RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT-3	Sheet No. 1/5
Branch	**ELECTRICAL & ELECTRONICS ENGINEERING**	**Semester**	**5**

Course Code	**513**	**Course Name**	**Data Communication and Networking**		
Course Outcome 1		Explain the fundamentals of computer network.		Teach Hrs	Marks
Learning Outcome 1		Classify different computer networks and servers. **(Cognitive)**		6	10
Contents		Parallel vs serial transmission; Definition, Benefits and Components of computer network, Classification of Network by their Geography: PAN, LAN, MAN, WAN, Classification of Network by their Component Role: Peer-to-Peer Network, client-Server Network, Topologies of network: Bus, Ring, Star, Mesh, Tree,			
Method of Assessment		Question Paper -External- End Sem Exam			
Learning Outcome 2		Compare different codes and switching methods. **(Cognitive)**		8	10
Contents		Types of switching: Circuit switching, message switching, packet switching, virtual circuit switching, Text codes:-ASCII, introduction to Unicode; Error codes- Parity code, Block code, Hamming code, CRC code			
Method of Assessment		Question Paper -External- End Sem Exam			
Learning Outcome 3		Describe Security services used in computer network. **(Cognitive)**		4	10
Contents		Need of network security, Definition and applications of security services- password, Biometric, captcha, antivirus, firewall Encryption: symmetric key, Asymmetric key, digital signature			
Method of Assessment		Internal –Assignment &/ Progressive			

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Branch	**ELECTRICAL & ELECTRONICS ENGINEERING**	**Semester**	**5**

Course Code	**513**	**Course Name**	**Data Communication and Networking**		
Course Outcome 2		Identify different network devices and transmission media. (**Cognitive**)		Hrs	Marks
Learning Outcome 4		Define different types of networking devices.		6	10
Contents		Need of Networking devices, Introduction and applications of NIC, Repeater, Bridge, Switch, Router, Gateway, Modems-DSL, ADSL, band splitter, media convertor, WiFi adapter card, Wifi access point			
Method of Assessment		Question Paper -External- End Sem Exam			
Learning Outcome 5		Set-up and configure a Local Area Network (**Psychomotor**)		8	10
Contents		Setup and configure a LAN network using network devices (routers, switches etc), Configure user devices. Identify Transmission media. Identify MAC address, IP address			
Method of Assessment		Internal practical assessment			
Learning Outcome 6		Compare different types of transmission media and media access methods. (**Cognitive**)		6	10
Contents		Need of Transmission Media, Selection Criteria. Guided Media: Types of cables, introduction, characteristics and comparison of: Twisted Pair Cable, STP, UTP, Ethernet cable, Co-axial Cable, Fiber Optic Cable. Selection Criteria of Unguided Media: Types of Communication Bands, Radio wave Communication, Microwave Communication, Infrared Communication, Satellite band. Frequency, Bandwidth and application. Definition of Media access; Media access methods: Polling, Token passing, CSMA/CA.			
Method of Assessment		Internal- Assignment &/ Progressive			

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Branch	**ELECTRICAL & ELECTRONICS ENGINEERING**	**Semester**	**5**

Course Code	513	Course Name	Data Communication and Networking

Course Outcome 3	Compare OSI model and TCP/IP protocol suite.	Hrs	Marks
Learning Outcome 7	Illustrate OSI Reference Model Concept. (**Cognitive**)	6	10
Contents	Introduction of OSI model – Layered Architecture, Peer-to- Peer Processes, Protocols, Encapsulation. Functions of each Layers of OSI model.		
Method of Assessment	Question Paper -External- End Sem Exam		
Learning Outcome 8	Define TCP/IP protocol suite and related protocols. (**Cognitive**)	6	10
Contents	Layers in the TCP/IP Protocol Suite, Comparison between OSI and TCP/IP Protocol Suite. Definition and applications of Protocols: PPPOE, ARP, RARP, IP, UDP, TCP, Http, Ftp, Telnet, SMTP, IMAP & POP, DHCP.		
Method of Assessment	Question Paper–External- End Sem Exam		
Learning Outcome 9	Interpret addressing in TCP/IP network. (**Cognitive**)	6	10
Contents	Addressing- MAC address; IP Address IPv4, Class A, B, C and D IP addresses, Netid, Hostid, Sub-netting, super-netting, Need of classless addressing, Need for IPv6; Port Address; Define URL and Domain name system		
Method of Assessment	Question Paper–External- End Sem Exam		

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Branch ELECTRICAL & ELECTRONICS ENGINEERING		**Semester**	**5**

Course Code	**513**	**Course Name**	**Data Communication and Networking**

Course Outcome 4	Manage computer network and host websites.	Hrs	Marks
Learning Outcome 10	Install and configure application layer software. (**Psychomotor**)	6	15
Contents	Install and configure Web browser and OS firewall. Client software of email (outlook, thunderbird), telnet (DoS, puTTY etc.) and ftp (FileZilla).		
Method of Assessment	External practical assessment		
Learning Outcome 11	Monitor LAN /Ethernet network. (**Psychomotor**)	8	15
Contents	Perform Network monitoring and functions like- Bandwidth management, Packet management, URL and content filtering, using software like wireshark, spiceworks, etc. Antivirus installation and use.		
Method of Assessment	External practical assessment		
Learning Outcome 12	Develop and host website. (**Psychomotor**)	8	10
Contents	Create web pages using Content Management System (i.e Joomla, Drupal, Wordpress). Domain name registration and web hosting Process.		
Method of Assessment	Internal practical assessment		

RGPV (DIPLOMA WING) BHOPAL	OBE CURRICULUM FOR THE COURSE	FORMAT-3	Sheet No. 5/5
Branch	**ELECTRICAL & ELECTRONICS ENGINEERING**	**Semester**	**5**

Course Code	513	Course Name	Data Communication and Networking		
Course Outcome 5		Identify current and future computer network technologies.		Hrs	Marks
Learning Outcome 13		Compare architecture of current computer network technologies. (**Cognitive**)		6	10
Contents		Introduction, architecture and application of different Computer Networks technologies: Ethernet, Bluetooth, Wi-Fi, USB, DSL & FTTH.			
Method of Assessment		Question Paper -External- End Sem Exam			
Learning Outcome 14		Define upcoming data technologies. (**Cognitive**)		6	10
Contents		Cloud: definition, architecture and services; Introduction of Artificial Intelligence, Machine learning, Block chain and Data Mining			
Method of Assessment		Internal- Assignment &/ Progressive			

Suggested List of Experiments*:

S.N.	Experiment
1.	Prepare and test Ethernet Cable connector
2.	Identify Network devices
3.	Connect standard Ethernet network
4.	Configure user device for Ethernet
5.	Configure broadband Router
6.	Connect a WiFi network
7.	Identify transmission cables and write characteristics
8.	Identify MAC address, IP address, port address of user devices
9.	Monitor a computer network using software i.e.wireshark, spicework
10.	Configure web browser
11.	Configure email(Outlook, Thunderbird) , ftp(Filezilla), telnet(DoS, putty)
12.	Perform domain name registration and hosting process
13.	Develop Web pages using open source software i.e Wordpress, Joomla, Drupal

Ten experiments in a semester as per the discretion of the subject teacher.

Major Equipment/Materials:

1.	Network devices Router, Modem, switch
2.	Computers with internet connectivity
3.	Ethernet cables with RJ 45 connectors
4.	Computers for server and workstation
5.	Network Cables
6.	Local Area Network Trainer

Suggestions for Practicals:
Experiments are expected to be performed using:
1. Open source software for network management i.e Wireshark, Spicework
2. Open Source Content Management software i.e. Wordpress, Joomla, Drupal
3. Application software i.e Outlook, Filezilla, putty etc.

Reference Books/Web Portals:

S.N.	Title	Author
1	Data communication and Computer Networking	Behrouz A Fourozan
2	Computer Network	Andrew S Tanenbaum
3	Data communication and Computer Networks	Rajneesh Agrawal and Bharat Bhushan Tiwari
4	nptel.ac.in	
5	swayam.gov.in	