Format K1

Maharashtra State Board of Technical Education, Mumbai

TEACHING PLAN (TP)

Academic Year: 2025-26 (EVEN)

Institute Code and Name: 61303- PPCOE,
Semester: Second(EE-2K)
Programme and Code: Electrical Engineering (EE)
Course and Code: Elements of Electronics (EOE)
Course Code: 312309
Name of Faculty: Mrs Dhande M.A
Scheme: K

CLASS: FYEE

©©

COURSE LEVEL LEARNING OUTCOMES (COS)

- CO1 - Identify various electronic components.
- CO2 - Use semiconductor diodes in different applications.
- CO3 - Use semiconductor transistors in different applications.
- CO4 - Use different types of Oscillators as per requirement
- CO5 - Test operation of regulated power supply.

TEACHING-LEARNING & ASSESSMENT SCHEME

Course Code	Course Title	Abbr	Course Category	Learning Scheme: Actual Contact Hrs./Week			Learning Scheme		Credits	Paper Duration	Assessment Scheme: Theory				Based on LL & TSL Practical				Based on SL		Total Marks
				CL	TL	LL	SLH	NLH			FA-TH	SA-TH	Total		FA-PR		SA-PR		SLA		
											Max	Max	Max	Min	Max	Min	Max	Min	Max	Min	
312310	**Elements of Electronics**	**EOE**	**DSC**	**4**	**-**	**4**	**2**	**10**	**5**	**3**	**30**	**70**	**100**	**40**	**25**	**10**	**25#**	**10**	**25**	**10**	**175**

Total IKS Hrs. for Sem.: 0 Hrs.

Abbreviations: CL- Classroom Learning , TL- Tutorial Learning, LL-Laboratory Learning, SLH-Self Learning Hours, NLH-Notional Learning Hours, FA - Formative Assessment, SA -Summative assessment, IKS - Indian Knowledge System, SLA - Self Learning Assessment Legends: @ Internal Assessment, # External Assessment, *# On Line Examination , @$ Internal Online Examination

SUGGESTED COS - POS MATRIX FORM

Course Outcomes (COs)	Programme Outcomes (POs)							Programme Specific Outcomes (PSOs)		
	PO-1 Basic and Discipline Specific Knowledge	**PO-2** Problem Analysis	**PO-3** Design/ Development of Solutions	**PO-4** Engineering Tools	**PO-5** Engineering Practices for Society, Sustainability and Environment	**PO-6** Project Management	**PO-7** Life Long Learning	**PSO- 1**	**PSO- 2**	**PSO- 3**
CO1	2	-	1	1	1	-	2			
CO2	2	-	1	1	2	-	2			
CO3	2	1	1	1	2	1	2			
CO4	2	1	1	1	2	1	2			
CO5	2	1	1	1	2	1	2			

Legends :- High:03, Medium:02,Low:01, No Mapping: - *PSOs are to be formulated at institute level

Maharashtra State Board of Technical Education K-1

Teaching Plan (TP)

Academic Year: 2025-26 **Institute Code:** 61303
Program: Electrical Engineering **Course Code:** 312309
Course: Elements of Electronics (EOE) **Semester:** Second (EE-2K)
Name of faculty: Mrs. Dhande M.A.

****

Unit No. (Allocated Hrs.)	*CO Mention only Number*	*TLO Mention only Number*	*Unit Name and Learning Content Title / Details*	*No. of Lecture*	*Plan (From-To)*	*Actual Execution (From-To)*	*Teaching method/ Media*	*Remark*
I (10 Hrs)			**Unit - I Electronics components and signal (Marks)**					
	CO1	TLO 1.1	1.1 Active and passive components	02				
			1.2 Resistor,Capacitor,inductor, symbols,applications,colour codes, specifications	03				
		TLO 1.2	1.3 Concept of Unipolar and Bipolar Devices.	03				
		TLO 1.3	1.4 Classification of signals-sinusoidal, triangular and square	02				
		TLO 1.4	1.5 Signal waveform ,Time and Frequency domain, Representation, Amplitude,Frequency,phase ,wavelength	**02**				
			1.6 Voltage and current source Ideal and non-ideal Sources Dependent voltage and current sources.					
II (14 Hrs)	CO2		**Unit - II Semiconductor Diodes**(Marks)					
			2.1 Construction, symbol, working principle, specification, applications, types of biasing and V-I characteristic of Zener diode, LED, Photo diode. Working principle and applications of OLED	03				
		TLO 2.1 TLO 2.2 TLO 2.3 TLO 2.4	2.2 Rectifiers- Full wave center tapped and Bridge Rectifier, circuit diagram, wave forms, working principle . Rectifier IC KBU 808 Pin diagram and applications	02				
			2.3 Parameters of rectifier: Average DC value of current and voltage, ripple factor, PIV of diode, TUF and efficiency of rectifier.	03				

			2.4 Need of filters ,Types- C,LC,CLC,L ,circuit diagram wave forms and working principle.	02				
III (6 Hrs)	CO3	TLO 3.1 TLO 3.2 TLO 3.3 TLO 3.4 TLO 3.5	**Unit - III Semiconductor Transistors**					
			3.1 Current operating Devices, Bipolar Junction Transistor- Types NPN , PNP, symbol, construction and working principle .	02				
			3.2 Need of biasing ,Types- Fixed bias and Voltage divider bias	01				
			3.3 Regions of operation and their significance - Cut off region , Active region and Saturation region	01				
			3.4 Transistor configurations: CB, CE, CC, working , comparison and applications	01				
			3.5 Transistor parameters- Alpha, Beta, Gama, Input, and output resistance, Relationship between alpha and beta, numerical on same.	01				
			3.6Applications- Transistor as an amplifier- Small signal and power amplifier , Class A, Class B, Class C, Class AB Amplifier , Transistor as a switch ,					
			3.7 Voltage operating devices, Construction Of JFET(N-Channel and P channel),symbol ,working principle, different parameters of JFET and applications.					
			3.8 MOSFET: Construction ,symbol ,working principle of Enhancement and Depletion MOSFET, and their applications.					
			Unit - IV Oscillators					
		TLO 4.1 TLO 4.2	4.1 Oscillator: Need, Definition	03				
			4.2 Types of feedback: Positive feedback, Negative feedback. Barkhausen's criterion.	03				
			4.3Oscillator: Circuit					

IV (16 Hrs)	CO4	TLO 4.3	Diagram , working and comparison of RC ,LC, and Crystal oscillator.	02				
		TLO 4.4	4.4 Types of RC oscillator-Wien bridge and RC Phase shift Oscillator Frequency calculation	02				
		TLO 4.5	4.5 Types of LC oscillator-Colpitts oscillators ,Hartley oscillators.Frequency calculation	02				
			Unit-V Regulators and power supply.					
V (10Hrs)	CO5	TLO 5.1	5.1 Voltage regulation Load and line regulation :Definition, formulae	02				
		TLO 5.2	5.2 Block diagram, Construction, and operation of DC Regulated power supply	02				
		TLO 5.3	5.3 Basic Zener diode as a voltage regulator.	02				
		TLO 5.4	5.4 Regulator IC's: IC's 78XX,79XX ,IC 723 as fixed, variable and Dual Regulated DC power supply	02				
			5.5 Switch mode power supply: Need, block diagram and working.	02				

X. ASSESSMENT METHODOLOGIES/TOOLS

- **Formative assessment (Assessment for Learning)**
  - Tests
  - Rubrics for COs Assignment
  - Midterm Exam
  - Self-learning
  - Term Work
  - Seminar/Presentation
- **Summative Assessment (Assessment of Learning)**
  - End Term Exam Theory
  - Micro-project
  - Tutorial Performance

(Name & Signature of Staff) **(Name & Signature of HOD)**