

COURSE TITLE	TE142453: Wireless Sensor Network Credits: 2 ELECTIVE COURSE
LEARNING OBJECTIVES	To study principles of components and architectures of wireless sensor network (WSN), as well as various protocols and computation techniques necessary for the operation WSN for applications.
COMPETENCY	The students will understand the following: <ul style="list-style-type: none"> • architectures and components of WSN and their characteristics • problems in design and operation of WSN, i.e.: distributed estimation and detection, energy aware protocol design for routing and data collecting • modelling, simulation and implementation of WSN by using the available hardware in the laboratory (Crossbow)
SUBJECTS	Wireless transmitter and receiver for WSN. Wireless channel characteristics, WSN architectures, MAC protocols, error control protocols, addressing and address management; time synchronization; routing techniques: forwarding; gossiping, flooding; single hop and multihop, coverage and deployment. Distributed estimation and detection techniques. WSN implementation using MICAz and simulation using ns2 and TOSSIM.
MAIN REFERENCES	<ul style="list-style-type: none"> • Holger Karl & Andreas Willig, <u>Protocols and Architectures for Wireless Sensor Networks</u>, Wiley, 2005. • Shashi Phoha, Thomas La Porta, & Christopher Griffin, eds., <u>Sensor Network Operations</u>, Wiley/IEEE, 2006.
OPTIONAL REFERENCES	<ul style="list-style-type: none"> • Ananthram Swami, Qing Zhao, Yao-Win Hong & Lang Tong,eds., <u>Wireless Sensor Networks: Signal Processing and Communications Perspectives</u>, Wiley, 2007. • IEEE Trans. on Signal Processing • IEEE Trans. on Wireless Communications.
PREREQUISITE	-