

| GANPAT UNIVERSITY | | | | | | | | | |
|--|---|----|-----------------|----|-------------------------------------|------------------------|-----|-------|-----|
| FACULTY OF ENGINEERING & TECHNOLOGY | | | | | | | | | |
| Programme | Bachelor of Technology | | | | Branch/Spec. | Information Technology | | | |
| Semester | V | | | | Version | 2.0.0.0 | | | |
| Effective from Academic Year | 2016-17 | | | | Effective for the batch Admitted in | July 2014 | | | |
| Subject code | 2IT504 | | Subject Name | | Computer Networks | | | | |
| Teaching scheme | | | | | Examination scheme (Marks) | | | | |
| (Per week) | Lecture(DT) | | Practical(Lab.) | | Total | CE | SEE | Total | |
| | L | TU | P | TW | | | | | |
| Credit | 4 | 0 | 1 | - | 5 | Theory | 40 | 60 | 100 |
| Hours | 4 | 0 | 2 | - | 6 | Practical | 30 | 20 | 50 |
| Pre-requisites: | | | | | | | | | |
| Operating System | | | | | | | | | |
| Learning Outcome: | | | | | | | | | |
| After successful completion of this course, student will be able to | | | | | | | | | |
| <ul style="list-style-type: none"> describe and analyse the hardware, software, components of a network and the interrelations. explain networking protocols and their hierarchical relationship hardware and software, compare protocol models and select appropriate protocols for a particular design. manage multiple operating systems, systems software, network services and security, evaluate and compare systems software and emerging technologies. develop solutions for networking and security problems, balancing business concerns, technical issues and security. explain concepts and theories of networking and apply them to various situations, classifying networks, analysing performance and implementing new technologies. | | | | | | | | | |
| Theory syllabus | | | | | | | | | |
| Unit | Content | | | | | | | Hrs | |
| 1 | Overview: Basics of Computer Networks, Network Hardware, Network software, Uses of computer networks, Network categories: LAN, MAN, WAN, Examples of Networks and Protocols, Reference Models: OSI, TCP/IP | | | | | | | 06 | |
| 2 | The Physical Layer: Transmission Media: magnetic media, twisted pair, baseband & broadband, fiber optics. Wireless Transmission: radio, microwave, infrared & light wave. Narrowband ISDN, Broadband ISDN & ATM. Cellular Radio: Paging systems, cordless telephones, analog & digital telephones | | | | | | | 10 | |
| 3 | Data Link Layer: Design Issues: Services Provided to Network Layer, Framing, Error Control, Flow Control, Error Detecting Codes, Error-Correcting Codes, Stop and Wait Protocol, Go Back n Protocol, Selective Repeat Protocol, Ethernet, Wifi, Medium Access: Multiple Access Protocols, ALOHA, CSMA/CD, Collision Free Protocols, Wide Area Networks: Circuit Switching & Packet Switching, Switching Networks, Packet Switching Principles | | | | | | | 14 | |
| 4 | Network Layer: Design Issues, Introduction to Routing, Virtual Circuits, Connectionless Internetworking, Fragmentation, IP Addressing Scheme, IP, Sub networking, IPv6. ARP, RARP, Routing Algorithms, Congestion Control Mechanisms | | | | | | | 10 | |
| 5 | Transport Layer: Process to Process Delivery, Client-server Paradigm, Addressing, Multiplexing and De multiplexing, establishing a Connection, Releasing a Connection, UDP, TCP: Service Model, Connection Management, Silly Window Syndrome, Performance Issues | | | | | | | 10 | |

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| 6 | Application Layer: Introduction to Application layer protocols, DNS, SMTP, E-mail, SMTP | 06 |
| Practical content | | |
| Experiments/Practicals/Simulations would be carried out based on syllabus | | |
| Text Books | | |
| 1 | Data Communication & Networking: By Behrouz A. Forouzan. Tata McGraw Hill. | |
| 2 | Computer Networks By Andrew S. Tanenbaum. Prentice Hall India. | |
| Reference Books | | |
| 1 | Computer Networks: A Top Down Approach, By Behrouz A. Forouzan. Tata McGraw Hill | |
| 2 | Data & Computer Communications: By William Stallings. Prentice Hall India. | |