PVP SIDDHARTHA INSTITUTE OF TEHNOLOGY, KANURU, VIJAYAWADA (AUTONOMOUS)

INFORMATION TECHNOLOGY

Program Elective-III

WIRELESS SENSOR NETWORKS

Course Code	19IT4602A	Year	III	Semester	II
Course Category	Program Elective	Branch	IT	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	DCCN
Continuous Internal Evaluation :	30	Semester End Evaluation:	70	Total Marks:	100

Course Outcomes		Blooms Taxonomy Level
Upon successful completion of the course, the student will be able to		
CO1	Understand the basic concepts of wireless sensor networks, sensing, computing, communication tasks and architectures.	L2
CO2	Demonstrate knowledge of MAC protocols developed for WSN	L3
CO3	Demonstrate knowledge of routing protocols developed for WSN.	L3
CO4	Analyze mobile data-centric networking and security considerations	L3

Contribution of Course Outcomes towards achievement of Program Outcomes & Strength of correlations (3:Substantial, 2: Moderate, 1:Slight)														
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	2												1	
CO2	2		2	2									1	
CO3	2		2	2									1	
CO4	2	2		2			1						1	

Syllabus		
Unit No	Contents	Mapped CO
I	**Overview of wireless sensor networks:** The vision of ambient intelligence, application example, types of applications, challenges for wireless sensor networks, enabling technologies for wireless sensor networks	CO1
II	**Architectures:** Single node architecture, hardware components,	CO1

	operating systems and execution environments, network architecture, sensor network scenarios.	
III	**Physical Layer:** Introduction, wireless channel and communication fundamentals, physical layer and transceiver design considerations in WSNs. MAC protocols, contention based protocols, schedule based protocols.	**CO1,CO 2**
IV	**Link layer protocols:** Fundamentals: Tasks and requirements, error control, causes and characteristics of transmission errors, ARQ techniques, FEC techniques, framing, adaptive schemes, intermediate checksum schemes, combining packet size optimization and FEC, link management, link quality characteristics, link quality estimation.	**CO1,CO 3**
V	**Advanced application support:** Advanced, network processing, going beyond mere aggregation of data, distributed signal processing, distributed source coding. Security, fundamentals security considerations in wireless sensor networks, denial of service attacks.	**CO1,CO 4**

Learning Recourses

Text Books

1. Holger Karl & Andreas Willig, Protocols And Architectures for Wireless Sensor Networks, John Wiley, 2011.

References

1. Feng Zhao & Leonidas J. Guibas, Wireless Sensor Networks, An Information Processing Approach, Elsevier, 2007.
2. Raghavendra, Cauligi S, Sivalingam, Krishna M., ZantiTaieb, Wireless Sensor Network, Springer 1/e, 2004 (ISBN: 978,4020,7883,5).
3. KazemSohraby, Daniel Minoli, &TaiebZnati, Wireless Sensor Networks, Technology, Protocols and Applications, John Wiley, 2010.
4. N. P. Mahalik, Sensor Networks and Configuration: Fundamentals, Standards, Platforms, and Applications, Springer Verlag, 2010.

e-Resources & other digital material

1. NPTEL VIDEO LECTURES