Week	Topics to be covered
Week 1	Introduction to Computer Networks - Uses and significance of computer networks - Goals and applications of computer networks - Overview of computer network structure and architecture
Week 2	- Introduction to OSI model - Explanation of TCP/IP model - Comparative analysis of TCP/IP and OSI models - Introduction to Novell Netware and ARPANET
Week 3	- Static and dynamic channel allocation for LAN and MAN - Explanation of ALOHA protocols: Static ALOHA and Dynamic ALOHA
Week 4	- CSMA (Carrier Sense Multiple Access) - CSMA/CD (Carrier Sense Multiple Access with Collision Detection) - Collision-free protocols in LAN - Introduction to BRAP, MLMA, Binary Countdown, Limited Contention Protocol, Urn Protocol, Adaptive Tree Walk Protocol
Week 5	- Role and function of repeaters - Bridges: Types and usage - Routers: Principles and routing algorithms - Gateways and their significance - Introduction to network switches
Week 6	- Components of computer network hardware - Overview of network software: Protocols and services
Week 7	- Introduction to FDDI (Fiber Distributed Data Interface) - Fast Ethernet: Characteristics and benefits - Overview of HIPPI (High-Performance Parallel Interface) - Introduction to Fiber Channel technology
Week 8	-MST
Week 9	MST
Week 10	- Comparison between static and dynamic routing - Exploration of various routing algorithms, Explanation of Multiple Spanning Tree protocol
Week 11	- Causes of network congestion - Different strategies and algorithms for congestion control, - In-depth look at LAN IEEE 802.x standards
Week 12	- Introduction to mobile telephone technology - Functionality of Mobile Telephone Switching Office (MTSO)
Week 13	- Principles of internetworking - Introduction to connectionless internetworking

Week 14	- In-depth study of IPv6 protocol - Understanding IPv6 addressing
Week 15	- Security requirements for computer networks - Common network security attacks and countermeasures
Week 16	- Overview of encryption techniques - Public key encryption and digital signatures - Introduction to distributed applications: SNMP, SMTP, HTTP - Recap of the course and discussion of future trends in networking

Teacher's Signature

HOD's Signature

Principal
Govt. College
Ropar

SESSION	TOPICS
Week 1	Objectives and types of research: Definition and types of research (Descriptive and analytical research, applied and fundamental research, qualitative and quantitative research, conceptual and empirical research).
Week 2	Research problem formulation: Defining and formulating research problem and its necessity, selecting the problem, literature review and its importance; Primary and secondary data sources-library (books, journals, periodicals
Week 3	reference sources, abstracting and indexing sources, reviews, monographs), patents, web (search engines, online libraries, online journals, e-books, e-encyclopedia, institutional websites); Journals and books-standards of research journals (impact factor, ISSN, ISBN, online and print journals,, indexed journals, peer reviewed journals), citation index, H-index; Identifying gaps areas from literature review.
Week 4	Research design and methods: Developing the research hypothesis; Research design – basic principles and need,
Week 5	Reporting and thesis writing: Structure and components of research report, types of report-monographs, review articles, research papers, thesis, books, technical reports and their significance;
Week 6	Important concepts; Observations and facts, laws and theories, prediction and explanation, induction, deduction; Development of models, developing a research plan, exploration, description, diagnosis, experimentation
Week 7	Data collection: Execution of research, observation and collection of data, methods of data collection, primary data, secondary data.
Week 8	Mid semester Test
Week 9	Mid semester Test
Week 10	Presentation of research papers: Poster presentations-layout and format; Oral presentation-planning, preparation, use of visual art, importance of effective communication.
Week 11	Different steps in preparation of a written scientific document- layout, structure and language of reports, illustrations and tables, bibliography, references, footnotes
Week 12	Application of intellectual property rights: Commercialization, copyright, royalty, intellectual property rights and patent law
Week 13	Plagiarism-concept and authentication of originality of research; Citation and acknowledgement; Reproducibility and accountability