



Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058-India

(Autonomous Institute Affiliated to University of Mumbai)

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		L	T	P	L	T	P	Total
CPE8033	Elective-III Adhoc Wireless Networks	4	-	-	4	-	-	4
		Examination Scheme						
		ISE		MSE		ESE		
		10		30		100 (60% Weightage)		

Pre-requisite Course Codes	CPC504(Computer Networks)	
At end of successful completion of this course, student will be able to		
Course Outcomes	CO1	Define characteristics and features of Adhoc Networks.
	CO2	Appreciate the designing of MAC protocol for Adhoc networks.
	CO3	Implement few protocols.
	CO4	Apply security principles for routing

Module No.	Unit No.	Topics	Ref.	Hrs.
1	1.1	Introduction		04
	1.2	Introduction to wireless Networks. Characteristics of Wireless channel, Issues in Ad hoc wireless networks, Adhoc Mobility Models:- Indoor and outdoor models	1,3	
	1.3	Adhoc Networks: Introduction to adhoc networks – definition, characteristics features, applications.	1,3	
2	2.1	MAC Layer		10
	2.2	MAC Protocols for Ad hoc wireless Networks: Introduction, Issues in designing a MAC protocol for Ad hoc wireless Networks, Design goals, and Classification of a MAC protocol, Contention based protocols with reservation mechanisms.	2,3	
	2.3	Scheduling algorithms, protocols using directional antennas. IEEE standards: 802.11a, 802.11b, 802.11g, 802.15, 802.16, HIPERLAN.	2,3	
3	3.1	Network Layer		10
	3.2	Routing protocols for Ad hoc wireless Networks: Introduction, Issues in designing a routing protocol for Ad hoc wireless Networks, Classification of routing protocols, Table driven routing protocol, On- demand routing protocol.	3,4	
	3.3	Proactive Vs reactive routing, Unicast routing algorithms, Multicast routing algorithms, hybrid routing algorithm, Energy aware routing algorithm, Hierarchical Routing, QoS aware routing.	3,4	
4	4.1	Transport Layer		07



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	4.2	Transport layer protocols for Ad hoc wireless Networks: 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.	2,5	
	4.3	Classification of transport layer solutions, TCP over Ad hoc wireless Networks, Other transport layer protocols for Ad hoc wireless Networks.	2,5	
5	5.1	Security		07
	5.2	Security: Security in wireless Ad hoc wireless Networks, Network security requirements, Issues & challenges in security provisioning,	2,4	
	5.3	Network security attacks, Key management, Secure routing in Ad hoc wireless Networks.	2,4	
6	6.1	QoS		07
	6.2	Quality of service in Ad hoc wireless Networks: Introduction, Issues and challenges in providing QoS in Ad hoc wireless Networks	1,3	
	6.3	Classification of QoS solutions, MAC layer solutions, network layer solutions	2,4	
			Total	45

References:

- [1] Siva Ram Murthy and B.S.Manoj, "Ad hoc Wireless Networks Architectures and protocols", 2nd edition, Pearson Education, 2007.
- [2] Charles E. Perkins, "Adhoc Networking", Addison – Wesley, 2000.
- [3] C. K. Toh, "Adhoc Mobile Wireless Networks", Pearson Education, 2002.
- [4] Matthew Gast, "802.11 Wireless Networks: The Definitive Guide", 2nd Edition, O'Reilly Media, April 2005.
- [5] Stefano Basagni, Marco Conti, Silvia Giordan and Ivan Stojmenovic, "Mobile Adhoc Networking", Wiley-IEEE Press, 2004.
- [6] Mohammad Ilyas, "The handbook of Adhoc Wireless Networks", CRC Press, 2002.