Swami Keshvanand Institute of Technology,
Management & Gramothan, Jaipur

Attainment Calculation Methodology

With Sample Calculation

Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur

Department of Electronics & Communication Engineering

Batch: 2020-2024

Program level Course-PO / PSO matrix to identify Curriculum Gap

S. No.	Course code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	1FY2-01	Engineering Mathematics-I	3	3	-	-	-	-	-	-	-	-	-	-	-	-
2	1FY2-03	Engineering Chemistry	3	2	-	-	-	3	3	-	-	-	-	-	-	-
3	1FY1-05	Human Values	-	-	-	-	-	-	3	3	-	-	-	3	-	-
4	1FY3-07	Basic Mechanical Engineering	2	-	-	-	-	-	-	-	-	-	-	-	-	-
5	1FY3-09	Basic Civil Engineering	3	3	-	-	-	2	2	2	2	-	-	-	-	-
6	1FY2-21	Engineering Chemistry Lab	2	-	-	-	3	-	-	-	-	-	-	-	-	-
7	1FY1-23	Human Values Activities	-	-	-	-	-	-	-	3	2	2	-	2	-	-
8	1FY3-25	Manufacturing Practices Workshop	2	-	-	-	2	-	-	-	3	-	-	-	-	-
9	1FY3-27	Basic Civil Engineering Lab	3	3	-	-	3	3	2	-	-	-	-	2	-	-
10	1FY3-28	Computer Aided Engineering Graphics	2	-	-	-	2	-	-	-	-	-	-	-	-	-
11	1FY8-00	Social Outreach, Discipline & Extra Curricular Activities	-	-	-	-	-	-	-	3	3	-	-	-	3	3
12	2FY2-01	Engineering Mathematics-II	3	3	-	-	-	-	-	-	-	-	-	-	-	-
13	2FY2-02	Engineering Physics	2	2	-	-	-	-	-	-	-	-	-	-	-	-
14	2FY1-04	Communication Skills	-	-	-	-	-	-	-	3	2	3	-	3	-	-
15	2FY3-06	Programming for Problem Solving	2	2	-	-	-	-	-	-	-	-	-	-	-	-
16	2FY3-08	Basic Electrical Engineering	3	3	3	-	-	-	-	-	-	-	-	3	-	-
17	2FY2-20	Engineering Physics Lab	2	-	-	-	-	-	-	-	3	-	-	-	-	-
18	2FY1-22	Language Lab	-	-	-	-	-	-	-	-	3	-	-	2	-	-
19	2FY3-24	Computer Programming Lab	2	2	-	-	-	-	-	-	-	-	-	-	-	-
20	2FY3-26	Basic Electrical Engineering Lab	3	3	3	-	-	-	-	-	-	-	-	3	-	-
21	2FY3-29	Computer Aided Machine Drawing	2	-	-	-	2	-	-	-	-	-	-	-	-	-
22	1FY8-00	Social Outreach, Discipline & Extra Curricular Activities	-	-	-	-	-	-	-	3	3	-	-	-	3	3
23	3EC2-01	Advanced Engineering Mathematics-I	2	3	-	-	-	-	-	-	-	-	-	2	-	-
24	3EC1-02	Technical Communication	-	1	-	-	-	-	-	-	-	3	-	3	-	-
25	3EC4-04	Digital System Design	3	3	3	1	-	-	-	-	-	1	-	3	3	1
26	3EC4-05	Signal & Systems	3	3	1	2	-	-	-	-	-	1	-	3	3	2
27	3EC4-06	Network Theory	3	3	2	2	-	-	-	-	-	1	-	3	3	1
28	3EC4-07	Electronics Devices	3	3	2	1	-	-	-	-	-	1	-	3	3	1
29	3EC4-21	Electronics Devices Lab	3	3	3	3	-	-	-	-	3	3	-	3	3	3
30	3EC4-22	Digital System Design Lab	2	2	2	2	-	2	-	-	3	3	-	3	2	2
31	3EC4-23	Signal Processing Lab	3	3	1	3	3	-	-	-	2	3	-	3	3	3
32	3EC3-24	Computer Programming Lab-I	2	3	2	2	3	-	-	-	3	3	-	3	-	2
33	3EC7-30	Industrial Training	1	1	-	1	1	2	1	1	3	1	1	3	1	2
34	3EC8-00	Social Outreach, Discipline & Extra Curricular Activities	-	-	-	-	-	-	3	3	3	3	-	3	3	3
35	4EC2-01	Advanced Engineering Mathematics-II	3	3	1	-	-	-	-	-	-	1	-	3	-	-
36	4EC1-03	Managerial Economics and Financial Accounting	-	-	-	3	-	-	-	-	3	2	1	3	-	-
37	4EC4-04	Analog Circuits	3	3	1	-	-	-	-	-	-	1	-	3	3	3
38	4EC4-05	Microcontrollers	2	3	2	1	-	-	-	-	-	1	-	3	3	3
39	4EC3-06	Electronics Measurement & Instrumentation	3	3	1	1	-	-	1	-	-	1	-	3	3	2
40	4EC4-07	Analog and Digital Communication	3	3	1	1	-	-	-	-	-	1	-	3	3	1
41	4EC4-21	Analog and Digital Communication Lab	3	3	1	3	-	-	-	-	2	3	-	3	3	3

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42	4EC4-22	Analog Circuits Lab	3	3	3	3	-	-	-	-	3	3	-	3	3	3
43	4EC4-23	Microcontrollers Lab	2	3	2	3	3	-	-	-	3	3	-	3	3	3
44	4EC4-24	Electronics Measurement & Instrumentation Lab	3	3	1	3	-	-	1	-	3	3	-	3	3	3
45	4EC8-00	Social Outreach, Discipline & Extra Curricular Activities	-	-	-	-	-	-	3	3	3	3	-	3	3	3
46	5EC 3-01	Computer Architecture	2	3	2	1	-	-	-	-	-	1	-	3	2	2
47	5EC 4-02	Electromagnetic Waves	3	3	1	1	-	-	-	-	-	1	-	3	3	2
48	5EC 4-03	Control system	3	3	1	-	-	-	-	-	-	1	-	3	3	`1
49	5EC 4-04	Digital Signal Processing	3	3	1	1	-	-	-	-	-	1	-	3	3	3
50	5EC 4-05	Microwave Theory & Techniques	3	3	2	1	-	-	-	-	-	1		3	3	1
51	5EC 5-12	Embedded Systems	3	3	1	1	-	-	-	-	-	1	-	3	2	2
52	5EC 4-21	RF Simulation Lab	3	3	1	2	3	-	-	-	-	3	-	3	3	2
53	5EC 4-22	Digital Signal Processing Lab	3	3	1	3	2	-	-	-	-	3	-	3	3	3
54	5EC 4-23	Microwave Lab	3	3	2	3	-	-	-	-	3	3		3	3	3
55	5EC 7-30	Industrial Training	1	1	1	1	1	2	1	1	3	1	1	3	1	2
56	5EC8-00	Social Outreach, Discipline & Extra Curricular Activities	-	-	-	-	-	-	3	3	3	3	-	3	3	3
57	6EC 3-01	Power Electronics	3	3	1	1	-	-	-	-	-	1	-	3	3	2
58	6EC 4-02	Computer Network	2	3	1	1	-	-	-	-	-	1	-	3	2	2
59	6EC 4-03	Fiber Optics Communications	3	2	1	1	-	-	-	-	-	1	-	3	3	3
60	6EC 4-04	Antennas and Propagation	3	3	-	2	-	-	-	-	-	1	-	3	3	2
61	6EC 4-05	Information theory and coding	3	3	2	2	-	-	-	-	-	1	-	3	3	2
62	6EC 5-12	Nano Electronics	3	2	1	1	-	-	-	-	-	1	-	3	2	2
63	6EC 4-21	Computer Network Lab	2	3	2	3	3	-	-	-	-	3	-	3	2	2
64	6EC 4-22	Antennas and Wave Propagation Lab	2	3	2	3	1	-	-	-	3	3	-	3	3	3
65	6EC 4-23	Electronics Design Lab	3	3	3	3	-	-	-	-	3	3	-	3	3	3
66	6EC 4-24	Power Electronics Lab	3	3	2	3	2	-	-	-	3	3	-	3	3	3
67	6EC8-00	Social Outreach, Discipline & Extra Curricular Activities	-	-	-	-	-	-	3	3	3	3	-	3	3	3
68	7EC5-11	VLSI Design	3	3	2	1	-	-	-	-	-	1	-	3	3	2
69	7CS6-60.2	Cyber Security	2	2	1	1	1	3	1	3	-	1	-	3	-	3
70	7EC4-21	VLSI Design Lab	2	3	2	3	3	-	-	-	-	3	-	3	3	2
71	7EC4-22	5G communication Lab	3	3	2		3				3	3		3	3	3
72	7EC4-23	Optical Communication Lab	3	3	2	3	3	-	-	-	3	3	-	3	3	3
73	7EC7-30	Industrial Training	1	1	1	1	1	2	1	1	3	1	1	3	1	2
74	7EC7-40	Seminar	1	1	1	1	-	1	1	1	1	2	-	3	1	2
75	7EC8-00	Social Outreach, Discipline & Extra Curricular Activities	-	-	-	-	-	-	3	3	3	3	-	3	3	3
76	8EC5-12	Digital Image and Video Processing	2	3	1	1	-	-	-	-	-	1	-	3	3	2
77	8AG6-60.1	Energy Management	-	-	-	-	-	2	1	-	-	-	-	-	-	-
78	8EC4-21	Internet of Things (IOT) Lab	3	3	3	3	3	2	-	-	3	3	1	3	3	2
79	8EC4-22	Skill Development Lab	1	2	1	1	2	2	2	1	1	2	1	3	2	3
80	8EC7-50	Project	2	2	2	2	1	1	1	2	2	1	1	3	2	3
81	8EC8-00	Social Outreach, Discipline & Extra Curricular Activities	-	-	-	-	-	-	3	3	3	3	-	3	3	3
		No. of Subjects Contributing to PO	66	61	49	46	23	13	20	19	36	59	7	65	54	55
		Grand Total	166	163	81	86	51	27	39	45	98	117	7	191	146	133
		Curricular Sufficiency	2.52	2.67	1.65	1.87	2.22	2.08	1.95	2.37	2.72	1.98	1.00	2.94	2.70	2.42
		Curricular Gap	0.48	0.33	1.35	1.13	0.78	0.92	1.05	0.63	0.28	1.02	2.00	0.06	0.30	0.58

DPAQIC Coordinator
Mamta Jain

HoD, ECE
Prof. (Dr.) Mukesh Arora

Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur					
Department of Electronics & Communication Engineering					
Batch: 2020-2024					
Attainment of Course Outcomes					
S. No.	**Course code**	**Course Name**	**Attainment (Internal)**	**Attainment (External)**	**consolidated Attainment Level**
1	1FY2-01	Engineering Mathematics-I	2.2	3	2.84
2	1FY2-03	Engineering Chemistry	3	3	3
3	1FY1-05	Human Values	3	3	3
4	1FY3-07	Basic Mechanical Engineering	3	3	3
5	1FY3-09	Basic Civil Engineering	3	3	3
6	1FY2-21	Engineering Chemistry Lab	3	3	3
7	1FY1-23	Human Values Activities	3	3	3
8	1FY3-25	Manufacturing Practices Workshop	3	3	3
9	1FY3-27	Basic Civil Engineering Lab	3	3	3
10	1FY3-28	Computer Aided Engineering Graphics	3	3	3
11	1FY8-00	Social Outreach, Discipline & Extra Curricular Activities			3
12	2FY2-01	Engineering Mathematics-II	3	3	3
13	2FY2-02	Engineering Physics	3	3	3
14	2FY1-04	Communication Skills	3	3	3
15	2FY3-06	Programming for Problem Solving	3	3	3
16	2FY3-08	Basic Electrical Engineering	3	3	3
17	2FY2-20	Engineering Physics Lab	3	3	3
18	2FY1-22	Language Lab	3	3	3
19	2FY3-24	Computer Programming Lab	3	3	3
20	2FY3-26	Basic Electrical Engineering Lab	3	3	3
21	2FY3-29	Computer Aided Machine Drawing	3	3	3
22	1FY8-00	Social Outreach, Discipline & Extra Curricular Activities			3
23	3EC2-01	Advanced Engineering Mathematics-I	3	3	3
24	3EC1-02	Technical Communication	3	3	3
25	3EC4-04	Digital System Design	3	3	3
26	3EC4-05	Signal & Systems	3	3	3
27	3EC4-06	Network Theory	3	3	3
28	3EC4-07	Electronics Devices	3	3	3
29	3EC4-21	Electronics Devices Lab	3	3	3
30	3EC4-22	Digital System Design Lab	3	3	3
31	3EC4-23	Signal Processing Lab	3	3	3
32	3EC3-24	Computer Programming Lab-I	3	3	3
33	3EC7-30	Industrial Training	3	3	3
34	3EC8-00	Social Outreach, Discipline & Extra Curricular Activities			3
35	4EC2-01	Advanced Engineering Mathematics-II	1.7	2	1.91
36	4EC1-03	Managerial Economics and Financial Accounting	3	3	3
37	4EC4-04	Analog Circuits	2.7	3	2.91
38	4EC4-05	Microcontrollers	2.3	3	2.79
39	4EC3-06	Electronics Measurement & Instrumentation	3	3	3
40	4EC4-07	Analog and Digital Communication	2.8	3	2.94
41	4EC4-21	Analog and Digital Communication Lab	3	3	3
42	4EC4-22	Analog Circuits Lab	3	3	3

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43	4EC4-23	Microcontrollers Lab	3	3	3
44	4EC4-24	Electronics Measurement & Instrumentation Lab	3	3	3
45	4EC8-00	Social Outreach, Discipline & Extra Curricular Activities			3
46	5EC 3-01	Computer Architecture	3	3	3
47	5EC 4-02	Electromagnetics Waves	2.5	0	0.75
48	5EC 4-03	Control system	3	3	3
49	5EC 4-04	Digital Signal Processing	2.8	3	2.94
50	5EC 4-05	Microwave Theory & Techniques	3	1	1.6
51	5EC 5-12	Embedded Systems	3	3	3
52	5EC 4-21	RF Simulation Lab	3	3	3
53	5EC 4-22	Digital Signal Processing Lab	3	3	3
54	5EC 4-23	Microwave Lab	3	3	3
55	5EC 7-30	Industrial Training	3	3	3
56	5EC8-00	Social Outreach, Discipline & Extra Curricular Activities			3
57	6EC 3-01	Power Electronics	3	3	3
58	6EC 4-02	Computer Network	3	3	3
59	6EC 4-03	Fiber Optics Communications	3	3	3
60	6EC 4-04	Antennas and Propagation	3	3	3
61	6EC 4-05	Information theory and coding	3	3	3
62	6EC 5-12	Nano Electronics	3	3	3
63	6EC 4-21	Computer Network Lab	3	2	2.6
64	6EC 4-22	Antennas and Wave Propagation Lab	3	3	3
65	6EC 4-23	Electronics Design Lab	3	3	3
66	6EC 4-24	Power Electronics Lab	3	3	3
67	6EC8-00	Social Outreach, Discipline & Extra Curricular Activities			3
68	7EC5-11	VLSI Design	3	3	3
69	7CS6-60.2	Cyber Security	3	3	3
70	7EC4-21	VLSI Design Lab	3	2	2.6
71	7EC4-22	5G communication Lab	3	3	3
72	7EC4-23	Optical Communication Lab	3	3	3
73	7EC7-30	Industrial Training	3	3	3
74	7EC7-40	Seminar	3	3	3
75	7EC8-00	Social Outreach, Discipline & Extra Curricular Activities			3
76	8EC5-12	Digital Image and Video Processing	2.16	3	2.75
77	8AG6-60.1	Energy Management	2.79	3	2.94
78	8EC4-21	Internet of Things (IOT) Lab	3	3	3
79	8EC4-22	Skill Development Lab	3	3	3
80	8EC7-50	Project	3	3	3
81	8EC8-00	Social Outreach, Discipline & Extra Curricular Activities			3

DPAQIC Coordinator

Mamta Jain

HoD, ECE

Prof. (Dr.) Mukesh Arora

Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur														
Department of Electronics & Communication Engineering														
Batch: 2020-2024														
Program Level Course-PO and PSO Attainment (Indirect)														
Parameter	**PO1**	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**	**PSO1**	**PSO2**
Conference/workshop	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Placement	1	1	1	1	1	1	1	1	1	1	1	1	1	1
External examiner feedback	2.95	2.93	2.93	2.8	2.88	2.77	2.69	2.82	2.9	2.9	2.77	2.93	2.95	2.95
Industrial visit/Local industrial tour/Industrial training	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Student exit survey	2.28	2.28	2.25	2.28	2.25	2.25	2.28	2.25	2.28	2.28	2.28	2.28	2.31	2.28
Alumini survey	2.51	2.47	2.45	2.52	2.47	2.47	2.52	2.53	2.63	2.48	2.48	2.37	2.51	2.53
MOOC's	3	3	3	3	3					3		3	3	3
Total Indirect Attainment	2.53	2.53	2.52	2.51	2.51	2.42	2.42	2.43	2.47	2.52	2.42	2.51	2.54	2.54

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Prof. (Dr.) Mukesh Arora

Swami Keshvanand Institute of Technology, Management and Gramothan, Jaipur																
Department of Electronics & Communication Engineering																
Batch: 2020-2024																
Program Level Course-PO and PSO Attainment (Direct)																
S. No.	Course	Consolidated CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	1FY2-01	2.84	2.84	2.84	-	-	-	-	-	-	-	-	-	-	-	-
2	1FY2-03	3	3	2	-	-	-	3	3	-	-	-	-	-	-	-
3	1FY1-05	3	-	-	-	-	-	-	3	3	-	-	-	3	-	-
4	1FY3-07	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-
5	1FY3-09	3	3	3	-	-	-	2	2	2	2	-	-	-	-	-
6	1FY2-21	3	2	-	-	-	3	-	-	-	-	-	-	-	-	-
7	1FY1-23	3	-	-	-	-	-	-	-	3	2	2	-	2	-	-
8	1FY3-25	3	2	-	-	-	2	-	-	-	3	-	-	-	-	-
9	1FY3-27	3	3	3	-	-	3	3	2	-	-	-	-	2	-	-
10	1FY3-28	3	2	-	-	-	2	-	-	-	-	-	-	-	-	-
11	1FY8-00	3	-	-	-	-	-	-	-	3	3	-	-	-	3	3
12	2FY2-01	3	3	3	-	-	-	-	-	-	-	-	-	-	-	-
13	2FY2-02	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
14	2FY1-04	3	-	-	-	-	-	-	-	3	2	3	-	3	-	-
15	2FY3-06	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
16	2FY3-08	3	3	3	3	-	-	-	-	-	-	-	-	3	-	-
17	2FY2-20	3	2	-	-	-	-	-	-	-	3	-	-	-	-	-
18	2FY1-22	3	-	-	-	-	-	-	-	-	3	-	-	2	-	-
19	2FY3-24	3	2	2	-	-	-	-	-	-	-	-	-	-	-	-
20	2FY3-26	3	3	3	3	-	-	-	-	-	-	-	-	3	-	-
21	2FY3-29	3	2	-	-	-	2	-	-	-	-	-	-	-	-	-
22	1FY8-00	3	-	-	-	-	-	-	-	3	3	-	-	-	3	3
23	3EC2-01	3	2	3	-	-	-	-	-	-	-	-	-	2	-	-
24	3EC1-02	3	-	1	-	-	-	-	-	-	-	3	-	3	-	-
25	3EC4-04	3	3	3	3	1	-	-	-	-	-	1	-	3	3	1
26	3EC4-05	3	3	3	1	2	-	-	-	-	-	1	-	3	3	2
27	3EC4-06	3	3	3	2	2	-	-	-	-	-	1	-	3	3	1
28	3EC4-07	3	3	3	2	1	-	-	-	-	-	1	-	3	3	1
29	3EC4-21	3	3	3	3	3	-	-	-	-	3	3	-	3	3	3
30	3EC4-22	3	2	2	2	2	-	2	-	-	3	3	-	3	2	2
31	3EC4-23	3	3	3	1	3	3	-	-	-	2	3	-	3	3	3
32	3EC3-24	3	2	3	2	2	3	-	-	-	3	3	-	3	-	2
33	3EC7-30	3	1	1	-	1	1	2	1	1	3	1	1	3	1	2
34	3EC8-00	3	-	-	-	-	-	-	3	3	3	3	-	3	3	3
35	4EC2-01	1.91	1.91	1.91	0.64	-	-	-	-	-	-	0.64	-	1.91	-	-
36	4EC1-03	3				3					3	2	1	3		
37	4EC4-04	2.91	2.91	2.91	0.97	-	-	-	-	-	-	0.97	-	2.91	2.91	2.91
38	4EC4-05	2.79	1.86	2.79	1.86	0.93	-	-	-	-	-	0.93	-	2.79	2.79	2.79
39	4EC3-06	3	3	3	1	1	-	-	1	-	-	1	-	3	3	2
40	4EC4-07	2.94	2.94	2.94	0.98	0.98	-	-	-	-	-	0.98	-	2.94	2.94	0.98
41	4EC4-21	3	3	3	1	3	-	-	-	-	2	3	-	3	3	3
42	4EC4-22	3	3	3	3	3	-	-	-	-	3	3	-	3	3	3
43	4EC4-23	3	2	3	2	3	3	-	-	-	3	3	-	3	3	3
44	4EC4-24	3	3	3	1	3	-	-	1	-	3	3	-	3	3	3

45	4EC8-00	3	-	-	-	-	-	-	3	3	3	3	-	3	3	3
46	5EC 3-01	3	2	3	2	1	-	-	-	-	-	1	-	3	2	2
47	5EC 4-02	0.75	0.75	0.75	0.25	0.25	-	-	-	-	-	0.25	-	0.75	0.75	0.5
48	5EC 4-03	3	3	3	1	-	-	-	-	-	-	1	-	3	3	-
49	5EC 4-04	2.94	2.94	2.94	0.98	0.98	-	-	-	-	-	0.98	-	2.94	2.94	2.94
50	5EC 4-05	1.6	1.6	1.6	1.07	0.53	-	-	-	-	-	0.53	-	1.6	1.6	0.53
51	5EC 5-12	3	3	3	1	1	-	-	-	-	-	1	-	3	2	2
52	5EC 4-21	3	3	3	1	2	3	-	-	-	-	3	-	3	3	2
53	5EC 4-22	3	3	3	1	3	2	-	-	-	-	3	-	3	3	3
54	5EC 4-23	3	3	3	2	3	-	-	-	-	3	3	-	3	3	3
55	5EC 7-30	3	1	1	1	1	1	2	1	1	3	1	1	3	1	2
56	5EC8-00	3	-	-	-	-	-	-	3	3	3	3	-	3	3	3
57	6EC 3-01	3	3	3	1	1	-	-	-	-	-	1	-	3	3	2
58	6EC 4-02	3	2	3	1	1	-	-	-	-	-	1	-	3	2	2
59	6EC 4-03	3	3	2	1	1	-	-	-	-	-	1	-	3	3	3
60	6EC 4-04	3	3	3	-	2	-	-	-	-	-	1	-	3	3	2
61	6EC 4-05	3	3	3	2	2	-	-	-	-	-	1	-	3	3	2
62	6EC 5-12	3	3	2	1	1	-	-	-	-	-	1	-	3	2	2
63	6EC 4-21	2.6	1.73	2.6	1.73	2.6	2.6	-	-	-	-	2.6	-	2.6	1.73	1.73
64	6EC 4-22	3	2	3	2	3	1	-	-	-	3	3	-	3	3	3
65	6EC 4-23	3	3	3	3	3	-	-	-	-	3	3	-	3	3	3
66	6EC 4-24	3	3	3	2	3	2	-	-	-	3	3	-	3	3	3
67	6EC8-00	3	-	-	-	-	-	-	3	3	3	3	-	3	3	3
68	7EC5-11	3	3	3	2	1	-	-	-	-	-	1	-	3	3	2
69	7CS6-60.2	3	2	2	1	1	1	3	1	3	-	1	-	3	-	3
70	7EC4-21	2.6	1.73	2.6	1.73	2.6	2.6	-	-	-	-	2.6	-	2.6	2.6	1.73
71	7EC4-22	3	3	3	2	-	3	-	-	-	3	3	-	3	3	3
72	7EC4-23	3	3	3	2	3	3	-	-	-	3	3	-	3	3	3
73	7EC7-30	3	1	1	1	1	1	2	1	1	3	1	1	3	1	2
74	7EC7-40	3	1	1	1	1	-	1	1	1	1	2	-	3	1	2
75	7EC8-00	3	-	-	-	-	-	-	3	3	3	3	-	3	3	3
76	8EC5-12	2.75	1.83	2.75	0.92	0.92						0.92		2.75	2.75	1.83
77	8AG6-60.1	2.94						1.96	0.98							
78	8EC4-21	3	3	3	3	3	3	2	-	-	3	3	1	3	3	2
79	8EC4-22	3	1	2	1	1	2	2	2	1	1	2	1	3	2	3
80	8EC7-50	3	2	2	2	2	1	1	1	2	2	1	1	3	2	3
81	8EC8-00	3	-	-	-	-	-	-	3	3	3	3	-	3	3	3
Direct Attainment			2.42	2.57	1.59	1.82	2.18	2.07	1.95	2.37	2.72	1.94	1	2.84	2.61	2.36
Indirect Attainment			2.53	2.53	2.52	2.51	2.51	2.42	2.42	2.43	2.47	2.52	2.42	2.51	2.54	2.54
Overall Attainment			2.44	2.56	1.78	1.96	2.25	2.14	2.04	2.38	2.67	2.06	1.28	2.77	2.6	2.4
Curricular Sufficiency			2.52	2.67	1.65	1.87	2.22	2.08	1.95	2.37	2.72	1.98	1.00	2.94	2.70	2.42
Target(80% of Curricular Sufficiency+20% of maximum indirect attainment level)			2.61	2.74	1.92	2.10	2.37	2.26	2.16	2.49	2.78	2.18	1.40	2.95	2.76	2.53
Gap			0.17	0.18	0.14	0.14	0.12	0.12	0.12	0.11	0.11	0.12	0.12	0.18	0.16	0.13

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Actions taken based on the results of evaluation of each of the POs & PSOs

POs & PSOs Attainment Levels and Actions for improvement (2020-2024)

POs	Target Level	Attainment Level	Observations
PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.			
PO1	**2.61**	**2.44**	There is some gap in attainment and target. Students have faced problems in solving complex mathematical problems. Actions taken for improvement are listed below:

Gap = 0.17

Action 1: Faculty members concerned with the courses (4EC2-01(AEM-II), 5EC4-02(EM Waves), 5EC4-05(MTT) and 7EC4-21(VLSI Lab) are advised to give more emphasis to design/numerical related problems.

Action 2: Faculty members are encouraged to conduct remedial and extra classes, as well as engage students in discussions on design-related problems during lab sessions.

Action 3: Students are encouraged to enroll in MOOCs or Spoken Tutorials for the subjects mentioned above.

Action 4: Virtual labs are used to strengthen this gap.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.			
PO2	**2.74**	**2.56**	Some gap in attainment and target. Students were facing problem in identifying and formulating engineering problems due to difficulty in applying theoretical knowledge. Actions taken for improvement are listed below:

Gap =0.18

Action 1: Faculty members are encouraged to guide students in practicing how to break down large problems into smaller components and work on solving them.

Action 2: Students are encouraged to actively participate in academic activities such as quizzes, mini projects, and paper/poster presentations on various platforms.

Action 3: Students are advised to diligently solve the question banks provided by faculty to gain a deeper understanding of problem-solving techniques.

Action 4: Expert lectures and workshops will be organized to bridge any knowledge gaps.

PO6 : The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.			
PO6	**2.26**	**2.14**	Some gap in attainment and target. Actions taken for improvement are listed below.

Gap = 0.12

Action 1: Students are encouraged to be actively involved in UHV & Ethics Cell as well as Gramothan Club and this participation helps them to analyze the responsibility of an Engineer towards society.

Action 2: Students are motivated to participate in various academic activities namely project exhibition, quizzes, industrial visits, mini projects, and paper presentations at various platforms.

Action 3: Regular plantation drives have been carried out in the institute for the welfare of society.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.			
PO7	**2.16**	**2.04**	Some gap in attainment and target. Actions taken for improvement are listed below.

Gap = 0.12

Action 1: Students are encouraged to indulge in projects, in which global and environmental issues are improved.

Action 2: Industrial visit to CSIR-CEERI, Jaipur center has been organized for the students to experience industry exposure.

Action 3: Regular plantation drives have been carried out in the institute for the welfare of society

Action 4: Students are motivated to participate in ANANDAM Activities

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice			
PO8	**2.49**	**2.38**	Some gap in attainment and target. Actions taken for improvement are listed below.

Gap =0.11

Action 1: In RTU curriculum, a course on Human value activities is incorporated.

Action 2: A UHV & Ethics Cell is established in the Institute. Students are motivated to be part of the cell.

PO9 : Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.			
PO9	**2.78**	**2.67**	Some Gap in Attainment. Actions taken are described below.

Gap = 0.11

Action 1: The entire batch is divided into groups, with each group assigned a project. The project work is further divided into individual tasks for each student. This division, along with the final project implementation, demonstrates effective teamwork.

Action 2: Students are encouraged to deliver presentations on various topics.

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PO3: Design/development of solutions:
Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO3	**1.92**	**1.78**	There is some gap in attainment and target. Actions taken for improvement are listed below.

Gap = 0.14

Action 1: Students actively participate in activities organized by various clubs and student chapters of the institute. They are encouraged to join professional societies to stay engaged in practical, hands-on projects that allow them to apply their theoretical knowledge.

Action 2: Design-based experiments are incorporated into lab sessions to encourage students to work on problem-solving through design.

Action 3: Expert Lectures/ Hands on sessions/ Workshops etc. were organized for students related to designing and development of solutions

PO4: Conduct investigations of complex problems:
Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO4	**2.10**	**1.96**	Some gap in attainment and target. Actions taken for improvement are listed below.

Gap= 0.14

Action 1: Various technical sessions were organized by Industrial Experts and Academicians. By actively participating in these technical sessions, students get the benefit of identifying the complex problems and their solutions. This helps them to develop critical thinking and clear understanding of underlying concepts required to investigate complex problems.

Action 2: Online Courses from platforms like NPTEL, Coursera, etc. were encouraged and financial aid was provided to students.

Action 3: Lecture Series on "Recent trends in ECE" is scheduled to be conducted in October 2024

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO5	**2.37**	**2.25**	Some gap in attainment and target. Actions taken for improvement are listed below.

Gap = 0.12

Action 1: Students are encouraged to regularly practice using modern tools in alignment with their lab courses. Additionally, they are asked to make extensive use of virtual labs, not only for experiments prescribed in the RTU syllabus but also for other experiments that help strengthen their understanding of core concepts.

Action 2: Under professional societies, various activities have been conducted inclusive of hands-on sessions. Students are motivated to participate in such activities and make utilization of Modern tool usage.

Action 3: Student workshop on "PCB designing and fabrication" was organized on 26-28th September, 2024.

Action 3: Students actively participate in both intra- and inter-level project competitions, such as hackathons, project exhibitions, and workshops.

PO10: Communication:
Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO10	**2.18**	**2.06**	Some Gap in Attainment. Actions taken are described below.

Gap = 0.12

Action 1: In the Campus Recruitment Training program, experts assist students in enhancing their communication skills. Students participate in group discussions and mock interviews to further refine these abilities.

Action 2: Individual seminars and presentations are conducted for students every semester.

Action 3: In various clubs and professional societies, students take an active role in organizing activities and prepare technical reports on the sessions conducted and the subject matter discussed.

Action 4: Through Toastmasters club and Soft skills classes, students take the advantage to enrich their required communication skills.

Some events organized in this respect are Soft Skills Classes are held for all students in II year to improve communication skills, and Campus Recruitment Training Classes for all students in III and IV year to improve communication and analytical skills. Mock interviews are also conducted in this regard by SDC Cell.

PO11 : Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments

PO11	**1.4**	**1.28**	Some Gap in Attainment. Actions taken are described below.

Gap = 0.12

Action 1: In project work, students operate under the guidance of faculty mentors. They are encouraged to manage the project in distinct phases, create a budget estimate, and follow it throughout the project. One student takes on the role of project leader, while the entire team collaborates to manage the project effectively.

Action 2: Students are encouraged to conduct a thorough market survey to assess the project requirements and develop a cost estimation model. Steps are taken to minimize costs wherever possible.

PO12 : Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PO12	**2.95**	**2.77**	Some Gap in Attainment. Actions taken are described below.

Gap = 0.18

Action 1: Students are motivated to participate as well as organize various activities as student coordinators, where students experience their holistic development.

Action 2: Student workshop o "PCB designing and fabrication" was organized on 26-28th September, 2024.

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PSO1 : Understand principles and applications of electronic components, circuits and devices.			
PSO1	**2.76**	**2.6**	Some Gap in Attainment. Actions taken are described below

Gap =0.16

Action 1: Students are encouraged to regularly practice solving problems related to electronic components and circuits.

Action 2: Faculty members motivate students to engage in discussions with their peers, whether in person or through online forums, to share knowledge and explore different problem-solving approaches.

Action 3: Students are urged to participate in workshops and seminars focused on electronic components and circuit design, which often offer insights into real-world applications and industry trends.

Action 4: In various labs, students utilize Proteus software to model and simulate electronic circuits, enabling them to experiment with circuit design without the need for physical components.

PSO2 : Develop proficiency in Electronics and Communication Engineering to enhance employability skills.			
PSO2	**2.53**	**2.4**	Some Gap in Attainment. Actions taken are described below

Gap = 0.13

Action1: Faculty members advise students to enroll in online courses and Massive Open Online Courses (MOOCs) to supplement their formal education and gain the certification.

Action2. Students are motivated to attend conferences, seminars, and workshops related to ECE. Interaction with domain experts from industry helps the students and opens opportunities for collaboration or employment.

Action 3: Students are advised to excel in programming languages commonly used in ECE, such as C, C++, or Python by practicing regularly. Programming skills are valuable for tasks like Embedded systems development, VLSI design and Digital Signal Processing.

Action 4: Students are encouraged to attend the CRT program regularly according to the schedule.

Action 5: Faculty members will place greater emphasis on certain subjects that are included in the GATE syllabus.

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