

Branch Name:	Signal Processing and Communication
Program Code:	ET214
Course Name:	Adhoc and Wireless Sensor Networks Practical
Course Code:	2ET2140206P
Pre-requisite Course:	Fundamentals of Communication (Analog/Digital), basics of Wireless communication, concept of Data Communication & Networking, Basic Knowledge of existing Cellular Networks (2G, 2.5G, 3G, etc.)

Course Objectives:

1. The course focuses on the Ad - Hoc networks fundamentals.
2. The main purpose of this course is to implementation challenges, routing, security and applications.
3. The course is also including Sensor networks fundamentals, major areas of thrust, energy efficiency, routing, security and applications.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	SEE		CCE		SEE		CCE						
	L	T	P	Total	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	-	-			10	25	10	25	50

Subject Contents

Sr. No	Topic	Total Hours	Weight (%)
1	Create a sample wireless topology using Simulation Tool.	2	8
2	Create a mobile Ad-hoc networks using Simulation Tool.	2	8
3	Implement an Ad-hoc On-demand Distance Vector protocol using Simulation Tool.	2	8
4	Implement a Transmission Control Protocol using Simulation Tool.	2	8
5	Implement an User Datagram Protocol using Simulation Tool.	4	18

6	Implement a Low Energy Adaptive Hierarchy protocol using Simulation Tool.	4	18
7	Implement a Power Efficient Gathering in Sensor Information System using Simulation Tool.	2	8
8	Implement a Sensor Protocol for Information via Negotiation (SPIN) using Simulation Tool	2	8
9	Implement a Power Efficient and Delay Aware MAC protocol using Simulation Tool.	2	8
10	Implement a Predictive Wake-up MAC protocol using Simulation Tool	4	8

List of Reference Books:

1. “Ad Hoc and Sensor Networks: Theory and Applications”, Carlos de Morais Cordeiro and Dharma Prakash Agrawal, Second Edition, World Scientific Publishers, 2011
2. “Ad Hoc Mobile Wireless Networks Protocols and Systems”, C. K. Toh, Prentice Hall, PTR, 2001
3. “Wireless Sensor Networks Signal Processing and Communications”, Ananthram Swami, Qing Zhao, Yao-Win Hong, Lang Tong Pub: John Wiley & Sons.

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the needs of Wireless Adhoc and Sensor Network in current scenario of technology.	1 Remembering 2 Understanding
CLO2	Describe current technology trends for the implementation and deployment of wireless adhoc/sensor networks.	2 Understanding 5. Evaluate 3 Applying
CLO3	Discuss the challenges in designing MAC, routing and transport protocols for wireless adhoc/sensor networks.	4 Analyze
CLO4	Understand the principles and characteristics of wireless sensor networks.	2 Understanding 4 Analyze

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1					L	M						H	H	M	L	
CLO2	H		M	M	L					L		H		M	L	
CLO3		M	H		L									H		L
CLO4	H	M			L			L					L		M	H

H: High, M: Medium, L: Low