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| **Course – 46 Title: Computer Networks** |  |
| **Course No.: CCE 313 Credit : 3 Contact Hours: 3** | **Total Marks: 100** |

**11.1 Rationale:**

A computer network engineer need to know the basic of network architecture, and design.

**11.2 Objectives:**

1. To develop an understanding of modern network architectures from a design and performance perspective.
2. To clarify network terminology.
3. To provide an opportunity to do network programming using TCP/IP.
4. To expose students to emerging technologies and their potential impact.

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| **11.3**  **Learning Outcomes** | **11.4**  **Course Content** | **11.5**  **Teaching Learning Strategy/** | **11.6 Assessment Strategy** |
| Illustrate network applications, Define network hardware and software,  Discuss reference model, Show network example | Wireless Network concepts: frequency reuse, handoff strategies, interference and system capacity, grade of service, improving capacity and coverage; Wireless LAN Technology; | **Lecture**  **Discussion** | **Assignment**  **Exercise**  **……………….** |
| Explain data communication theory,  Classify transmission media,  Define communication satellite, PSTN  Discuss mobile telephone system, and cable television | **The physical layer:** the theoretical basis for data communication, guided transmission media, wireless transmission, communication satellites, the public switched telephone network, the mobile telephone system, cable television | **Lecture**  **Discussion** | **Assignment**  **Exercise**  **Multiple Choice**  **Essay**  **Short answer** |
| Examine data link layer design issues,  Generalize error detection and correction,  Describe elementary data link & sliding window protocols  Deduce Protocol verification | **The data link layer:** data link layer design issues, error detection and correction, elementary data link protocols, sliding window protocols, protocol verification, example data link protocols | **Lecture**  **Discussion** | **Assignment**  **Group Exercise**  **Multiple Choice** |
| Identify channel allocation problem,  Discuss multiple access protocols,  Illustrate WLAN, Ethernet, broadband , Bluetooth technology  Compare broadband and narrowband,  Demonstrate data link layer switching | **The medium access sublayer:** the channel allocation problem, multiple access protocols, Ethernet, wireless LAN, broadband wireless, Bluetooth, data link layer switching | **Lecture**  **Assignment**  **Case studies** | **Assignment**  **Group Exercise**  **Multiple Choice**  **Essay** |
| Examine network layer design issues  Analyze routing and congestion control algorithms  Characterize QoS  Implement Internetworking,  Discuss the network layer in the internet | **The network layer:** network layer design issues, routing algorithms, , congestion control algorithms, quality of service, internetworking, the network layer in the internet | **Lecture**  **Q/A**  **Assignment**  **Case studies** | **Assignment**  **Exercise**  **Short answer** |
| List transport service,  Name elements of transport protocols  Illustrate SMTP, UDP and TCP  Differentiate UDP and TCP | **The transport layer:** the transport service, elements of transport protocols, a simple transport protocol, the internet transport protocols: UDP, the internet transport protocols: TCP | **Lecture**  **Q/A**  **Assignment**  Group Discussion | **Assignment**  **Exercise**  **Short answer**  **Eassy** |
| List application layer activities,  Design E-mail  Discuss WWW and multimedia | **The application layer:** DNS--domain name system, electronic mail, the world wide web, multimedia | **Lecture**  **Q/A**  **Assignment**  **Case studies** | **Assignment**  **Exercise**  **Short answer**  **Essay** |
| Define spread spectrum, Distinguish packet and circuit switching  Define LAN and high LAN | Spread spectrum, circuit switching and packet switching, asynchronous transfer mode(ATM), local area network overview, high-speed LAN | **Lecture**  **Q/A**  **Reading Assignment** | **Assignment**  **Exercise**  **Short answer**  **Essay** |