

Nagar Yuwak Shikshan Sanstha's  
**Yeshwantrao Chavan College of Engineering**  
 (An Autonomous Institution Affiliated to Rashtrasant Tukadoji Maharaj Nagpur University)  
 Hingna Road, Wanadongri, Nagpur - 441110  
**Department of Electronics and Telecommunication**  
 Session : 2021-22 ODD + EVEN  
 SUMMARY-ATTAINMENT

Weightage	Attainment Parameters	PO1		PO2		PO3		PO4		PO5		PO6		PO7		PO8		PO9		PO10		PO11		PO12		PSO1		PSO2	
		T	A	T	A	T	A	T	A	T	A	T	A	T	A	T	A	T	A	T	A	T	A	T	A	T	A	T	A
80%	TH+PR	2.99	2.21	2.86	2.12	2.55	1.87	1.86	1.36	2.69	1.99	2.21	1.61	2.36	2.03	2.92	2.35	2.39	1.83	2.47	1.88	2.04	1.49	2.49	1.91	2.52	1.88	2.67	1.98
		74.03%		74.13%		73.23%		73.23%		74.06%		72.71%		85.88%		80.57%		76.67%		76.09%		73.06%		76.56%		74.53%		74.17%	
20%	Survey	3.00	2.41	3.00	2.26	3.00	2.30	3.00	2.44	3.00	2.53	3.00	2.47	3.00	2.45	3.00	2.39	3.00	2.54	3.00	2.47	3.00	2.49	3.00	2.49	3.00	2.52	3.00	2.57
		80.28%		75.41%		76.73%		81.46%		84.22%		82.30%		81.81%		79.67%		84.59%		82.47%		83.07%		83.02%		83.85%		85.55%	
Total		2.99	2.25	2.89	2.15	2.64	1.96	2.09	1.58	2.75	2.10	2.37	1.78	2.49	2.11	2.93	2.36	2.51	1.97	2.58	2.00	2.23	1.69	2.60	2.03	2.62	2.01	2.74	2.10
		75.28%		74.40%		74.02%		75.60%		76.28%		75.14%		84.90%		80.39%		78.56%		77.57%		75.75%		78.05%		76.66%		76.66%	

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**SUMMARY-ATTAINMENT**

**CO-PO MAPPING (EVEN + ODD Session 2021-22)**

Semester	Course Code/Name	CO	CO Statement	% AVG (A+B+C)	Attainment																
					PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2			
III	ET2201 - Electronic Devices and Circuits/ ET2202 - Lab: Electronic Devices and Circuits	1	Apply the knowledge of semiconductor diodes in circuit analysis	75.31	2.26	1.51			2.26					2.26	2.26	1.51	2.26	2.26	2.26		
		2	Analyze the transistor circuits for different configurations	72.97	2.19	2.19			2.19						2.19	2.19	1.46	2.19	2.19	2.19	
		3	Design transistor circuit with suitable biasing and stabilization techniques	73.76	2.21	2.21	2.21			2.21						2.21	2.21	1.48	2.21	2.21	2.21
		4	Analyze the response of transistors at low and high frequency	80.74	2.42	2.42				2.42						2.42	2.42	1.61	2.42	2.42	2.42
		5	Analyze power amplifier circuits	71.43	2.14	2.14				2.14						2.14	2.14	1.43	2.14	2.14	2.14
III	ET2203 - Digital Circuits and Fundamentals of Microprocessor /ET2204 - Lab: Digital Circuits and Fundamentals of Microprocessor	1	Illustrate logic families ,BCD arithmetic	66.65	2.00	0.67			2.00						2.00	2.00	1.33	2.00	2.00	2.00	
		2	Simplify the logic functions using various minimization techniques	81.72	2.45	2.45			2.45							2.45	2.45	1.63	2.45	2.45	2.45
		3	Design Combinational and sequential logic circuits	83.84	2.52	2.52	2.52			2.52						2.52	2.52	1.68	2.52	2.52	2.52
		4	Explain the architecture and instructions of 8085	79.89	1.60											0.80	0.80				
		5	Develop 8085 microprocessor programs	80.84	2.43	2.43	2.43			2.43						2.43	2.43	1.62	2.43	2.43	2.43
III	ET2205 - Electronic Measurement & Instrumentation / ET2206 - Lab: Electronic Measurement & Instrumentation	1	Elaborate basic measurement and instrumentation system	75.09	1.50				2.25						2.25	1.50					
		2	Analyze the types of errors, bridge circuits and gauge factor of strain gauges	76.21	2.29	2.29			2.29							2.29	2.29		1.52	1.52	
		3	Explain the working of display devices, generators, and analyzers	79.79	1.60											0.80	2.39		1.60		
		4	Measure different physical parameters using suitable transducers	77.10	2.31	1.54			2.31							2.31	2.31		1.54	0.77	
III	ET2207 - Network Analysis	1	Analyze electrical circuits using nodal and mesh analysis	88.30	2.65	2.65			1.77						1.77	1.77		1.77	2.65	1.77	
		2	Evaluate electrical circuit parameters using network theorems	79.74	2.39	2.39			1.59							1.59	1.59		1.59	2.39	1.59
		3	Estimate steady state and transient response of electrical circuits using initial and final conditions	89.41	2.68	2.68			1.79							1.79	1.79		1.79	2.68	1.79
		4	Analyze waveforms using Laplace transform	88.52	2.66	2.66			1.77							1.77	1.77		1.77	2.66	1.77
		5	Evaluate parameters of two – port networks.	88.03	2.64	2.64			1.76							1.76	1.76		1.76	2.64	1.76
IV	ET2251 - Electromagnetic Fields	1	Use appropriate co-ordinate systems for solving electromagnetic fields problems	65.58	1.97	1.97									1.31	1.31		1.31	1.31		
		2	Apply the principles of electrostatics & magneto-statics for the solution of problems relating to electric and magnetic field	63.33	1.90	1.90										1.27	1.27		1.27	1.27	
		3	Analyze static and time varying fields using Maxwell's equations	63.53	1.91	1.91										1.27	1.27		1.27	1.27	
		4	Examine wave propagation in different medium.	65.69	1.97	1.97										1.31	1.31		1.31	1.31	
IV	ET2252 - Microcontroller and Interfacing / ET2253 - Lab: Microcontroller and Interfacing	1	Elaborate 8051 microcontroller architecture.	72.00	2.16										1.44	1.44		2.16	2.16		
		2	Develop assembly language programs.	69.72	2.09	2.09	1.39	0.70	2.09	1.39						2.09	2.09	1.39	2.09	2.09	2.09
		3	Develop embedded C language program.	69.81	2.09	2.09	1.40	0.70	2.09	1.40						2.09	2.09	1.40	2.09	2.09	2.09
		4	Interface peripherals with 8051 microcontroller to solve real life problems	67.84	2.04	2.04	2.04	0.68	2.04	1.36						2.04	2.04	1.36	2.04	2.04	2.04
IV	ET2254 - Analog Communication / ET2255 - Lab: Analog Communication	1	Analyze different modulation techniques	65.96	1.98	1.98		0.66	1.32	1.32					1.98	1.32	1.32	1.32	1.98	1.32	
		2	Analyze different parameters of communication receivers.	65.92	1.98	1.98		0.66	1.32	1.32					1.98	1.32	1.32	1.32	1.98	1.32	
		3	Elaborate the concept of television transmission and reception	67.39	2.02				1.35							2.02	1.35		1.35	2.02	1.35
		4	Estimate noise in communication system	64.83	1.95	1.95											1.30		1.30	1.95	
		5	Select appropriate techniques for wave propagation of signals	84.47	2.53												1.69		1.69	2.53	
IV	ET2256 - Control Systems / ET2257 - Lab: Control Systems	1	Evaluate transfer function of a system	67.87	2.04	2.04			2.04						2.04	2.04		1.36	1.36	2.04	
		2	Analyze the characteristics of feedback control system	69.32	2.08	2.08			2.08							2.08	2.08		1.39	1.39	2.08
		3	Estimate time response of first and second order control systems for different test signals	71.01	2.13	2.13			2.13							2.13	2.13		1.42	1.42	2.13
		4	Determine the stability of linear control system	75.20	2.26	2.26			2.26							2.26	2.26		1.50	1.50	2.26
		5	Assess frequency domain parameters of linear control system	72.51	2.18	2.18			2.18							2.18	2.18		1.45	1.45	2.18
V	ET 2301 - ANALOG INTEGRATED CIRCUITS / ET 2302 - LAB: ANALOG INTEGRATED CIRCUITS	1	Design and analyze OP-AMP configurations.	85.28	2.56	2.56	2.56		2.56						2.56	2.56	1.71	2.56	2.56	2.56	
		2	Analyze OP-AMP circuit parameters and frequency response	77.94	2.34	2.34	0.78		2.34							2.34	2.34	1.56	2.34	2.34	2.34
		3	Design linear and non-linear OP-AMP applications.	83.70	2.51	2.51	2.51		2.51							2.51	2.51	1.67	2.51	2.51	2.51
		4	Explain special function ICs and design circuits using it.	86.95	2.61	1.74	2.61		2.61							2.61	2.61	1.74	2.61	2.61	2.61
V	ET 2303 – FIELDS & RADIATING SYSTEMS	1	Estimate transmission lines parameters	80.20	2.41	2.41									0.80	1.60		1.60	1.60		
		2	Illustrate parallel plane waveguides, and rectangular waveguides	77.18	2.32	2.32	1.54									0.77	1.54		1.54	1.54	
		3	Analyze antenna parameters	77.66	2.33	2.33										0.78	1.55		1.55	1.55	
		4	Explain various types of antennas	69.06	2.07	2.07			1.38							0.69	1.38		1.38	1.38	1.38

V	ET 2304 – SIGNALS & SYSTEMS / ET 2305 – LAB: SIGNALS & SYSTEMS	1	Classify systems based on their properties and determine the response of LTI system.	73.52	2.21	2.21			2.21			2.21	2.21		2.21	2.21	2.21				
		2	Analyze system properties based on impulse response and Fourier analysis.	76.52	2.30	2.30		1.53	2.30				2.30	2.30		2.30	2.30	2.30			
		3	Sample and reconstruct the signals.	74.52	2.24	2.24			2.24				2.24	2.24		2.24	2.24	2.24			
		4	Apply the Laplace transform and Z- transform for analysis of continuous-time and discrete-time signals and systems	77.22	2.32	2.32	0.77	1.54	2.32				2.32	2.32		2.32	2.32	2.32			
V	ET 2306– LAB: ELECTRONICS WORKSHOP	1	Identify and test passive and active electronic components and devices.	73.65	2.21	2.21			1.47	1.47				2.21	2.21	1.47	2.21	2.21	1.47		
		2	Identify and Test wires, cables, connectors and interconnected components.	72.19	2.17	2.17			1.44	1.44					2.17	2.17	1.44	2.17	2.17	1.44	
		3	Develop mini project	70.58	2.12	2.12	2.12			2.12	1.41				2.12	2.12	1.41	2.12	2.12	2.12	
VI	ET2351 - Digital Signal Processing / ET2352 - Lab: Digital Signal Processing	1	Apply discrete Fourier transform and fast Fourier transform on signals.	63.87	1.92	1.92			1.92					1.92	1.92	1.28	1.92	1.92	1.92		
		2	Implement digital filters in a variety of structures.	65.04	1.95	1.95	1.30		1.30						1.95	1.95	1.30	1.95	1.95	1.30	
		3	Design digital IIR and FIR filter.	64.57	1.94	1.94	1.94		1.94							1.94	1.94	1.29	1.94	1.94	1.94
		4	Analyze the effects of finite word length on discrete time system.	61.30	1.84	1.84			1.84							1.84	1.84	1.23	1.84	1.84	1.84
		5	Analyze multi-rate discrete time system with unequal sampling rates.	67.06	2.01	2.01			2.01							2.01	2.01	1.34	2.01	2.01	2.01
VI	ET2361 - PE I : Object Oriented Programming / ET2362 - Lab : PE I: Object Oriented Programming	1	Elaborate the object oriented paradigm with concepts of streams, classes, functions, data and objects.	73.01	2.19	2.19			2.19					2.19	2.19	1.46	2.19	2.19	2.19		
		2	Demonstrate the use of various OOPs concepts with the help of C++ programs.	68.54	2.06	2.06	1.37		1.37						2.06	2.06	1.37	2.06	2.06	1.37	
		3	Develop C++ programs for implementing data structures using array and linked list.	75.17	2.26	2.26	2.26		2.26							2.26	2.26	1.50	2.26	2.26	2.26
		4	Apply the knowledge of BFS,DFS and Dijkstra's algorithm for traversal of Graph.	62.03	1.86	1.86			1.86							1.86	1.86	1.24	1.86	1.86	1.86
		5	Develop C++ programs for implementing the concept of file handling, template and exception handling	73.21	2.20	2.20			2.20							2.20	2.20	1.46	2.20	2.20	2.20
VI	ET2363 - PE I : Discrete Structures / ET2364 - Lab : PE I : Discrete Structures	1	Examine logic and proof concepts	66.75	2.00	2.00			2.00					2.00	2.00	1.33	2.00	1.33	2.00		
		2	Develop recursive algorithms and recurrence relations	69.53	2.09	2.09	1.39		2.09						2.09	2.09	1.39	2.09	1.39	2.09	
		3	Use concepts of counting methods, and the pigeonhole principle	74.62	2.24	2.24			2.24							2.24	2.24	1.49	2.24	1.49	2.24
		4	Design applications using graphs, tree, group theory in computer science	78.76	2.36	2.36	1.58		2.36							2.36	2.36	1.58	2.36	1.58	2.36
		5	Apply transport network and pumping network models for problem solving	69.85	2.10	2.10			2.10							2.10	2.10	1.40	2.10	1.40	2.10
VI	ET2365 - PE I : Microprocessors and Peripherals / ET2366 - PE I : Lab: Microprocessors and Peripherals	1	Elaborate architecture and instructions of 8085 and 8086 microprocessor.	56.64	1.70				1.13					1.13	1.13	1.13	1.70	1.70			
		2	Analyze timing diagrams and interrupt structure of 8085 microprocessor.	59.73	1.79	1.79			1.79						1.79	1.79	1.19	1.79	1.79	1.79	
		3	Explain functioning of 8255, 8253 and 8257 peripheral ICs	58.80	1.76				1.18						1.18	1.18	1.18	1.76	1.76		
		4	Develop programs using 8085 and 8086 instruction sets.	66.40	1.99	1.99	1.99		1.99							1.99	1.99	1.33	1.99	1.99	1.99
		5	Interface various off chip peripherals with 8085	61.33	1.84	1.84	1.84		1.84							1.84	1.84	1.23	1.84	1.84	1.84
VI	ET2367 - PE I : Electronic Instrumentation / ET2368 - PE I : Lab Electronic Instrumentation	1	Explain electronic instrumentation system	63.94	1.92									0.64	1.28		1.92	1.28			
		2	Analyze pressure, temperature, parameters measured using transducers	67.99	2.04	2.04									2.04	2.04		2.04	1.36		
		3	Analyze flow, speed and level parameters measured using transducers	73.14	2.19	2.19										2.19	2.19		2.19	1.46	
		4	Develop PLC programs by using ladder diagram	70.44	2.11	1.41	1.41		1.41							2.11	2.11		2.11	1.41	1.41
VI	ET2371 - PE I : Fundamentals of Computing / ET2372 - Lab: PE I - Fundamentals of Computing	1	Explain Python framework	85.41	2.56				2.56					2.56	2.56	1.71	2.56	1.71	2.56		
		2	Develop Python programs using data types, operators and control structures	82.22	2.47	2.47	1.64		2.47						2.47	2.47	1.64	2.47	1.64	2.47	
		3	Apply strings, lists, tuples, Numpy and dictionaries for Python programs.	85.67	2.57	2.57			2.57							2.57	2.57	1.71	2.57	1.71	2.57
		4	Develop Python programs using functions	83.04	2.49	2.49	1.66		2.49							2.49	2.49	1.66	2.49	1.66	2.49
VI	ET2377 - PE II : Antenna Theory & Design / ET2378 - PE II : Lab. Antenna Theory & Design	1	Evaluate various parameters of antennas.	64.28	1.93	1.93								1.29	1.29	1.29	1.93	1.93			
		2	Analyze performance parameters of various antennas & antenna array.	65.97	1.98	1.98			1.98						1.98	1.98	1.32	1.98	1.98	1.98	
		3	Perform antenna measurements using different antenna measurement techniques.	69.49	2.08	2.08			2.08							2.08	2.08	1.39	2.08	2.08	
		4	Design and Analyze various antennas	65.73	1.97	1.97	1.97		1.97							1.97	1.97	1.31	1.97	1.97	1.97
VI	ET2379 - PE II : Digital System Design / ET2380- PE II : Lab. Digital system Design	1	Explain digital system design principles	54.08	1.62	1.62								1.08	1.08	1.08	1.62	1.62			
		2	Implement digital circuits using discrete gates and programmable logic devices.	75.83	2.27	2.27	2.27		2.27						2.27	2.27	1.52	2.27	2.27	2.27	
		3	Develop Verilog programs for combinational, sequential circuits and test pattern generation.	57.86	1.74	1.74	1.74		1.74							1.74	1.74	1.16	1.74	1.74	1.74
		4	Design a system using CAD tools.	77.26	2.32	2.32	2.32		2.32							2.32	2.32	1.55	2.32	2.32	2.32
VI	ET2381 - PE II : Internet of Things (IoT) / ET2382- PE II : Lab. Internet of Things (IoT)	1	Illustrate the physical and Logical design of IoT.	74.28	2.23	2.23			2.23					2.23	2.23	1.49	2.23	1.49			
		2	Explain the M2M and NETCONF.	78.52	2.36	2.36									1.57	1.57		2.36	1.57		
		3	Develop python programs for IoT applications.	71.94	2.16	2.16			2.16							2.16	2.16	1.44	2.16	1.44	2.16
		4	Design IoT based systems.	76.77	2.30	2.30	2.30		2.30							2.30	2.30	1.54	2.30	1.54	2.30
VI	ET2383- PE II : Optical Communication / ET2384- PE II : Lab. Optical Communication	1	Elaborate the concepts of optical communication system.	73.46	2.20				2.20					2.20	2.20		2.20	2.20			
		2	Analyze Optical Communication Systems with different types of losses.	78.41	2.35	2.35			2.35						2.35	2.35		2.35	2.35		
		3	Select appropriate types of optical fibers and receivers.	80.92	2.43	2.43			2.43							2.43	2.43		2.43	2.43	

		4	Elaborate different methods of loss measurements in fiber optics	79.54	2.39	1.59				2.39				2.39	2.39		2.39	2.39			
VI	ET2385- PE II: Principles of image processing / ET2386-PE II: Lab. Principles of image processing	1	Examine the concepts of image enhancement , restoration, segmentation, representation and description.	67.52	2.03	2.03			2.03					2.03	2.03	1.35	2.03	2.03	2.03		
		2	Apply basic image processing algorithms and filtering techniques for image enhancement.	67.61	2.03	2.03			2.03						2.03	2.03	1.35	2.03	2.03	2.03	
		3	Apply the algorithms for image restoration , compression and segmentation	74.39	2.23	2.23			2.23						2.23	2.23	1.49	2.23	2.23	2.23	
		4	Apply the techniques for image representation and description	71.25	2.14	2.14			2.14						2.14	2.14	1.42	2.14	2.14	2.14	
VII	ET 2401–RF & Microwave / ET 2402 –Lab: RF & Microwave	1	Analyze the behavior of linear beam and cross field tubes.	78.21	2.35	2.35			2.35					2.35	2.35		2.35	2.35			
		2	Apply s-parameters to model and analyze output response of microwave transmission lines.	75.57	2.27	2.27			2.27						2.27	2.27		2.27	2.27		
		3	Analyze behavior of different passive components using s-matrix.	78.60	2.36	2.36			2.36						2.36	2.36		2.36	2.36		
		4	Measure performance parameters of microwave devices.	79.33	2.38	2.38			2.38						2.38	2.38		2.38	2.38		
		5	Explore various microwave solid state devices.	73.55	2.21				1.47						2.21	2.21		2.21	2.21		
VII	ET2403 – Digital Communication / ET2404 – Lab: Digital Communication	1	Analyze various source coding techniques.	78.78	2.36	2.36			2.36					2.36	2.36	1.58	2.36	2.36	2.36		
		2	Illustrate signal space concepts.	76.44	2.29	2.29			2.29						2.29	2.29	1.53	2.29	2.29	2.29	
		3	Elaborate digital modulation techniques.	79.38	2.38				2.38						2.38	2.38	1.59	2.38	2.38	2.38	
		4	Analyze different channel coding techniques	71.17	2.14	2.14			2.14						2.14	2.14	1.42	2.14	2.14	2.14	
		5	Apply spread spectrum modulation for various applications of communication systems.	70.88	2.13	1.42										1.42			2.13		
VII	ET 2411 – PEIII:Power Electronics	1	Design circuits using power semiconductor devices.	96.12	2.88	2.88	2.88							1.92	1.92		2.88	1.92			
		2	Analyze AC/DC , DC/DC and DC/AC and Cyclo-converters.	84.04	2.52	2.52									1.68	1.68		2.52	1.68		
		3	Design of Gate Drive and snubber circuits for SCR	69.52	2.09	2.09	2.09									1.39	1.39		2.09	1.39	
		4	Elaborate AC ,DC drives and SMPS	83.20	2.50											1.66	1.66		2.50	1.66	
VII	ET2412 – PE III: Data compression and encryption	1	Elaborate text, audio, image and video compression techniques.	70.57	2.12				1.41					0.71	1.41		1.41	0.71	1.41		
		2	Elaborate data and network security issues.	68.07	2.04										0.68	1.36		1.36	0.68		
		3	Implement text compression Techniques.	67.77	2.03	1.36			1.36						0.68	1.36		1.36	0.68	1.36	
		4	Implement Symmetric and Asymmetric Key Cryptography schemes	64.93	1.95	1.30			1.30						0.65	1.30		1.30	0.65	1.30	
VII	ET 2413 –PE III :Analog VLSI Design	1	Elaborate small and large signal models of MOS transistor amplifiers and ADC, DAC, Sigma-delta converters.	85.83	2.57	2.57								0.86	1.72		1.72	1.72			
		2	Analyze single stage, Differential and operational amplifier circuits.	78.80	2.36	2.36									0.79	1.58		1.58	1.58		
		3	Analyze Performance parameters of ADC, DAC, Sigma-delta converters.	84.61	2.54	2.54									0.85	1.69		1.69	1.69		
		4	Design single stage, Differential and operational amplifier circuits and ADC, DAC, Sigma-delta converters	85.79	2.57	2.57	2.57									0.86	1.72		1.72	1.72	
VII	ET 2414 – PE III: Error Correcting Code	1	Elaborate the various codes for error detection & correction	83.61	2.51									1.67	1.67		2.51	2.51			
		2	Apply the concepts of information theory for source and channel coding/decoding.	88.06	2.64	2.64									1.76	1.76		2.64	2.64		
		3	Determine error detecting and correcting capability of linear & block codes	81.78	2.45	2.45									1.64	1.64		2.45	2.45		
		4	Analyze error control capability for cyclic, BCH and Convolutional codes	68.39	2.05	2.05									1.37	1.37		2.05	2.05		
VII	ET2415– PE III: Wireless Mobile Communication Systems	1	Analyze Cellular concept and mobile radio propagation	65.64	1.97	1.97								0.66	1.31		1.31	1.97			
		2	Illustrate types of equalization, diversity technique & multiple access techniques for wireless communication.	77.33	2.32	2.32									0.77	1.55		1.55	2.32		
		3	Elaborate concepts of GSM and CDMA	73.26	2.20	0.73									0.73	1.47		1.47	2.20		
		4	Explain wireless networking for mobile communication	76.69	2.30										0.77	1.53		1.53	2.30		
VII	ET2421 – PE IV: Satellite Communication & Radar Engineering	1	Elaborate satellite services , satellite system and propagation of satellites.	91.21	2.74	1.82								1.82	1.82		1.82	2.74			
		2	Illustrate Earth station technology and tracking of satellites.	95.32	2.86	2.86									1.91	1.91		1.91	2.86		
		3	Analyze the RADAR range equation, Doppler principle and types of radars	97.38	2.92	2.92									1.95	1.95		1.95	2.92		
		4	Elaborate RADAR antennas, Duplexers, clutter and the effects of weather on radar	72.37	2.17	1.45									1.45	1.45		1.45	2.17		
VII	ET2422- PE IV: Embedded System	1	Explain the architectural features of ARM processors	73.67	2.21	1.47								1.47	1.47		1.47	2.21			
		2	Apply ARM instruction set for development of assembly language programs.	33.91	1.02	1.02	1.02	0.68							0.68	0.68		0.68	1.02	0.68	
		3	Explain ARM floating point architecture and DSP extensions	48.98	1.47	0.98									0.98	0.98		0.98	1.47		
		4	Apply the knowledge of embedded C to interface Wi-Fi module ESP 8266, ESP32 and Node MCU with various peripherals.	56.51	1.70	1.70	1.70	1.13							1.13	1.13		1.13	1.70	1.13	
		5	Elaborate memory management in ARM and architectural support of operating system	61.53	1.85	1.23									1.23	1.23		1.23	1.85		
VII	ET 2423 – PE IV: Switching Theory	1	Analyze technology mapping & threshold networks	76.63	2.30	2.30								1.53	1.53		1.53	2.30			
		2	Analyze fault models and testing principles in combinational and sequential circuits	60.84	1.83	1.83									1.22	1.22		1.22	1.83		
		3	Design the synchronous, asynchronous sequential circuits and finite state machines.	69.19	2.08	2.08	2.08								1.38	1.38		1.38	2.08		
		4	Analyze behavior of FSM, test generation of sequential circuits, design for testability & BIST through experimentation	60.82	1.82	1.82	1.82								1.22	1.22		1.22	1.82		
VII	ET 2424 – PE IV: Topics in Machine Learning	1	Apply and analyze the model using regression.	86.74	2.60	2.60			2.60					2.60	2.60	1.73	2.60	0.87	2.60		
		2	Apply Supervised and unsupervised learning for problem solving.	76.30	2.29	2.29			2.29						2.29	2.29	1.53	2.29	0.76	2.29	

	Topics to be covered	Learning	3	Apply neural network algorithms for classification.	65.00	1.95	1.95				1.95				1.95	1.95	1.30	1.95	0.65	1.95			
			4	Evaluate deep neural network with computational complexity	92.60	2.78	2.78				2.78			2.78	2.78	1.85	2.78	0.93	2.78				
VII	ET 2425 – PE IV:Multimedia Communications		1	Explain the fundamental concepts of multimedia systems	77.14	2.31				1.54					1.54	1.54		1.54	2.31	1.54			
			2	Elaborate image ,audio and video compression techniques	84.00	2.52	1.68			1.68			1.68	1.68		1.68	2.52	1.68					
			3	ImplementWavebased image compression and video compression techniques	36.64	1.10	1.10	0.73		0.73						0.73	0.73		0.73	1.10	0.73		
			4	Illustrate various multimedia network protocols	84.86	2.55	1.70			1.70						1.70	1.70		1.70	2.55	1.70		
			5	Explain concepts of image retrieval from digital libraries	41.57	1.25				0.83						0.83	0.83		0.83	1.25	0.83		
VII	ET2431-PE V: Display Technology		1	Identify different display technologies and manufacturing process.	91.58	2.75	1.83								1.83	1.83	1.83						
			2	Analyzecharacteristics of display devices and Luminescence materials.	94.62	2.84	2.84								1.89	1.89	1.89						
			3	Analyze addressing matrix, TFT backplane and backlight unit technologies.	77.66	2.33	2.33	1.55								1.55	1.55	1.55					
			4	Elaborate advanced display devices and Materials	82.75	2.48	2.48									1.66	1.66	1.66					
VII	ET2432-PE V:Biomedical Instrumentation		1	Elaborate Fundamentals of Biomedical Instrumentation and its Electrodes	95.14	2.85								1.90	1.90	1.90	1.90						
			2	Explain the measuring and recording instruments	80.55	2.42									1.61	1.61	1.61	1.61					
			3	Describe the functioning of imaging systems.	85.22	2.56									1.70	1.70	1.70	1.70					
			4	Describe the functioning of therapeutic equipment's	85.79	2.57									1.72	1.72	1.72	1.72					
VII	ET 2433 – PE V: Fuzzy Logic & Neural Network		1	Examine fuzzy logic, neural network and deep learning models	74.17	2.23	2.23			1.48				1.48	1.48	1.48	0.74	1.48		1.48			
			2	Apply fuzzy logic for solving problems	80.50	2.42	2.42	1.61		1.61					1.61	1.61	1.61	0.81	1.61				
			3	Apply supervised/unsupervised algorithms for pattern recognition	66.24	1.99	1.99			1.32						1.32	1.32	1.32	0.66	1.32			
			4	Analyze the concepts of deep learning models for computer vision analysis	79.10	2.37	2.37			1.58						1.58	1.58	1.58	0.79	1.58			
VII	ET 2434 –PE V: Wireless Sensor Networks		1	Elaborate common wireless sensor networks.	82.86	2.49								1.66	1.66		1.66						
			2	Compare wireless sensor networks with Adhoc networks.	80.07	2.40	1.60								1.60	1.60	1.60	1.60					
			3	Elaborate MACand physical layer for WSN.	77.93	2.34									1.56	1.56	1.56	1.56					
			4	Describe Localization and positioning system for WSN	86.26	2.59									1.73	1.73	1.73	1.73					
			5	Design topology, and clustering methods for WSN	55.13	1.65	1.10	1.10							1.10	1.10	1.10	1.10					
VII	ET2435 – PE V : RF Circuit Design		1	Analyse the behaviour of series and parallel RLC circuit at High Frequency.	80.98	2.43	2.43							1.62	1.62	1.62	1.62						
			2	Elaborate the MOSFET based circuit design and different bandwidth estimation techniques.	88.09	2.64	1.76								1.76	1.76	1.76	1.76					
			3	Design high frequency amplifier for RF applications	92.28	2.77	2.77	2.77							1.85	1.85	1.85	1.85					
			4	Explain RF Power Amplifiers, Phase Detectors and biasing of RF Circuit	84.95	2.55									1.70	1.70	1.70	1.70					
VII	ET2441-PE VI : CMOS VLSI Design		1	Elaborate the characteristics of MOSFET,MOSFET based circuits and process of CMOS circuits fabrication	82.51	2.48	1.65			1.65				1.65	1.65	1.65	2.48	1.65					
			2	Design the MOSFET inverters, combinational and sequential circuits.	90.00	2.70	2.70	2.70		1.80					1.80	1.80	1.80	2.70	1.80				
			3	Design optimized CMOS circuits and layouts	48.05	1.44	1.44	1.44		0.96					0.96	0.96	0.96	1.44	0.96				
			4	Analyze switching characteristics and interconnection effects of MOS device, advance CMOS logic circuits	84.67	2.54	2.54			1.69					1.69	1.69	1.69	2.54	1.69				
VII	ET2442– PE VI: Digital Image Analysis for Remote Sensing		1	Elaborate the basic and applied principles of remote sensingand RS image characteristics	83.21	2.50				1.66				1.66	1.66	1.66	1.66				1.66		
			2	Evaluate image spatial and spectral transforms and their effect on image quality and data integrity	64.29	1.93	1.93			1.29					1.29	1.29	1.29	1.29				1.29	
			3	Apply the image correction techniques and classification algorithms on remote sensing images	61.29	1.84	1.84			1.23					1.23	1.23	1.23	1.23				1.23	
			4	Analyze high-dimensional remote sensing imagery with appropriate remote sensing data and processing methods	67.19	2.02	2.02			1.34					1.34	1.34	1.34	1.34				1.34	
VII	ET 2443- PE VI : Microwave Integrated circuits		1	Explain the planar transmission lines.	79.60	2.39								0.80	1.59	1.59	1.59						
			2	Design active and passive components and planner antennas using microstrip lines.	85.29	2.56	2.56	2.56		1.71					0.85	1.71	1.71	1.71	1.71				
			3	Design active and passive circuits using microstrip lines.	82.61	2.48	2.48	2.48		1.65					0.83	1.65	1.65	1.65	1.65				
			4	Elaboratedifferentactive and passive components and Microstrip Patch antenna.	93.76	2.81									0.94	1.88	1.88	1.88					
			5	Elaborate the fabrication process of MIC Devices and Components	84.43	2.53									0.84	1.69	1.69	1.69					
VII	ET2444 – PE VI: Communication Networks		1	Select the appropriate topologies and techniques for design of communication system	64.07	1.92	1.92	1.92						1.28	1.28	1.28	1.92						
			2	Elaborate the design techniques and protocols of computer networks.	81.34	2.44	2.44	1.63							1.63	1.63	1.63	2.44					
			3	Elaborate flow control and error control techniques in communication network	62.21	1.87	1.87								1.24	1.24	1.24	1.87					
			4	Solve problems based on evaluation of errors, class-full & classless addressing and data security in communication networks	75.91	2.28	2.28								1.52	1.52	1.52	2.28					
VII	ET2446 – PE VI:PLCs& SCADA		1	Explain the basic building blocks of Programmable logic controller	85.48	2.56								1.71	1.71	1.71	1.71						
			2	Develop PLC and SCADA programs for industrial automation.	93.40	2.80	2.80	1.87							1.87	1.87	1.87	1.87					
			3	Illustrate the concepts involved in HMI & SCADA	92.81	2.78	2.78	1.86							1.86	1.86	1.86	1.86					
			4	Elaborate the concepts in distributed control systems	89.81	2.69									1.80	1.80	1.80	1.80					
			1	Identify, formulate and analyze complex engineering problems through literature survey.	76.92	2.31	2.31	1.54	1.54	2.31	1.54	1.54	2.31	2.31	2.31	1.54	2.31	2.31	2.31				

VII	ET2409: Mini Project	2	Apply knowledge to assess health, social, safety and environmental issues.	67.90	2.04	2.04	1.36	1.36	2.04	2.04	2.04	2.04	2.04	2.04	1.36	2.04	2.04		
		3	Implement core /multidisciplinary/ industrybased electronics projects in cost effective manner.	72.97	2.19	2.19	1.46	1.46	2.19	1.46	1.46	2.19	2.19	2.19	1.46	2.19	2.19	2.19	
		4	Communicate technical details effectively	57.76	1.73	1.73	1.16	1.16	1.73			1.73	1.73	1.73	1.16	1.73	1.73	1.73	
VII	ET2410: Campus Recruitment Training (CRT)	1	Write effectively in English.	94.84	2.85	2.85			2.85		1.90	2.85	2.85	2.85		2.85	2.85	2.85	
		2	Analyze logically and critically on different issues.	86.80	2.60	2.60			2.60		1.74	2.60	2.60	2.60		2.60	2.60	2.60	
		3	Solve quantitative problems effectively.	91.06	2.73	2.73			2.73		1.82	2.73	2.73	2.73		2.73	2.73	2.73	
		4	Apply fundamentals of Electronics and Telecommunication for practical applications.	92.95	2.79	2.79			2.79		1.86	2.79	2.79	2.79		2.79	2.79	2.79	
VIII	ET2452: Extra curricular Activity Evaluation	1	The students will be able to demonstrate their involvement and achievement in Extra/Co curricular Activities which they have exhibited throughout the program	52.58	1.58	1.58	1.58	1.58	1.58	1.05	1.05	1.05	1.58	1.58	1.05	1.58	1.58	1.58	
VII	ET2451 : Major Project	1	Design and analyze application based electronic systems.	88.68	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	2.66	
		2	Implement core / multidisciplinary / industrybased electronics projects in cost effective manner.	91.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75	2.75
		3	Communicate technical details effectively	89.62	2.69				2.69		2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69	2.69
<b>Total Attainment</b>				<b>461.98</b>	<b>364.40</b>	<b>104.72</b>	<b>18.97</b>	<b>260.33</b>	<b>22.61</b>	<b>21.50</b>	<b>28.39</b>	<b>354.71</b>	<b>381.83</b>	<b>112.86</b>	<b>381.59</b>	<b>375.50</b>	<b>226.66</b>		
<b>Maximum Possible Attainment</b>				<b>618.00</b>	<b>513.00</b>	<b>168.00</b>	<b>42.00</b>	<b>393.00</b>	<b>42.00</b>	<b>33.00</b>	<b>36.00</b>	<b>597.00</b>	<b>618.00</b>	<b>228.00</b>	<b>606.00</b>	<b>597.00</b>	<b>345.00</b>		
<b>% Attainment wrt mapping count</b>				<b>74.75</b>	<b>71.03</b>	<b>62.34</b>	<b>45.16</b>	<b>66.24</b>	<b>53.84</b>	<b>65.15</b>	<b>78.86</b>	<b>59.42</b>	<b>61.78</b>	<b>49.50</b>	<b>62.97</b>	<b>62.90</b>	<b>65.70</b>		
<b>AVG</b>					<b>2.24</b>	<b>2.12</b>	<b>1.84</b>	<b>1.35</b>	<b>1.97</b>	<b>1.62</b>	<b>1.95</b>	<b>2.37</b>	<b>1.76</b>	<b>1.84</b>	<b>1.48</b>	<b>1.88</b>	<b>1.86</b>	<b>1.95</b>	

INDIRECT attainment															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
Alumni Survey	2.21	2.05	2.05	2.21	2.45	2.61	2.53	2.37	2.29	2.45	2.68	2.61	2.29	2.45	
Student Survey	2.45	2.45	2.55	2.53	2.53	2.48	2.53	2.53	3.00	2.38	2.48	2.55	2.95	2.95	
Employer Survey	2.50	2.00	2.00	2.50	2.50	2.00	2.00	2.00	2.00	2.50	2.00	2.00	2.00	2.00	
Parents Survey	2.77	2.86	2.91	2.86	2.86	2.91	2.86	2.77	2.86	2.86	2.86	2.86	2.82	2.77	
<b>Avg</b>	<b>2.41</b>	<b>2.26</b>	<b>2.30</b>	<b>2.44</b>	<b>2.53</b>	<b>2.47</b>	<b>2.45</b>	<b>2.39</b>	<b>2.54</b>	<b>2.47</b>	<b>2.49</b>	<b>2.49</b>	<b>2.52</b>	<b>2.57</b>	
Total attainment															
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
PO level attained direct tools Avg	2.21	2.12	1.87	1.36	1.99	1.61	2.03	2.35	1.83	1.88	1.49	1.91	1.88	1.98	
PO level attained indirect tools	2.41	2.26	2.30	2.44	2.53	2.47	2.45	2.39	2.54	2.47	2.49	2.49	2.52	2.57	
<b>Avg attained 0.8*D+0.2*ID</b>	<b>2.25</b>	<b>2.15</b>	<b>1.96</b>	<b>1.58</b>	<b>2.10</b>	<b>1.78</b>	<b>2.11</b>	<b>2.36</b>	<b>1.97</b>	<b>2.00</b>	<b>1.69</b>	<b>2.03</b>	<b>2.01</b>	<b>2.10</b>	