

CS414 ADHOC SENSOR NETWORKS
(Dept. Elective - III)**Objective of the Course :**

This course explores the basics of working with internet including WWW, Email, Browsing, Chatting etc., and also explores the potential of secured electronic transactions, E-mail security and electronic publishing.

UNIT - I

Fundamentals of Adhoc Networks : (Text book for all units) Overview and Communication aspects of MANETs, Applications of MANETs, Challenges, Topology-Based versus Position-Based Routing Approaches, Topology-Based Routing Protocols Proactive, Reactive and Hybrid protocols, Position-Based Routing, Other Routing Protocols.

UNIT - II

Broadcasting, Multicasting and Geocasting in Manets : Introduction, The Broadcast Storm - Broadcasting in a MANET, Flooding-Generated Broadcast Storm, Redundancy Analysis, Rebroadcasting Schemes, Multicasting - Issues in Providing Multicast in a MANET, Multicast Routing Protocols, Comparison, Geocasting – Geocast Routing Protocols, Comparison.

UNIT - III

Wireless Sensor Network : Introduction, The Mica Mote, Sensing and Communication Range, Design Issues, Energy Consumption, Clustering of Sensors, Applications of Sensor Networks.

UNIT - IV :

Data Retrieval in Sensor Networks : Introduction, Classifications of WSNs, MAC layer Design issues and Protocols, Routing Protocols of Sensor Networks - Network Structure Based Routing, Flat versus Hierarchical Routing, Multipath and Query Based Routing, Location-Based Routing, Transport Layer, High-Level Application Layer Support, Adapting to the Dynamic Nature of WSNs.

UNIT - V

Security and Connectivity to other Networks : Introduction, Security in Ad Hoc Networks, Distributed Systems Security, Key Management, Secure Routing,

Cooperation in MANETs, Security of Wireless Sensor Networks, Intrusion Detection Systems, Ingredients of a Heterogeneous Architecture, Protocol Stack, Comparison of the Integrated Architectures.

TEXT BOOK :

1. Carlos Cordeiro and Dharma P. Agrawal, "Ad hoc and Sensor Networks - Theory and Applications", 2nd ed., World Scientific Publications, ISBN 981-256-681-3, March 2006.

REFERENCE BOOKS :

1. Holger Karl and Andreas Willig, "Protocols and Architectures for Wireless Sensor Networks", 1st ed., WILEY (ISBN: 0-470-09510-5), 2009.
2. C. Siva Ram Murthy, "Ad Hoc Wireless Networks : Architectures and Protocols", 1st ed., Publisher: Prentice Hall PTR, May 28, 2004.
3. Jean warland and Pravin Varaiya , Harcourt and Morgan Kauffman, "High Performance Communication Networks ", 2nd ed., London, 2000.
4. Leon Gracia, Widjaja, "Communication networks", 2nd ed., Tata McGraw-Hill, New Delhi, 2000.
5. Behrouz.a. Forouzan, "Data Communication and Networking", 2nd ed., Tata McGraw-Hill, New Delhi, 2000.