**Detailed Syllabus**

**Lecture-wise Breakup**

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| **Subject Code** | 15B11CI511 | **Semester: Odd**  **(specify Odd/Even)** | **Semester 5th Session** 2019-2020  **Month from** JUL’19 **to** DEC’19 |
| **Subject Name** | Computer Networks | | |
| **Credits** | 4 | **Contact Hours** | 3-1-0 |

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| **Faculty (Names)** | **Coordinator(s)** | Dr. Gagandeep Kaur (J62), Dr. Sanjeev Patel (J128) |
| **Teacher(s) (Alphabetically)** | J62: Dr. Alka Singhal, Dr. Nisha Chaurasia, Dr. Shilpa Budhkar, Dr. Kavita Pandey  J128:Mr. Bansidhar Joshi, Dr. Neeraj Jain, Rupesh K Koshariya |

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| **COURSE OUTCOMES** | | **COGNITIVE LEVELS** |
| **C310.1** | Defining the basics of networking, delay components and underlying technologies | Remembering (Level 1) |
| **C310.2** | Illustrate the various key protocols in OSI model and TCP/IP protocol suite and explain various application protocols. | Understanding (Level 2) |
| **C310.3** | Examine various transport protocols and its performance enhancing mechanisms. | Analyzing (Level 4) |
| **C310.4** | Determine the shortest path for the network using various routing protocols and evaluate it. | Evaluating (Level 5) |
| **C310.5** | Choose IP & MAC addressing mechanisms and data link layer protocols to solve communication, error detection and correction problems. | Applying (Level 3) |

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| **Module No.** | **Subtitle of the Module** | **Topics in the module** | **No. of Lectures for the module** |
| 1. | Introduction | Network terminologies, Clients and Servers, Network Models, Protocol layers and their services, Connection Oriented and Connectionless services, Switching  Techniques, Physical Media. | 7.5 |
| 2. | The Application Layer | Principles of Application-Layer Protocols, The World Wide Web: HTTP, File Transfer: FTP, The Internet's Directory Service: DNS, Electronic Mail in the Internet | 5 |
| 3. | The Transport Layer | Transport-Layer Services and Principles, Multiplexing and Demultiplexing Applications, UDP and TCP, Connection Establishment, Transport Layer Protocols (go back N, stop and wait, selective repeat), Flow Control and Error Control, Principles of Congestion Control, TCP  Congestion Control | 8.5 |
| 4. | The Network Layer | Introduction and Network Service Model, Routing Principles, Hierarchical Routing, IP: the Internet Protocol, Routing in the Internet, Broadcast and multicast routing | 11 |
| 5. | The Link Layer and Local Area Networks | The Data Link Layer: Introduction, Services, Error Detection and Correction, Multiple Access Protocols and LANs, LAN Addresses and ARP, Ethernet | 8.5 |
| 6. | Recent Trends in Networks | Introduction to Distributed Systems, Cloud, IoT, FoG SDN etc. | 1.5 |
| **Total number of Lectures** | | | **42** |
| **Evaluation Criteria**  **Components Maximum Marks**  T1 20  T2 20  End Semester Examination 35  TA 25 (Assignments-10, Quiz-5, Attendance-10)  **Total 100** | | |  |

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| **Recommended Reading material:** Author(s), Title, Edition, Publisher, Year of Publication etc. ( Text books,  Reference Books, Journals, Reports, Websites etc. in the IEEE format) | |
| 1 | James Kurose, Keith Ross,” Computer Networking: A Top-Down Approach Featuring the Internet “, Addison Wesley |
| 2 | Andrew S. Tanenbaum ,”Computer Networks *“*, Prentice-Hall Publishers |
| 3 | Larry Peterson , Bruce Davie ,”Computer Networks a Systems Approach “, Morgan Kaufmann |
| 4 | William Stallings ,”Data and Computer Communications”, Prentice Hall |