



C. U. SHAH UNIVERSITY – WADHWAN CITY

**FACULTY OF TECHNOLOGY AND ENGINEERING
DEPARTMENT OF COMPUTER ENGINEERING
M. TECH. SEMESTER: - II**

SUBJECT NAME: Wireless Sensor Network (WSN)

SUBJECT CODE: 5TE02WSN1

Teaching & Evaluation Scheme: -

Subject Code	Subject Name	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	Total		Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
							Marks	Hours	Marks	Hours	Pr/Viva	TW	Pr	
5TE02WSN1	Wireless Sensor Network	4	0	2	6	5	30	1.5	70	3.0	-	20	30	150

Objectives:

- To gain knowledge about famous adhoc wireless network and its topology, use of sensor networks and its implementation

Prerequisites:

- Basic knowledge of computer network and protocols

Course outline:

Sr. No.	Course Contents
1	OVERVIEW OF WIRELESS SENSOR NETWORKS Challenges for Wireless Sensor Networks, Characteristics, requirements, Required mechanisms, Difference Between mobile ad-hoc and sensor networks, Applications of sensor networks, Enabling Technologies for Wireless Sensor Networks
2	ARCHITECTURES Single Node Architecture, Hardware Components, Energy Consumption of Sensor Nodes , Operating Systems and Execution Environments, Network Architecture Sensor Network Scenarios, Optimization Goals and Figures of Merit, Gateway Concepts
3	NETWORKING OF SENSORS Physical Layer and Transceiver Design Considerations, MAC Protocols for Wireless Sensor Networks, Low Duty Cycle Protocols And Wakeup Concepts S MAC , The Mediation Device Protocol, Wakeup Radio Concepts, Address and Name Management, Assignment of MAC Addresses, Routing Protocols Energy Efficient Routing, Geographic Routing.
4	INFRASTRUCTURE ESTABLISHMENT Topology Control, Clustering, Time Synchronization, Localization and Positioning, Sensor Tasking and Control.

5	SENSOR NETWORK PLATFORMS AND TOOLS Operating Systems for Wireless Sensor Networks, Sensor Node Hardware, Berkeley Motes, Programming Challenges, Node level software platforms, Node level Simulators, State centric programming
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Learning Outcomes:

Students will be able make research project in the area of wireless sensor networks.

Books Recommended:

1. Protocols and Architectures for Wireless Sensor Networks, **Holger Karl & Andreas Willig**; John Wiley, 2005.
2. Fundamentals of Wireless Sensor Networks: Theory and Practice, **Waltenegus Dargie, Christian Poellabauer**, Wiley, 2010
3. Wireless Sensor Networks, **C.S. Raghavendra, Krishna M. Sivalingam, Taieb Znati**, Springer, 2004.
4. Wireless Sensor Networks: Architectures and Protocols, **Edgar H. Callaway, Jr. and Edgar H. Callaway**, CRC Press, 2003