

Govt. Polytechnic, Balasore
COMPUTER ENGINEERING AND IOT
LESSON PLAN FOR ACADEMIC SESSION - 2026-27
INTRODUCTION TO SENSOR TECHNOLOGY

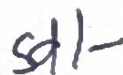
Course Code : CEIPC209 (Th.5)	Semester : 3rd
Total Periods : 45 Hours	Examination : 3 Hours
Theory Periods : 3 P/Week	Progressive Assessment: 30 Marks
Maximum Marks : 100	End Semester Examination : 70 Marks
Semester From Date : 14/07/2025	To Date :
Name of the Teaching Faculty: Er. Prasanta ray, Guest Faculty (ELECT.)	

WEEK	PERIOD	TOPIC
1 st	1 st	UNIT I: INTRODUCTION TO EMBEDDED SYSTEMS
	2 nd	Definition of Embedded System
	3 rd	Embedded Systems vs. General Computing Systems
2 nd	1 st	History of Embedded Systems
	2 nd	Classification and Major Application Areas of Embedded Systems
	3 rd	Purpose, Characteristics, and Quality Attributes of Embedded Systems
3 rd	1 st	UNIT II: TYPICAL EMBEDDED SYSTEM
	2 nd	Core of the Embedded System: Processors (General Purpose, ASICs, PLDs, COTS)
	3 rd	Memory: ROM, RAM, Memory types
4 th	1 st	Memory Shadowing and Memory selection for Embedded Systems
	2 nd	Sensors and Actuators
	3 rd	Communication Interface: On-board and External Communication
5 th	1 st	UNIT III: RTOS BASED EMBEDDED SYSTEM DESIGN
	2 nd	Operating System Basics and Types of Operating Systems
	3 rd	Tasks, Process and Threads
6 th	1 st	UNIT IV: SENSORS / TRANSDUCERS
	2 nd	Principles, Classification, Parameters, and Characteristics of Sensors
	3 rd	Environmental Parameters (EP) and Characterization
7 th	1 st	Mechanical and Electromechanical Sensors: Resistive Potentiometer, Strain Gauge
	2 nd	Inductive Sensors and Capacitive Sensors
	3 rd	Force/Stress Sensors using Quartz Resonators and Ultrasonic Sensors
8 th	1 st	Thermal Sensors: Gas Thermometric, Thermal Expansion, Acoustic, Junction Semiconductor Types
	2 nd	Thermal Radiation Sensors, Quartz Crystal Thermoelectric Sensors
	3 rd	NQR Thermometry, Spectroscopic Thermometry, Noise Thermometry, Heat Flux Sensors
9 th	1 st	Magnetic Sensors: Introduction and Principles
	2 nd	Magneto resistive, Hall Effect, and Inductance Sensors
	3 rd	Angular/Rotary Movement Transducers (Synchros, Synchro-resolvers) and Electromagnetic Flowmeter
10 th	1 st	Switching Magnetic Sensors and SQUID Sensors
	2 nd	(Progressive Assessment/Quiz)
	3 rd	(Progressive Assessment/Quiz)

11 th	1 st	UNIT V: RADIATION SENSORS AND SMART SENSORS
	2 nd	Radiation Sensors: Introduction, Basic Characteristics, and Types of Photo sensors
	3 rd	X-ray and Nuclear Radiation Sensors, Fiber Optic Sensors
12 th	1 st	Electro-analytical Sensors: Electrochemical Cell, Cell Potential
	2 nd	Standard Hydrogen Electrode (SHE), Liquid Junction, Polarization
	3 rd	Reference & Sensor Electrodes, Electro-ceramics in Gas Media
13 th	1 st	Smart Sensors: Introduction and Primary Sensors
	2 nd	Excitation, Amplification, and Filters
	3 rd	Converters, Compensation, and Information Coding/Processing
14 th	1 st	Data Communication and Standards for Smart Sensor Interface
	2 nd	Applications of Sensor Technology: On-board Automobile
	3 rd	Applications: Home Appliance, Aerospace, and Manufacturing
15 th	1 st	Applications: Environmental Monitoring and other diverse applications
	2 nd	(Revision)
	3 rd	(Revision)



Teaching Faculty
Government Polytechnic, BLS



Principal
Government Polytechnic,
Balasore