| Course Code | PIT21E203J | Course Name | Network Protocols | Course Category | D | Discipline Elective Courses | L | T | P | C |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 3 | 0 | 2 | 4 |

| Pre-requisite Courses | Nil | Co-requisite Courses | Nil | Progressive Courses | Nil |
|---|---|---|---|---|---|
| Course Offering Department | Computer Science | Data Book / Codes/Standards | Nil | | |

| Course Learning Rationale (CLR): | The purpose of learning this course is to | Learning | | | Program Learning Outcomes (PLO) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CLR-1 : | focus on the protocol performance, parameters, security, and state of the art implementations. | 1 | 2 | 3 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| CLR-2 : | Understand network protocols and their specifications | | | | | | | | | | | | | | | | | | |
| CLR-3 : | Do security analysis, understand possible attacks and suggest defense mechanisms. | | | | | | | | | | | | | | | | | | |
| CLR-4 : | Evaluate the performance metrics of a protocol | | | | | | | | | | | | | | | | | | |
| CLR-5 : | Understand the utility and implementation scenario of the protocols | | | | | | | | | | | | | | | | | | |

| Course Learning Outcomes (CLO): | At the end of this course, learners will be able to: | Level of Thinking (Bloom) | Expected Proficiency (%) | Expected Attainment (%) | Engineering Knowledge | Problem Analysis | Design & Development | Analysis, Design, Research | Modern Tool Usage | Society & Culture | Environment & Sustainability | Ethics | Individual & Team Work | Communication | Project Mgt. & Finance | Life Long Learning | PSO - 1 | PSO - 2 | PSO – 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CLO-1 : | understand the need and methods of protocol design, analysis and modeling for suitable performance calibrations. | 3 | 80 | 70 | H | H | M | - | - | - | - | - | H | H | - | - | M | H | H |
| CLO-2 : | understand the needs of protocol standards, RFCs | 3 | 85 | 75 | H | H | H | H | H | - | M | - | H | H | - | - | M | H | H |

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| CLO-3 : | Understand the need for protocol evaluation, simulation | 3 | 75 | 70 | H | H | M | H | H | - | M | - | H | H | - | - | M | H | H |
| CLO-4 : | Analyze security issues | 3 | 85 | 80 | H | H | H | - | - | - | - | - | H | M | - | - | M | H | H |
| CLO-5 : | Understand the scalability issues | 3 | 85 | 75 | H | M | M | M | M | M | M | - | H | H | - | M | M | H | H |
| CLO-6 : | Understand the configuration issues | 3 | 80 | 70 | H | H | M | - | - | - | - | - | H | H | - | - | M | H | H |

| Duration (Hour) | | 15 | 15 | 15 | 15 | 15 |
|---|---|---|---|---|---|---|
| S-1 | SLO-1 | Network Communication Architecture and Protocols | Application Layer Protocols | Overview of ISDN | Network Security Technologies and Protocols | Wide Area Network,WANProtocols |
| | SLO-2 | Introduction to Network Protocol | Protocol Layer | Introduction to ISDN | Network Security Technologies | WAN Protocols |
| S-2 | SLO-1 | OSI Network Architecture | Presentation Layer Protocols | Channels | AAA Protocols | Broadband and Access protocols |
| | SLO-2 | OSI Layers | Session Layer Protocols | User Access Protocols | Tunneling Protocols | PPP protocols |
| S-3 | SLO-1 | Local Area Network and LAN Protocols | Virtual LAN Protocols | Wireless LAN Protocols | Metropolitan Area Network and MAN Protocol | Storage Area Network and SAN Protocols |
| | SLO-2 | | | | | |
| S-4- 5 | SLO -1 | Laboratory :1 Packet Tracer Simulation Tool: Connecting user devices using network interface devices | Laboratory :4 Packet Tracer Simulation Tool: Static Route configuration | Laboratory :7 Implementing inter host communication | Laboratory :10 Implementing OSPF algorithm | Laboratory :13 Implementing encryption algorithm |
| | SLO-2 | | | | | |
| S- 6 | SLO -1 | Definition and Overview of TCP/IP Protocols | Transport Layer Protocols | Network Management requirements | Security Protocols | Cisco Protocols |
| | SLO -2 | | | | Private key encryption | |
| S-7 | SLO-1 | TCP/IP Four Layers Architecture Model | Network Layer Protocols | Network monitoring | Data encryption system, | Ethernet Protocols |
| | SLO-2 | | | | | |
| S-8 | SLO-1 | TCP/IP Four Layers Architecture Model | Data Link Layer Protocols | Network control | Public key encryption | Virtual LAN protocols |
| | SLO-2 | | | | | |
| S 9-10 | SLO-1 | Laboratory :2 Packet Tracer Simulation Tool: LAN, WAN configuration | Laboratory :5 Packet Tracer Simulation Tool: DHCP Configuration | Laboratory :8 Packet Tracer Simulation Tool: Examining HTTP web traffic | Laboratory :11 Packet Tracer Simulation Tool: Frame Relay Configuration | Laboratory :14 Packet Tracer Simulation Tool: Implementing Compression algorithm |
| S-11 | SLO-1 | Network- Architecture Models: IBM SNA | Routing Protocols | SNMP V1, V2 and V3 | RSA, Elliptic curve cryptography | Novell NetWare and Protocols |
| | SLO 2 | | Multicasting Protocols | MIBs | | |
| S-12 | SLO-1 | Network Analyzer tool can be used to analyze speed | Multiprotocol Label Switching | Implementation Issues | Authentication mechanisms | IBM Systems Network Architecture |
| | SLO-2 | | | | | |

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| S-13 | SLO-1<br>SLO-2 | Comparison of the OSI and TCP/IP Reference Models | MPLS Comparison: Frame Relay and ATM | RMON | Web Security, Secured Routing Protocols | SAN Protocols |
| S-14-15 | SLO-1 | Laboratory :3<br>Packet Tracer Simulation Tool:<br>Implementing Network Topologies | Laboratory :6<br>Network Analyzer tool can be used to analyze conversation | Laboratory :9<br>Network Analyzer tool can be used to analyze bandwidth usage | Laboratory :12<br>Network Analyzer tool can be used to monitor network traffic | Laboratory :15<br>Network Analyzer tool can be used to analyse site to site monitoring |

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| Learning Resources | 1. Javvin, (2005), "Network Protocols" , Javvin Technologies Inc , II Ed. (For Unit I to III)<br>2. William Stallings, (2000), "Cryptography and Network Security", PHI. (For Unit IVto V) | 3. Mani Subramanian, (2000), "Network Management–Principles and Practices", Addison Wesley.<br>4. William Stallings, (1999), "SNMP, SNMPV2, SNMPV3 and RMON1 and 2", 3rd Edition, Addison Wesley. William Stallings, (1999), "Data and Computer Communications", 5th Edition, PHI |

| Learning Assessment | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Bloom's Level of Thinking | | Continous Learning Assessment(50% Weightage) | | | | | | | | Final Examination (50% weightage) | |
| | | CLA – 1 (10%) | | CLA – 2 (10%) | | CLA – 3 (20%) | | CLA – 4# (10%) | | | |
| | | Theory | Practice | Theory | Practice | Theory | Practice | Theory | Practice | Theory | Practice |
| Level 1 | Remember | 20% | 20% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% |
| | Understand | | | | | | | | | | |
| Level 2 | Apply | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% | 20% |
| | Analyze | | | | | | | | | | |
| Level 3 | Evaluate | 10% | 10% | 15% | 15% | 15% | 15% | 15% | 15% | 15% | 15% |
| | Create | | | | | | | | | | |
| | Total | 100 % | | 100 % | | 100 % | | 100 % | | 100% | |

# CLA – 4 can be from any combination of these: Assignments, Seminars, Scientific Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications etc.,

| **Course Designers** | | |
|---|---|---|
| **Experts from Industry** | **Experts from Higher Technical Institutions** | **Internal Experts** |
| Mr. S. Karthik, IT Analyst, Tata Consultancy Services | Dr. Neelanarayanan,, Professor, School of Computer Science and Engineering, VIT Chennai | Dr. P.Muthulakshmi |
| | | Mrs. E. Aarthi |