EC-410A	WIRELESS ADHOC NETWORKS (ELECTIVE - VI)	L T P C 4 - - 3

COURSE OBJECTIVES:

1. To understand the architecture of Wireless Ad Hoc Networks
2. To distinguish between proactive and reactive routing in an Ad hoc networks
3. To understand issues and challenges in Providing QoS in Ad Hoc Wireless Networks
4. To know the importance of Wireless Sensor Networks

COURSE OUTCOMES:

After successful completion of the course, the students are able to

1. analyze MAC protocols for Ad Hoc Wireless Networks
2. analyze Routing protocols for Ad Hoc Wireless Networks
3. understand the need for Energy Management in Ad Hoc Wireless Networks
4. understand the issues and challenges in Wireless Network security
5. understand the issues of routing in WSN

UNIT I *Text Book - 1* **(10)**

Wireless AdHoc Networks : Introduction, Properties, applications, limitations, Issues in Ad Hoc Wireless Networks, Ad Hoc Wireless Internet. **MAC Protocols :** Introduction, Issues in Designing a MAC protocol for Ad Hoc Wireless Networks, Design goals of a MAC Protocol for Ad Hoc Wireless Networks, Classifications of MAC Protocols, Contention - Based Protocols, Contention - Based Protocols with reservation Mechanisms, Contention - Based MAC Protocols with Scheduling Mechanisms

UNIT II *Text Book - 1* **(10)**

Routing Protocols : Introduction, Issues in Designing a Routing Protocol for Ad Hoc Wireless Networks, Classification of Routing Protocols, Proactive/ Table-Driven Routing Protocols, Reactive/ On-Demand Routing Protocols, Hybrid Routing Protocols, Hierarchical Routing Protocols, Power - Aware Routing Protocols. **Transport Layer :** Introduction, Issues in Designing a Transport Layer Protocol for Ad Hoc Wireless Networks, Design Goals of a Transport Layer Protocol for Ad Hoc Wireless Networks, Classification of Transport Layer Solutions, TCP Over Ad Hoc Wireless Networks, Other Transport Layer Protocol for Ad Hoc Wireless Networks.

UNIT III *Text Book - 1* **(10)**

Quality of Service : Introduction, Issues and Challenges in Providing QoS in Ad Hoc Wireless Networks, Classification of QoS Solutions, MAC Layer Solutions, Network Layer Solutions, and QoS Frameworks for Ad Hoc Wireless Networks. **Energy Management :** Introduction, Need for Energy Management in Ad Hoc Wireless Networks, Classification of Ad Hoc Wireless Networks. Battery Management Schemes, Transmission Power Management Schemes, System Power Management Schemes.

UNIT IV *Text Book - 1,2* **(10)**

Security Protocols : Network Security Requirements, Issues and Challenges in Security Provisioning, Network Security Attacks, Key Management, Secure Routing in Ad Hoc Wireless Networks. **Wireless Sensor Networks :** Introduction, Sensor Network Architecture, Data Dissemination, Data Gathering, Location Discovery, Quality of a Sensor Network, Evolving Standards, Other Issues.

UNIT V *Text Book - 1* **(10)**

WSN routing, localization & QOS : Issues in WSN routing - OLSR, AODV. Localization - Indoor and Sensor Network, Localization. QoS in WSN.

LEARNING RESOURCES:

TEXT BOOK(s):

1. C. Siva Ram Murthy and B.S.Manoj - AdHoc Wireless Networks: Architectures and Protocols, 2004, PHI.
2. Jagannathan Sarangapani - Wireless Ad-hoc and Sensor Networks: Protocols, Performance and Control, CRC Press.

REFERENCE BOOK(s):

1. C. S. Raghavendra, Krishna M. Sivalingam - Wireless Sensor Networks, Springer, 2004.
2. C.K. Toh - Ad-Hoc Mobile Wireless Networks: Protocols & Systems, First ed. Pearson Education.

WEB RESOURCES:

http://nptel.ac.in/courses/