CSE4052 : Mobile Ad Hoc Networks

Programme: B.Tech. (CSE), PG II	Year: IV	Semester :
Course : Program Elective	Credits : 4	Hours : 40

Course Context and Overview:

At the end of this course the student should be able to:

- Understand need for ad hoc networks.
- Explain the constraints that affect the design and performance of ad hoc network.
- Understand why protocols required for wired network may not work for wireless network at MAC, Network and Transport Layer.
- Explain the operations and performance of various MAC layer protocols, unicast routing protocols and transport layer protocols proposed for ad hoc networks.
- Understand security issues and QoS requirements.

Prerequisites Courses:

Computer Networks, CSE332

Course outcomes(COs):

On completion of this course, the students will have the ability to:
CO1 Understand the challenges in design of wireless ad hoc networks.
CO2 Understand and analyze protocols at MAC, routing and transport layers of wireless networks.
CO3 Design and Implement security protocols at MAC, transport and routing layers.

Course Topics:

Topics	Lecture Hours
UNIT - I **Fundamentals**	
The Electromagnetic spectrum – Radio Propagation Mechanisms, Characteristics of the Wireless Channel, Modulation techniques, Multiple access techniques, Spread spectrum techniques, IEEE 802.11, The cellular architecture. Ad Hoc Wireless Networks: Introduction, Applications and Issues.	12
UNIT - II **Media Access Control (MAC) Protocols**	9
Issues in designing MAC protocols, Classifications of MAC protocols, Contention-Based Protocols,	

Contention-Based protocols with reservation mechanism, contention based protocols with scheduling mechanisms	
UNIT - III **Routing Protocols**	9
Issues in designing routing protocols, classifications of routing Protocols, Table-Driven Routing Protocols, On Demand Routing Protocols, Hybrid Routing Protocols, Hierarchical Routing Protocols	
UNIT - IV **Transport Layer Protocols**	6
Issues in designing transport layer protocols, classification, transport layer solutions	
UNIT - V **Security in ad hoc wireless networks**	4
network security requirements, issues and challenges in security provisioning, network security attacks	

Textbook references:
Text Book:
1. C. Siva Ram Murthy, B. S. Manoj, Ad Hoc Wireless Networks, Architectures and Protocols, Pearson.

Reference books:
1. Charles .E. Perkins, "Ad Hoc Networking", Pearson Education, 2008.
2. C.K.Toh, "Ad Hoc Mobile Wireless Networks-Protocols and Systems", Pearson Education, 2009.
3. Stallings, "Wireless Communications and Networking", Prentice-Hall.
4. Jochen Schiller, "Mobile Communications", Pearson Education
5. Latest research papers

Evaluation Methods:

Item	Weightage
Continuous evaluation (quiz, assignment, group project etc.)	35%
Midterm	30%
Final Examination	35%

Prepared By: **Last Update: 14th May, 2015**