C.V.RAMAN POLYTECHNIC, BHUBANESWAR

LESSON PLAN
Session (2026-2027)

Discipline: ELECTRONICS AND TELECOMMUNICATIO N ENGINEERING	**Semester:**5th Semester, Winter/2026	**Name of the Faculty:** SUCHISMITA SATPATHY ASST.PROF **Email ID: suchismita@cvrp.edu.in**
Subject Name with code: BIO MEDICAL ELECTRONICS (ETCPE303 (B)	**No.of Days/week:**03 **Total No. of Class (Required):** 45	**Start Date: 01.07.2026** **End Date: 5.11.2026**

Week	Class Day	Brief description of the Topic/Chapter to be taught
1st	1st	**Cell structure:** Basic cell functions, Origin of bio potentials.
	2nd	Electrical activity of cells, Acquisition
	3rd	Types of bio-signals, Study of diagnostically significant bio-signal parameters
2nd	1st	Electrodes for bio-physiological sensing and conditioning.
	2nd	Electrode-electrolyte interface.
	3rd	**Cardio-vascular system and measurements:** Structure of heart, Rhythmcity
3rd	1st	Pacemaker cell filters, Averaging and integrator circuits.
	2nd	ECG signal acquisition, ECG electrodes.
	3rd	Electrocardiograph, Vector cardiograph.
4th	1st	ECG analysis, ECG- QRS detection.
	2nd	Bio-signal amplifiers and signal processing.
	3rd	Phonocardiography.
5th	1st	PCG analysis to diagnose heart valve disorder.
	2nd	Blood pressure measurement (invasive and non-invasive).

	3rd	Blood flow meter-magnetic and ultrasound.
6th	1st	Cardiac output measurement.
	2nd	Plethysmography, Ultrasound therapy unit.
	3rd	Radiotherapy , Pacemakers and defibrillators
7th	1st	Heart lung machine.
	2nd	Doubt Clearing class and Quiz.
	3rd	**Central nervous systems and muscular system:** Receptors, Sensory pathways and motor systems.
8th	1st	Processing sensory information, Sensory muscular and sensory measurements.
	2nd	Electroencephalography (EEG) ,EEG amplifier.
	3rd	Separation of alpha, Beta, theta and delta waves from EEG.
9th	1st	Classification of muscles, Muscle contraction mechanism.
	2nd	Myoelectric voltages, Electromyography (EMG).
	3rd	Noise removal and signal compensation for reducing ECG artifacts in an EMG recording.
10th	1st	**Auditory and vision system:** Mechanism of hearing.
	2nd	Sound conduction system.
	3rd	Basic audiometer, Pure tone audiometer.
11th	1st	Evoked response audiometer system Hearing aids.
	2nd	Doubt Clearing class and Quiz.
	3rd	**Eye** : Anatomy of eye, Visual acuity
12th	1st	Slit lamp, Tonometer.
	2nd	Ophthalmoscope , Perimeter.
	3rd	LASER applications in ophthalmology, Diabetic retinopathy.
13th	1st	Glaucoma and retinal hole and detachment treatment.
	2nd	**Image processing:** Introduction to image processing.
	3rd	Imaging systems X-rays.
14th	1st	Image intensifiers , CT scanner.
	2nd	Ultrasound scanner.

	3rd	Thermography, MRI
15th	1st	Doubt clearing class and Quiz.
	2nd	Previous year Question Discussion.
	3rd	Previous year Question Discussion.

Signature of the Faculty

Signature of the H.O.D