced Frame Relay	3	3
	Topic 8	**Network Security** • Securing Routers • Secure Router Network Services • Using SDM • Secure Router Management	3	3
	Topic 9	**ACLs** • Using ACLs to Secure Networks • Configuring Standard ACLs • Configuring Extended ACLs • Configuring Complex ACLs	3	3
	Topic 10	**Teleworker Services**	4	3

		• Business Requirements for Teleworker Services • Broadband Services • VPN Technology **IP Addressing Services** • DHCP • Scaling Networks with NAT • IPv6		
	Topic 11	**Mananging and administrating local area networks/ under windows** • Installing and configuring DHCP • Installing and configuring DNS • Installing and configuring Active directory • Managing groups	6	6
	Topic 12	**Network Troubleshooting** • Establishing the Network Performance Baseline • Troubleshooting Methodologies and Tools • Common WAN Implementation Issues • Network Troubleshooting	3	2
		Total contact hours	42	28
		Equivalent lecture hours	42	14
		Total lecture hours	56	
		Credit hours	4	
14.	**Main reference:**	**Networking Fundamental CCNA 3 and 4**, Cisco Press, 2007		
15	**Additional References:** **Other Materials:**	1. W.Stalling, **Data and Computer Communication**, 6th Ed., Prentice Hall, 2000 2. Behrouz A. Forouzan, **Data Communications and Networking**, 2nd Ed. Mc Graw Hill, 2001 3. **Cisco Networking Academy Program**. First Year Companion Guide. Cisco Press,2001 4. Fred Halsall, **Data Communications, Computer Networks and Open System**, 4th Ed., Addison Wesley, 1997. 5. William A. Shay, **Understanding Data Communication and Networks**, 2nd Ed., ITP, 1999. 6. Gerd Keiser, **Local Area Networks**, 2nd Ed, McGraw Hill, 2002 All other materials will be available to students online.		