POORNIMA
COLLEGE OF ENGINEERING

Approved by AICTE
Affiliated to Rajasthan Technical University, Kota
Recognized by UGC under Section 2(f) of the UGC Act, 1956

CO, PO and PSO Target and Attainment, Observations and Action Taken Report (2021-22)

CONTENT

POORNIMA
COLLEGE OF ENGINEERING

Promoted by Shanti Education Society, Affiliated to Rajasthan Technical University & Approved by AICTE

Department of Computer Engineering
Session 2021-22
CO, PO and PSO Target and Attainment and Observations and Action Taken Report (CS)

1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I			2.10	1.88
2	1FY2-03	Engineering Chemistry			2.00	1.61
3	1FY1-04	Communication Skills			2.00	1.88
4	1FY3-07	Basic Mechanical Engineering			1.75	1.59
5	1FY3-08	Basic Electrical Engineering			2.00	1.79
6	1FY2-21	Engineering Chemistry Lab			1.87	1.64
7	1FY1-22	Language Lab			2.00	1.54
8	1FY3-26	Basic Electrical Engineering Lab			2.08	1.68
9	1FY3-25	Manufacturing Practices Workshop			1.87	1.53
10	1FY3-28	Computer Aided Engineering Graphics			1.87	1.50
11	2FY2-01	Engineering Mathematics-II	2021-25	I Year	2.00	1.54
12	2FY2-02	Engineering Physics			2.00	1.35
13	2FY1-05	Human Values			2.20	1.99
14	2FY3-06	Programming for Problem Solving			2.00	1.69
15	2FY3-09	Basic Civil Engineering			2.00	1.75
16	2FY2-20	Engineering Physics Lab			1.58	1.50
17	2FY1-23	Human Values Activities and Sports			1.80	1.70
18	2FY3-24	Computer Programming Lab			2.00	1.96
19	2FY3-27	Basic Civil Engineering Lab			1.86	1.75
20	2FY3-29	Computer Aided Machine Drawing			1.87	1.78
21	3CS2-01	Advanced Engineering Mathematics			2.50	1.64
22	3CS1-03	Managerial Economics and Financial Accounting			2.14	1.95
23	3CS3-04	Digital Electronics			2.25	2.15
24	3CS4-05	Data Structures and Algorithms	2020-24	II Year	2.75	2.38
25	3CS4-06	Object Oriented Programming			2.50	2.37
26	3CS4-07	Software Engineering			2.50	1.99
27	3CS4-21	Data Structures and Algorithms Lab			2.00	2.00
28	3CS4-22	Object Oriented Programming Lab			2.16	1.98

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29	3CS4-23	Software Engineering Lab			2.50	1.63
30	3CS4-24	Digital Electronics Lab			2.07	2.00
31	3CS7-30	Industrial Training			2.90	2.56
32	4CS2-01	Discrete Mathematics Structure			2.50	1.39
33	4CS1-02	Technical Communication			2.87	3.10
34	4CS3-04	Microprocessor & Interfaces			2.25	1.50
35	4CS4-05	Database Management System			2.50	2.24
36	4CS4-06	Theory of Computation			2.25	1.25
37	4CS4-07	Data Communication and Computer Networks			2.25	1.94
38	4CS4-21	Microprocessor & Interfaces Lab			2.50	2.27
39	4CS4-22	Database Management System Lab			2.30	2.13
40	4CS4-23	Network Programming Lab			2.25	2.22
41	4CS4-24	Linux Shell Programming Lab			2.00	1.88
42	4CS4-25	Java Lab			3.00	2.84
43	5CS3-01	Information Theory & Coding			2.25	1.78
44	5CS4-02	Compiler Design			2.75	2.28
45	5CS4-03	Operating System			2.75	2.14
46	5CS4-04	Computer Graphics & Multimedia			2.25	2.09
47	5CS4-05	Analysis of Algorithms			2.75	2.10
50	5CS5-11	Wireless Communication			2.50	1.89
51	5CS5-12	Human Computer Interaction			2.50	2.12
52	5CS4-21	Computer Graphics & Multimedia Lab			2.75	2.37
53	5CS4-22	Compiler Design Lab			3.00	2.60
54	5CS4-23	Analysis of Algorithms Lab			2.40	2.00
55	5CS4-24	Advance Java Lab	2019-23	III Year	3.00	2.92
56	5CS7-30	Industrial Training			2.90	2.53
57	6CS3-01	Digital Image Processing			2.25	2.00
58	6CS4-02	Machine Learning			2.25	2.04
59	6CS4-03	Information Security System			2.25	2.04
60	6CS4-04	Computer Architecture and Organization			2.50	2.22
61	6CS4-05	Artificial Intelligence			2.50	1.98
62	6CS4-06	Cloud Computing			2.50	1.66
63	6CS5-11	Distributed System			2.25	2.24
64	6CS5-13	Ecommerce and ERP			2.25	2.15
65	6CS4-21	Digital Image Processing Lab			3.00	2.66
66	6CS4-22	Machine Learning Lab			3.00	2.41
67	6CS4-23	Python Lab			2.60	2.30

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68	6CS4-24	Mobile Application Development Lab	2018-22	IV Year	2.00	1.73
69	7CS4-01	Internet of Things			2.50	2.22
70	7CS4-21	Internet of Things Lab			3.00	2.86
71	7CS4-22	Cyber Security Lab			2.80	2.31
72	7CS7-30	Industrial Training			2.90	2.75
73	7CS7-40	Seminar			2.80	2.67
74	7CE6-60.1	Environmental Impact Analysis			1.80	1.53
75	7CE6-60.2	Disaster Management			1.79	1.31
76	7EE6-60.1	Electrical Machines and Drives			2.29	1.90
77	7EE6-60.2	Power Generation Sources			2.50	2.15
78	7EC6-60.1	Principle of Electronic communication			2.43	2.22
79	7EC6-60.2	Micro and Smart System Technology			2.56	2.31
80	7ME6-60.1	Finite Element Analysis			2.40	2.20
81	7ME6-60.2	Quality Management			2.60	2.10
82	8CS4-01	Big Data Analytics			2.25	2.08
83	8CS4-21	Big Data Analytics Lab			3.00	2.75
84	8CS4-22	Software Testing and Validation Lab			3.00	2.91
85	8CS7-50	Project			3.00	3.00
86	8CE6-60.1	Composite Materials			1.79	1.73
87	8CE6-60.2	Fire and Safety Engineering			1.75	1.75
88	8EC6-60.1	Industrial and Biomedical applications of RF Energy			2.8	2.10
89	8EC6-60.2	Robotics and control			2.51	1.94
90	8EE6-60.1	Energy Audit and Demand side Management			2.5	2.50
91	8EE6-60.2	Soft Computing			2.61	2.36
92	8ME6-60.1	Operations Research			2.75	2.14
93	8ME6-60.2	Simulation Modeling and Analysis			2.75	2.13

1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge			2.00	1.61
2	PO2: Problem analysis			1.82	1.37
3	PO3: Design/development of solutions	2021-25	I Year	1.00	0.99
4	PO4: Conduct investigations of complex problems.			-	-
5	PO5: Modern tool usage			2.50	1.56
6	PO6: The engineer and society			2.00	1.48

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7	PO7: Environment and sustainability			2.00	1.64
8	PO8: Ethics			2.00	1.82
9	PO9: Individual and team work.			2.70	1.78
10	PO10: Communication			2.00	1.67
11	PO11: Project management and finance			-	-
12	PO12: Life-long learning			2.00	1.68
13	PSO1:Computing Knowledge			1.44	1.22
14	PSO2 :Evolutionary changes in computing			1.80	1.36
15	PSO3: Modern computing tools			1.00	0.99
16	PO1: Engineering knowledge			2.22	1.92
17	PO2: Problem analysis			2.43	1.90
18	PO3: Design/development of solutions			2.67	1.97
19	PO4: Conduct investigations of complex problems.			2.43	1.69
20	PO5: Modern tool usage			2.20	1.79
21	PO6: The engineer and society			2.33	1.81
22	PO7: Environment and sustainability			2.25	2.01
23	PO8: Ethics	2020-24	II Year	2.00	1.95
24	PO9: Individual and team work.			2.44	1.86
25	PO10: Communication			2.71	2.06
26	PO11: Project management and finance			2.67	1.95
27	PO12: Life-long learning			2.38	1.79
28	PSO1:Computing Knowledge			2.11	1.87
29	PSO2 :Evolutionary changes in computing			2.00	1.50
30	PSO3: Modern computing tools			2.36	1.82
31	PO1: Engineering knowledge			2.30	1.82
32	PO2: Problem analysis			2.55	2.15
33	PO3: Design/development of solutions			2.64	1.83
34	PO4: Conduct investigations of complex problems.			2.50	1.67
35	PO5: Modern tool usage			2.56	1.48
36	PO6: The engineer and society			3.00	2.26
37	PO7: Environment and sustainability			3.00	2.77
38	PO8: Ethics	2019-23	III Year	2.50	1.68
39	PO9: Individual and team work.			3.00	2.08
40	PO10: Communication			3.00	2.63
41	PO11: Project management and finance			3.00	2.02
42	PO12: Life-long learning			2.75	2.11
43	PSO1:Computing Knowledge			2.39	1.92
44	PSO2 :Evolutionary changes in computing			2.27	1.60
45	PSO3: Modern computing tools			2.52	1.72
46	PO1: Engineering knowledge	2018-22	IV Year	2.45	2.39

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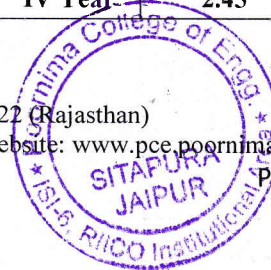
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47	PO2: Problem analysis			2.36	2.30
48	PO3: Design/development of solutions			2.39	2.31
49	PO4: Conduct investigations of complex problems.			2.33	2.27
50	PO5: Modern tool usage			2.29	2.25
51	PO6: The engineer and society			2.31	1.98
52	PO7: Environment and sustainability			2.63	2.25
53	PO8: Ethics			2.63	2.27
54	PO9: Individual and team work.			2.79	2.63
55	PO10: Communication			2.67	2.20
56	PO11: Project management and finance			2.56	2.30
57	PO12: Life-long learning			2.89	2.43
58	PSO1:Computing Knowledge			2.31	2.04
59	PSO2 :Evolutionary changes in computing			2.14	1.80
60	PSO3: Modern computing tools			2.48	2.20
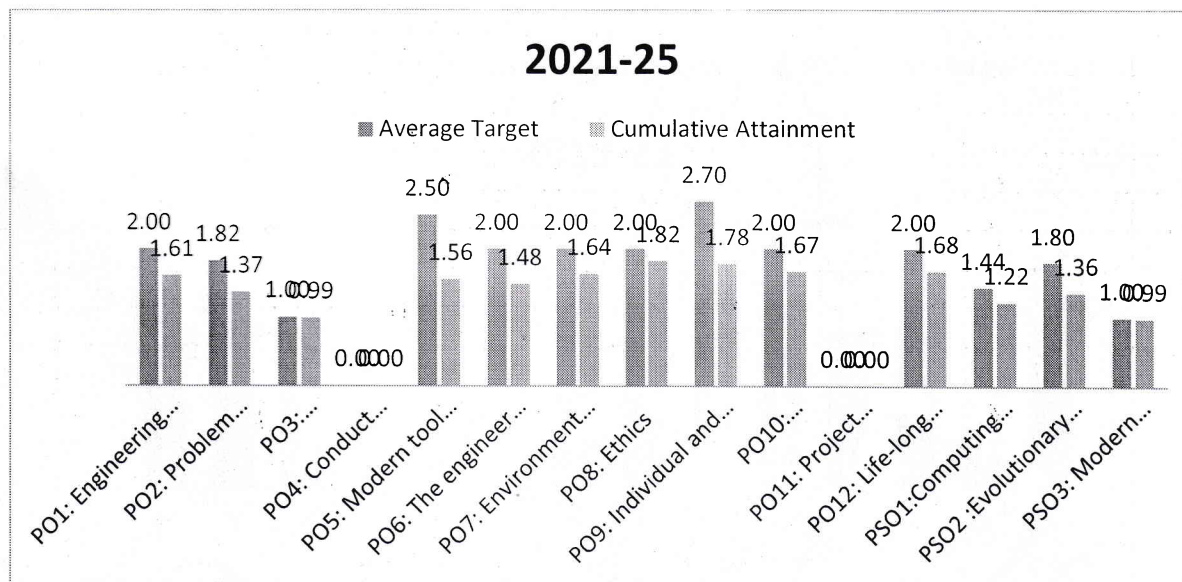
Figure 1: Graph between Average Target and Average Attainment of PO & PSO for Batch 2021-25

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2020-24

■ Average Target   ■ Cumulative Attainment
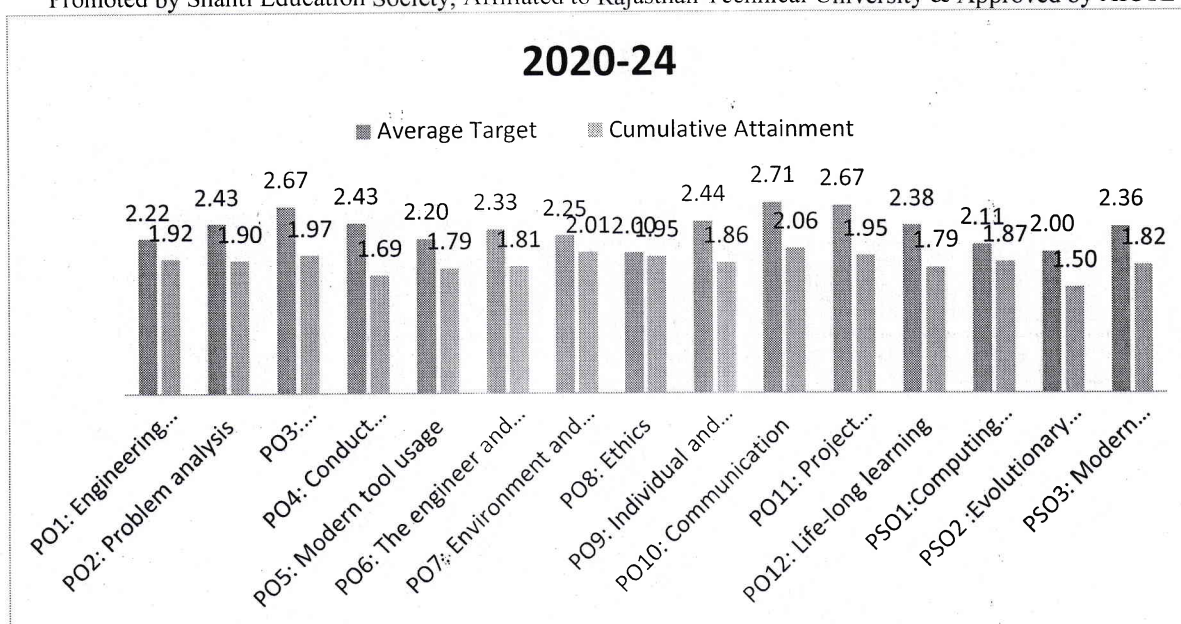
Figure 2: Graph between Average Target and Average Attainment of PO & PSO for Batch 2020-24

2019-23

■ Average Target   ■ Cumulative Attainment
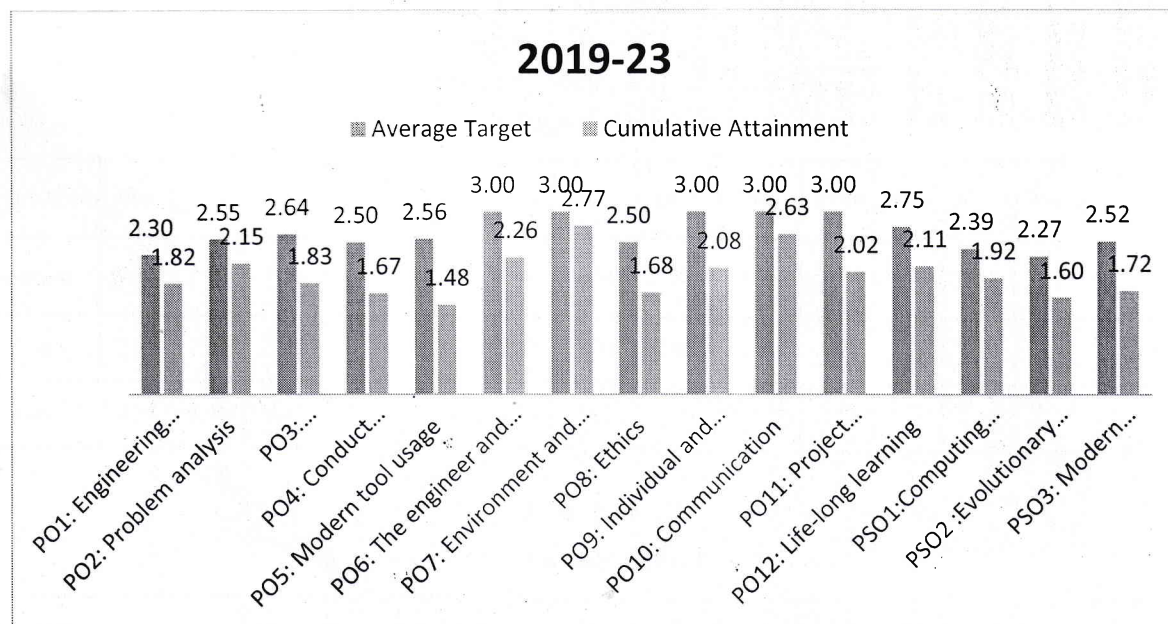
Figure 3: Graph between Average Target and Average Attainment of PO & PSO for Batch 2019-23

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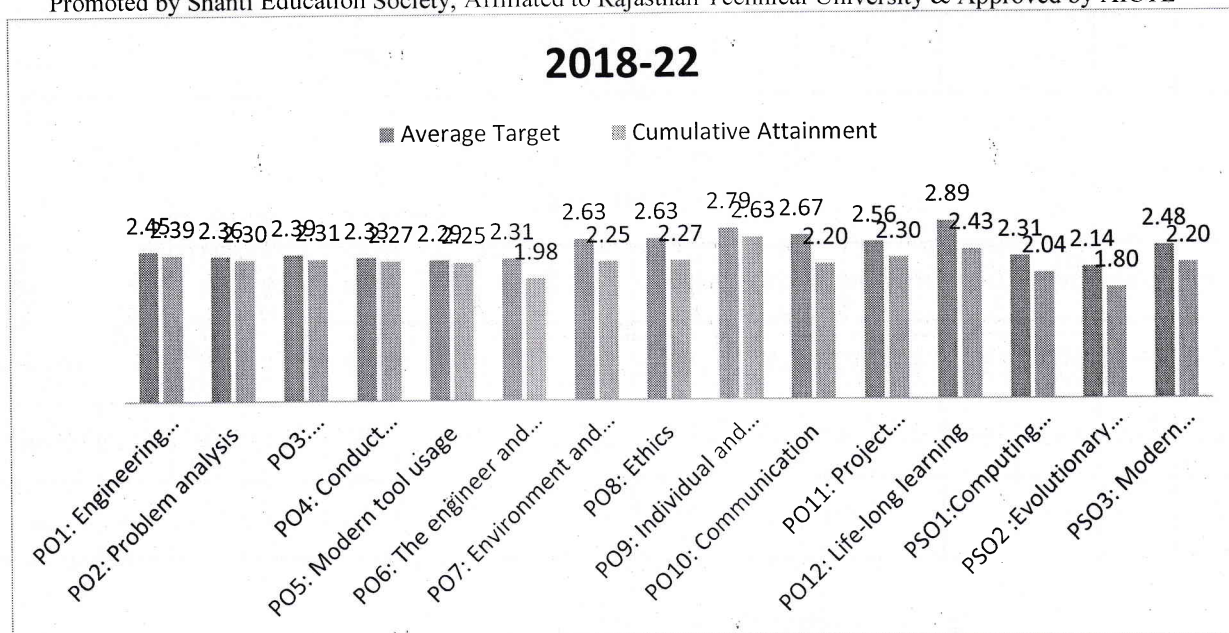
Figure 4: Graph between Average Target and Average Attainment of PO & PSO for Batch 2018-22

1.3 Analysis of PO and PSO Attainment

Table 1.1: PO Attainment, Target and Gaps

Batch: 2021-25

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.61	1.37	0.99	-	1.56	1.48	1.64	1.82	1.78	1.67	-	1.68	1.22	1.36	0.99
Target	2.00	1.82	1.00	-	2.50	2.00	2.00	2.00	2.70	2.00	-	2.00	1.44	1.80	1.00
Gap	0.39	0.46	0.01	-	0.94	0.52	0.36	0.18	0.92	0.33	-	0.32	0.21	0.44	0.01

Table 1.2: PO Attainment, Target and Gaps

Batch: 2020-24

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.92	1.90	1.97	1.69	1.79	1.81	2.01	1.95	1.86	2.06	1.95	1.79	1.87	1.50	1.82
Target	2.22	2.43	2.67	2.43	2.20	2.33	2.25	2.00	2.44	2.71	2.67	2.38	2.11	2.00	2.36

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Gap	0.29	0.53	0.69	0.74	0.41	0.52	0.24	0.05	0.58	0.66	0.71	0.60	0.24	0.50	0.55

Table 1.3: PO Attainment, Target and Gaps

Batch: 2019-23

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.82	2.15	1.83	1.67	1.48	2.26	2.77	1.68	2.08	2.63	2.02	2.11	1.92	1.60	1.72
Target	2.30	2.55	2.64	2.50	2.56	3.00	3.00	2.50	3.00	3.00	3.00	2.75	2.39	2.27	2.52
Gap	0.48	0.40	0.80	0.83	1.07	0.74	0.23	0.82	0.92	0.37	0.98	0.64	0.48	0.67	0.80

Table 1.4: PO Attainment, Target and Gaps

Batch: 2018-22

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	2.39	2.30	2.31	2.27	2.25	1.98	2.25	2.27	2.63	2.20	2.30	2.43	2.04	1.80	2.20
Target	2.45	2.36	2.39	2.33	2.29	2.31	2.63	2.63	2.79	2.67	2.56	2.89	2.31	2.14	2.48
Gap	0.06	0.06	0.08	0.06	0.04	0.33	0.37	0.36	0.15	0.46	0.26	0.46	0.27	0.33	0.28

1.4 Observations

Table 1.5: Achieved Level of PO / PSO (Batch 2021-25)

PO / PSO	Achieved Level
-	Below Average (<50%)
PO5, PO9	Average (>=50% but <70%)
PO1, PO2, PO3, PO6, PO7, PO8, PO10, PO12, PSO1, PSO2, PSO3	Above Average (>=70%)

Batch (2021-25): After analysis of the table 1.5 of PO / PSO achieved level for batch 2021-25, it has been observed that none of the attainment level are falling below average. PO5 and PO9 are attainment on average level. The attainment level of PO1, PO2, PO3, PO6, PO7, PO8, PO10, PO12, PSO1, PSO2 and PSO3are above average.

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Table 1.6: Achieved Level of PO / PSO (Batch 2020-24)

PO / PSO	Achieved Level
-	Below Average (<50%)
PO4	Average (>=50% but <70%)
PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2, PSO3	Above Average (>=70%)

Batch (2020-24): After analysis of the table 1.6 of PO / PSO achieved level for batch 2020-24, it has been observed that none of the attainment level are falling below average. Only PO4 attainment on average level. The attainment level of PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2, PSO3 are above average.

Table 1.7: Achieved Level of PO / PSO (Batch 2019-23)

PO / PSO	Achieved Level
-	Below Average (<50%)
PO3, PO4, PO5, PO8, PO9, PO11, PSO3	Average (>=50% but <70%)
PO1, PO2, PO6, PO7, PO10, PO12, PSO1, PSO2	Above Average (>=70%)

Batch (2019-23): After analysis of the table 1.7 of PO / PSO achieved level for batch 2019-23, it has been observed that none of the attainment level are falling below average. PO3, PO4, PO5, PO8, PO9, PO11 and PSO3 are attainment on average level. The attainment level of PO1, PO2, PO6, PO7, PO10, PO12, PSO1, PSO2 are above average.

Table 1.8: Achieved Level of PO / PSO (Batch 2018-22)

PO / PSO	Achieved Level
-	Below Average (<50%)
-	Average (>=50% but <70%)
PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2, PSO3	Above Average (>=70%)

Batch (2018-22): After analysis of the table 1.8 of PO / PSO achieved level for batch 2018-22, it has been observed that none of the attainment level are falling below average or average level. The all attainment level are on above average.

1.5 Actions Taken

- The Course on communication skills were modified to include more interactive sessions for PO10.
- Used research-based knowledge and research area in course for improvement of PO3 and PO4.
- Conduct a workshop on machine learning methods so that student understand the design solutions for complex engineering problems and design system components to make the PO3 above average.
- To give platforms to be an entrepreneur an industrial visit is organized for students so they learn the ability to employ modern computing tools to overcome the limitation in PSO3.

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- A webinar titled "Technical, Communication and life skills" organized by department for students for PO9 and PO10.

- For understand the impact of the professional engineering solutions in societal and environmental contexts (PO8), students motivated to participant in smart India Hackathon.

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Department of Computer Engineering
Session 2021-22
CO, PO and PSO Target and Attainment, Observations and Action Taken Report (CSR)

1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I			2.00	1.93
2	1FY2-02	Engineering Physics			2.00	1.85
3	1FY1-05	Human Values			2.00	1.85
4	1FY3-06	Programming for Problem Solving			2.00	1.67
5	1FY3-09	Basic Civil Engineering			2.00	1.81
6	1FY2-20	Engineering Physics Lab			1.87	1.53
7	1FY1-23	Human Values Activities and Sports			2.00	1.50
8	1FY3-24	Computer Programming Lab			2.00	1.64
9	1FY3-27	Basic Civil Engineering Lab			2.25	1.48
10	1FY3-28	Computer Aided Engineering Graphics	2021-25	I Year	2.00	1.53
11	2FY2-01	Engineering Mathematics-II			2.00	1.47
12	2FY2-03	Engineering Chemistry			2.00	1.43
13	2FY1-04	Communication Skills			2.11	1.95
14	1FY3-07	Basic Mechanical Engineering			1.75	1.75
15	2FY3-08	Basic Electrical Engineering			2.00	1.68
16	2FY2-21	Engineering Chemistry Lab			1.25	1.47
17	2FY1-22	Language Lab			1.75	1.70
18	2FY3-26	Basic Electrical Engineering Lab			2.12	1.97
19	1FY3-25	Manufacturing Practices Workshop			2.00	1.77
20	2FY3-29	Computer Aided Machine Drawing			2.00	1.76

1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge			2.00	1.75
2	PO2: Problem analysis			1.82	1.34
3	PO3: Design/development of solutions			1.00	0.91
4	PO4: Conduct investigations of complex problems.	2021-25	I Year	-	-
5	PO5: Modern tool usage			2.50	1.23
6	PO6: The engineer and society			2.00	1.51
7	PO7: Environment and sustainability			2.00	1.47

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8	PO8: Ethics		2.00	1.90
9	PO9: Individual and team work.		2.70	1.78
10	PO10: Communication		2.00	1.59
11	PO11: Project management and finance		-	-
12	PO12: Life-long learning		2.00	1.87
13	PSO1: Computing Knowledge		1.44	1.41
14	PSO2: Evolutionary changes in computing		1.80	1.25
15	PSO3: Modern computing tools		1.00	0.97
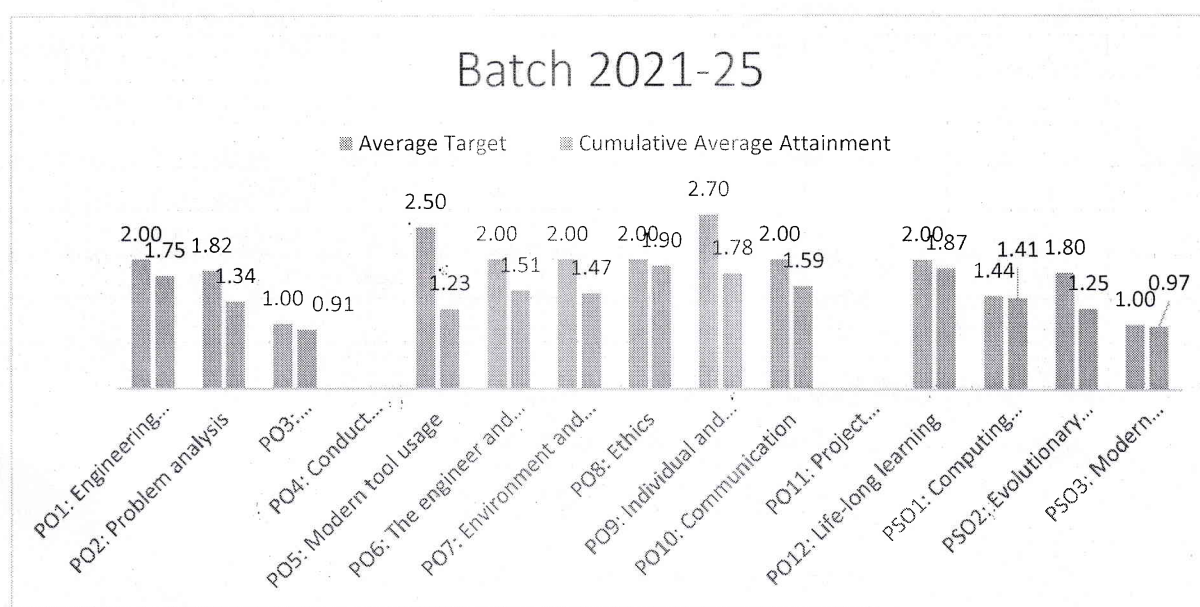
Figure 1: Analysis of PO and PSO attainment (Batch 2021-25)

1.3 Analysis of PO and PSO Attainment

Table 1.1: PO Attainment, Target and Gaps (2021-25)

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	2.00	1.82	1.00		2.50	2.00	2.00	2.00	2.70	2.00		2.00	1.44	1.80	1.00
Target	1.75	1.34	0.91		1.23	1.51	1.47	1.9	1.78	1.59		1.87	1.41	1.25	0.97
Gap	0.25	0.48	0.09		1.27	0.49	0.53	0.10	0.92	0.41		0.13	0.03	0.55	0.03

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1.4 Observations

Table 1.2: Achieved Level of PO / PSO (Batch 2021-25)

PO / PSO	Achieved Level
PO5	Below Average (<50%)
PO9 and PSO2	Average (>=50% but <70%)
PO1, PO2, PO3, PO6, PO7, PO8, PO10, PO12, PSO1 and PSO3	Above Average (>=70%)

Batch (2021-25): After analysis of the table 1.2 of PO / PSO attainment for batch 2021-25, it has been observed that the attainment level of PO5 are falling below average. PO9 and PSO2 are attainment on average. The attainment level of PO1, PO2, PO3, PO6, PO7, PO8, PO10, PO12, PSO1 and PSO3 are above average.

1.5 Actions Taken

- Modern tool usage in PO5 is attained below average. Google classroom quiz are being conducted for particular subjects.

- Individual and team work in PO9 and Evolutionary changes in computing in PSO 2 are attained average. For students "Self Help Group" (SHG) concept is applied for solving the tutorials in order to improve team work skills among them.

- Students are participating in various conductions i.e. industrial visits, workshop, seminars, conferences and outside participations for further enhancement of the attained PO and PSO.

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COLLEGE OF ENGINEERING

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Department of Advance Computing
Session 2021-22
CO, PO and PSO Target and Attainment, Observations and Action Taken Report (CAI)

1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I			2.10	1.76
2	1FY2-02	Engineering Physics			2.00	1.55
3	1FY1-05	Human Values			2.20	2.13
4	1FY3-06	Programming for Problem Solving			1.75	1.53
5	1FY3-09	Basic Civil Engineering			2.00	1.75
6	1FY2-20	Engineering Physics Lab			1.58	1.53
7	1FY1-23	Human Values Activities and Sports			1.80	1.73
8	1FY3-24	Computer Programming Lab			1.88	1.79
9	1FY3-27	Basic Civil Engineering Lab			1.87	1.71
10	1FY3-28	Computer Aided Engineering Graphics	2021-25	I Year	1.88	1.85
11	2FY2-01	Engineering Mathematics-II			2.00	1.43
12	2FY2-03	Engineering Chemistry			2.00	1.71
13	2FY1-04	Communication Skills			2.00	1.83
14	1FY3-07	Basic Mechanical Engineering			2.00	1.60
15	2FY3-08	Basic Electrical Engineering			2.00	1.80
16	2FY2-21	Engineering Chemistry Lab			1.88	1.77
17	2FY1-22	Language Lab			2.00	1.77
19	2FY3-26	Basic Electrical Engineering Lab			2.00	1.93
20	1FY3-25	Manufacturing Practices Workshop			2.08	2.03
21	2FY3-29	Computer Aided Machine Drawing			1.88	1.82

1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge			1.88	0.87
2	PO2: Problem analysis			1.69	0.75
3	PO3: Design/development of solutions			1.00	0.37
4	PO4: Conduct investigations of complex problems.	2021-25	I Year	-	-
5	PO5: Modern tool usage			2.50	1.75
6	PO6: The engineer and society			2.00	1.03
7	PO7: Environment and sustainability			1.00	0.97

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8	PO8: Ethics			1.94	1.03
9	PO9: Individual and team work.			2.72	1.83
10	PO10: Communication			2.00	1.07
11	PO11: Project management and finance			-	-
12	PO12: Life-long learning			2.00	1.11
13	PSO1: Fundamental knowledge for the society benefit.			1.44	0.59
14	PSO2: Professionally communicate using modern tools.			1.67	0.74
15	PSO3: Specific knowledge of renewable and green energy, EV and smart grids.			1.00	0.37
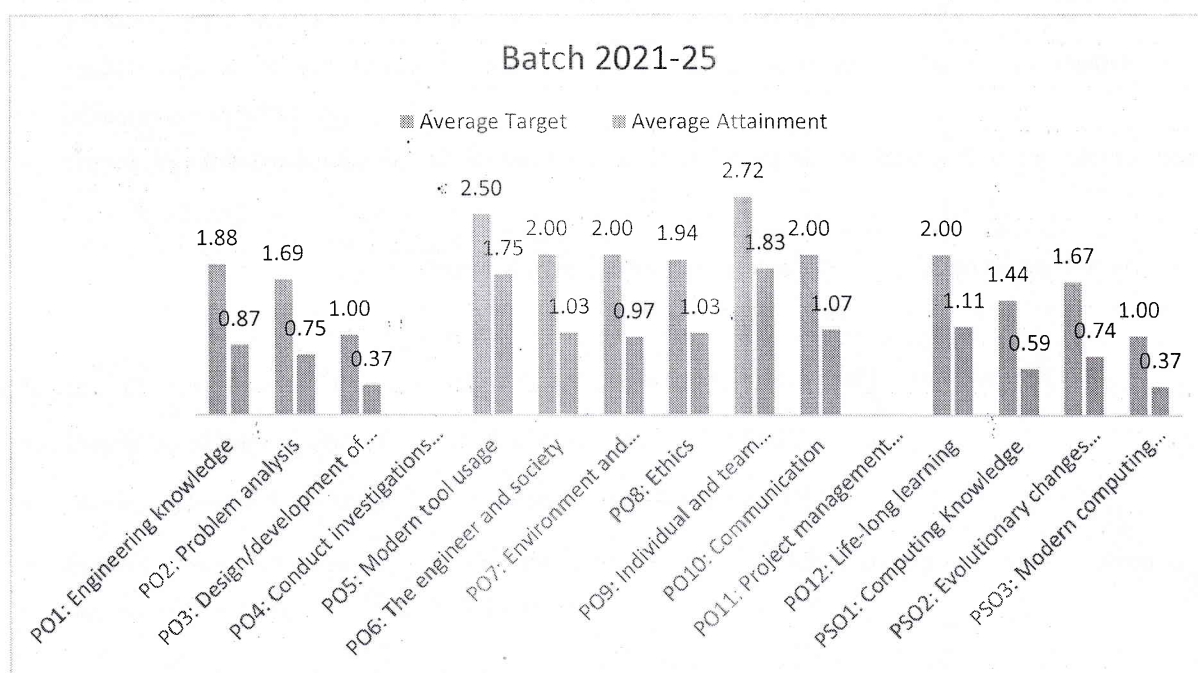
Batch 2021-25

1.3 Analysis of PO and PSO Attainment

Table 1.1: PO Attainment, Target and Gaps (2021-25)

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.88	1.69	1.00	-	2.50	2.00	2.00	1.94	2.72	2.00	-	2.00	1.44	1.67	1.00
Target	0.87	0.75	0.37	-	1.75	1.03	0.97	1.03	1.83	1.07	-	1.11	0.59	0.74	0.37
Gap	1.01	0.94	0.63	-	0.75	0.97	1.03	0.91	0.89	0.93	-	0.89	0.85	0.93	0.63
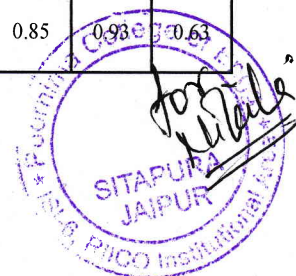
1.4 Observations

Table 1.2: Achieved Level of PO / PSO (Batch 2021-25)

PO / PSO	Achieved Level
PO1, PO2, PO3, PO7, POS1, POS2 and PSO3	Below Average (<50%)
PO6, PO8, PO9, PO10 and PO12	Average (>=50% but <70%)
PO5	Above Average (>=70%)

Batch (2021-25): After analysis of the table 1.2 of PO / PSO attainment for batch 2021-25, it has been observed that the attainment level of PO1, PO2, PO3, PO7, POS1, POS2 and PSO3 are falling below average. PO6, PO8, PO9, PO10 and PO12 are attainment on average level. The attainment level of PO5 are above average.

1.5 Actions Taken

- Remedial and revision classes were arranged for weak students for improving the PO1.

- Multiple sets of numerical questions were distributed among the group of students for practice for the enhancement in the PO2.

- Faculty members guided the students in order to make better projects that address the environmental issues for achieving the PO3.

- Students were participated in professional society activities such as ISHRAE, ASHRAE etc. for improving the PO7.

- Students are encouraged to attend various courses related to C and C++ for the enhancement in the PSO1.

- Project based learning are arranged for the enhancement in the PSO2.

- Internal and external expert lectures are arranged for achieving the PSO3.

- Student driven activities such as teaching learning process, club activities etc. were promoted for enhancement in PO5, PO6, PO8, PO9, PO10 and PO12.

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Department of Advance Computing
Session 2021-22
CO, PO and PSO Target and Attainment, Observations and Action Taken Report (AID)

1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I			2.10	1.50
2	1FY2-02	Engineering Physics			2.00	1.43
3	1FY1-05	Human Values			2.20	1.97
4	1FY3-06	Programming for Problem Solving			1.75	1.57
5	1FY3-09	Basic Civil Engineering			2.00	1.65
6	1FY2-20	Engineering Physics Lab			1.58	1.16
7	1FY1-23	Human Values Activities and Sports			1.80	1.46
8	1FY3-24	Computer Programming Lab			1.88	1.44
9	1FY3-27	Basic Civil Engineering Lab			1.87	1.34
10	1FY3-28	Computer Aided Engineering Graphics	2021-25	I Year	1.88	1.45
11	2FY2-01	Engineering Mathematics-II			2.00	1.33
12	2FY2-03	Engineering Chemistry			2.00	1.48
13	2FY1-04	Communication Skills			2.00	1.69
14	1FY3-07	Basic Mechanical Engineering			2.00	1.40
15	2FY3-08	Basic Electrical Engineering			2.00	1.63
16	2FY2-21	Engineering Chemistry Lab			1.88	1.69
17	2FY1-22	Language Lab			2.00	1.71
18	2FY3-26	Basic Electrical Engineering Lab			2.00	1.86
19	1FY3-25	Manufacturing Practices Workshop			2.08	1.92
20	2FY3-29	Computer Aided Machine Drawing			1.88	1.74

1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge			1.88	0.89
2	PO2: Problem analysis			1.69	0.72
3	PO3: Design/development of solutions			1.00	0.35
4	PO4: Conduct investigations of complex problems.	2021-25	I Year	-	-
5	PO5: Modern tool usage			2.50	1.47
6	PO6: The engineer and society			2.00	1.02
7	PO7: Environment and sustainability			2.00	0.99

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8	PO8: Ethics			1.94	0.93
9	PO9: Individual and team work.			2.72	1.78
10	PO10: Communication			2.00	0.92
11	PO11: Project management and finance				
12	PO12: Life-long learning			2.00	1.05
13	PSO1: Fundamental knowledge for the society benefit.			1.44	0.64
14	PSO2: Professionally communicate using modern tools.			1.67	0.75
15	PSO3: Specific knowledge of renewable and green energy, EV and smart grids.			1.00	0.36
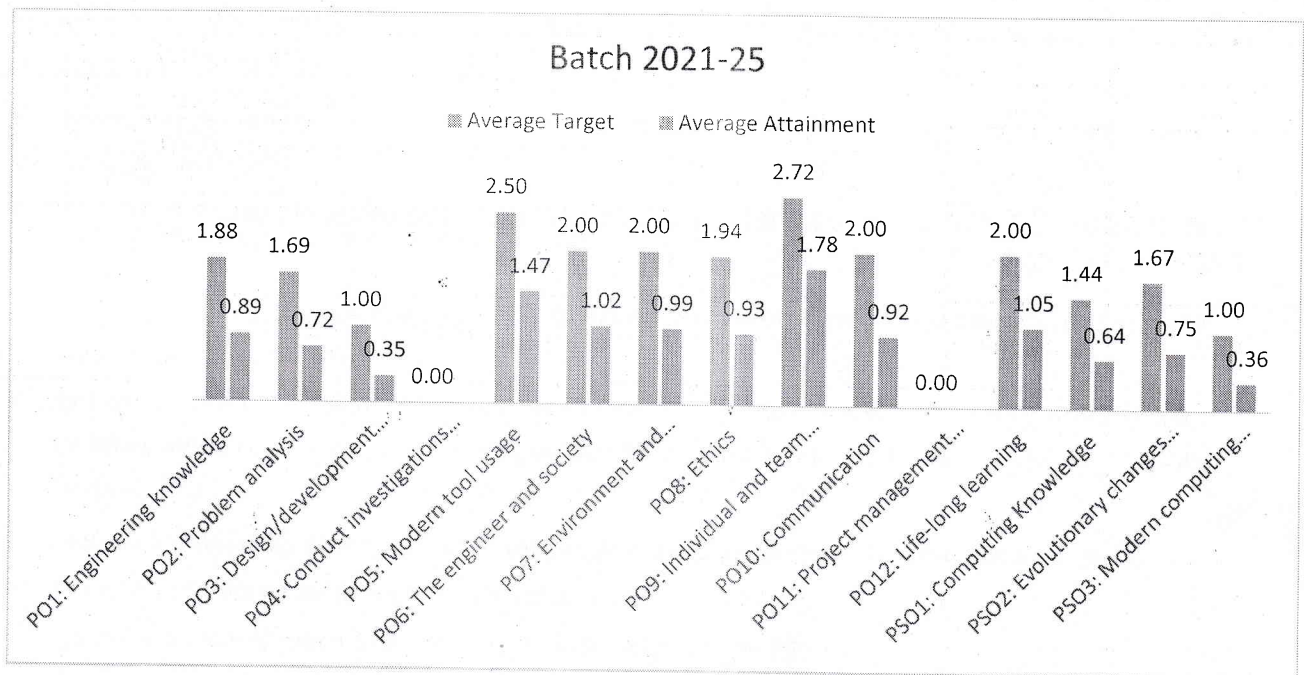
Batch 2021-25

1.3 Analysis of PO and PSO Attainment

Table 1.1: PO Attainment, Target and Gaps (2021-25)

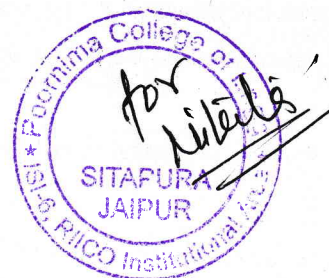| POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.88	1.69	1.00	-	2.50	2.00	2.00	1.94	2.72	2.00	-	2.00	1.44	1.67	1.00
Target	0.89	0.72	0.35	-	1.47	1.02	0.99	0.93	1.78	0.92	-	1.05	0.64	0.75	0.36
Gap	0.99	0.97	0.65	-	1.03	0.98	1.01	1.01	0.94	1.08	-	0.95	0.80	0.92	0.64
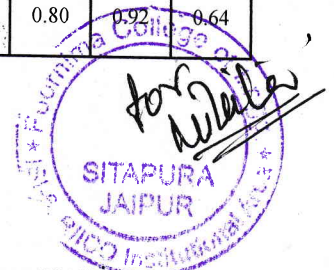
1.4 Observations

Table 1.2: Achieved Level of PO / PSO (Batch 2021-25)

PO / PSO	Achieved Level
PO1, PO2, PO3, PO7, PO8, PO10, POS1, POS2 and PSO3	Below Average (<50%)
PO5, PO6, PO9 and PO12	Average (>=50% but <70%)
-	Above Average (>=70%)

Batch (2021-25): After analysis of the table 1.2 of PO / PSO attainment for batch 2021-25, it has been observed that the attainment level of PO1, PO2, PO3, PO7, PO8, PO10, POS1, POS2 and PSO3 are falling below average. PO5, PO6, PO9 and PO12 are attainment on average level.

1.5 Actions Taken

- Remedial and revision classes were arranged for weak students for improving the PO1.

- Multiple sets of numerical questions were distributed among the group of students for practice for the enhancement in the PO2.

- Faculty members guided the students in order to make better projects that address the environmental issues for achieving the PO3.

- Students participated in professional society activities such as ISHRAE, ASHRAE etc. for improving the PO7.

- The first year students are introduced to the role and significance of ethics in the engineering profession for improving the PO8.

- In I and II semester language lab is a part of curriculum as per teaching scheme of RTU and it includes exercises related to LSRW i.e. Listening, Speaking, Reading and Writing Skills for the enhancement in the PO10.

- Students are encouraged to attend various courses related to C and C++ for the enhancement in the PSO1.

- Project based learning are arranged for the enhancement in the PSO2

- Internal and external expert lectures are arranged for achieving the PSO3.

- Student driven activities such as teaching learning process, club activities etc. were promoted for enhancement in PO5, PO6, PO9 and PO12.

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Department of Advance Computing
Session 2021-12
CO, PO and PSO Target and Attainment, Observations and Action Taken Report (CCS)

1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I			2.10	1.30
2	1FY2-03	Engineering Chemistry			2.00	1.45
3	1FY1-04	Communication Skills			2.00	1.82
4	1FY3-07	Basic Mechanical Engineering			2.00	1.80
5	1FY3-08	Basic Electrical Engineering			2.00	1.59
6	1FY2-21	Engineering Chemistry Lab			1.88	1.31
7	1FY1-22	Language Lab			2.00	1.31
8	1FY3-26	Basic Electrical Engineering Lab			2.00	1.39
9	1FY3-25	Manufacturing Practices Workshop			2.08	1.41
10	1FY3-28	Computer Aided Engineering Graphics			1.88	1.33
11	2FY2-01	Engineering Mathematics-II	2021-25	I Year	2.00	0.92
12	2FY2-02	Engineering Physics			2.00	0.99
13	2FY1-05	Human Values			2.20	1.58
14	2FY3-06	Programming for Problem Solving			1.75	1.45
15	2FY3-09	Basic Civil Engineering			2.00	1.43
16	2FY2-20	Engineering Physics Lab			1.58	1.47
17	2FY1-23	Human Values Activities and Sports			1.80	1.67
18	2FY3-24	Computer Programming Lab			1.88	1.82
19	2FY3-27	Basic Civil Engineering Lab			1.87	1.71
20	2FY3-29	Computer Aided Machine Drawing			1.88	1.77

1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge			1.88	0.87
2	PO2: Problem analysis			1.69	0.65
3	PO3: Design/development of solutions			1.00	0.33
4	PO4: Conduct investigations of complex problems.	2021-25	I Year	-	-
5	PO5: Modern tool usage			2.50	0.99
6	PO6: The engineer and society			2.00	0.93
7	PO7: Environment and sustainability			2.00	0.96

8	PO8: Ethics			1.94	0.93
9	PO9: Individual and team work.			2.72	1.79
10	PO10: Communication			2.00	1.01
11	PO11: Project management and finance			-	-
12	PO12: Life-long learning			2.00	0.88
13	PSO1: Fundamental knowledge for the society benefit.			1.44	0.63
14	PSO2: Professionally communicate using modern tools.			1.67	0.83
15	PSO3: Specific knowledge of renewable and green energy, EV and smart grids.			1.00	0.37

Batch 2021-25
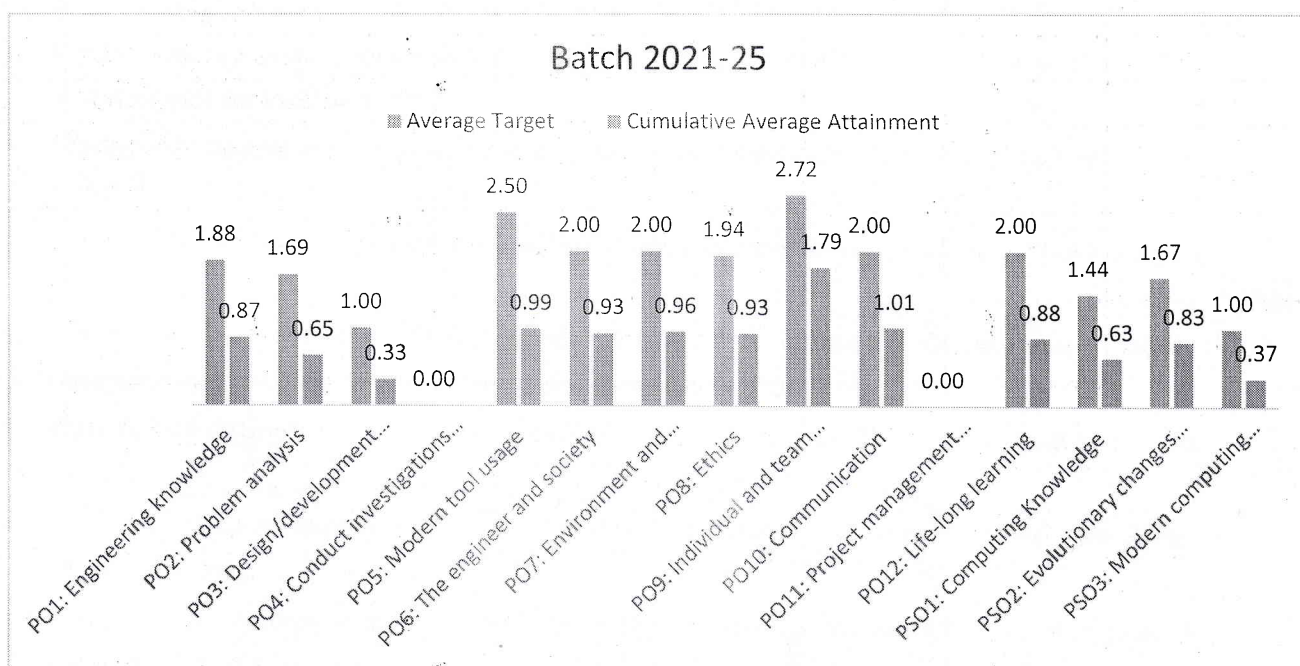
1.3 Analysis of PO and PSO Attainment

Table 1.1: PO Attainment, Target and Gaps (2017-21)

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.88	1.69	1.00	-	2.50	2.00	2.00	1.94	2.72	2.00	-	2.00	1.44	1.67	1.00
Target	0.87	0.65	0.33	-	0.99	0.93	0.96	0.93	1.79	1.01	-	0.88	0.63	0.83	0.37
Gap	1.00	1.05	0.67	-	1.51	1.07	1.04	1.00	0.93	0.99	-	1.12	0.82	0.84	0.63

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1.4 Observations

Table 1.2: Achieved Level of PO / PSO (Batch 2017-21)

PO / PSO	Achieved Level
PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO12, POS1, POS2 and PSO3	Below Average (<50%)
PO9 and PO10	Average (>=50% but <70%)
-	Above Average (>=70%)

Batch (2021-25): After analysis of the table 1.2 of PO / PSO attainment for batch 2021-25, it has been observed that the attainment level of PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO10, POS1, POS2 and PSO3 are falling below average. PO5, PO6, PO9 and PO12 are attainment on average level.

1.5 Actions Taken

- Remedial and revision classes were arranged for weak students for improving the PO1.

- Multiple sets of numerical questions were distributed among the group of students for practice for the enhancement in the PO2.

- Faculty members guided the students in order to make better projects that address the environmental issues for achieving the PO3.

- NPTEL video lectures were made available for better understanding of the concerned topics for achieving the PO5.

- Students were participated in various activities and visits i.e. industrial visits, workshop, seminars, conferences and outside participations for the enhancement in the PO6.

- Students were participated in professional society activities such as ISHRAE, ASHRAE etc. for improving the PO7.

- The first year students are introduced to the role and significance of ethics in the engineering profession for improving the PO8.

- Regular Alumni interactions are organised in the institute to enhance the lifelong learning of students for improving the PO12.

- Students are encouraged to attend various courses related to C and C++ for the enhancement in the PSO1.

- Project based learning are arranged for the enhancement in the PSO2.

- Internal and external expert lectures are arranged for achieving the PSO3.

- Student driven activities such as teaching learning process, club activities etc. were promoted for enhancement in PO9 and PO10.
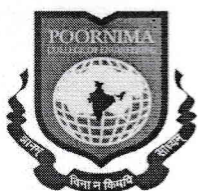
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COLLEGE OF ENGINEERING

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Department of Electronics and Communication Engineering
Session 2021-22
CO, PO and PSO Target and Attainment and Observations and Action Taken Report (ECE)

1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I			2.9	2.32
2	1FY2-02	Engineering Physics			2.99	1.48
3	1FY1-05	Human Values			2.82	1.99
4	1FY3-06	Programming for Problem Solving			2.04	1.78
5	1FY3-09	Basic Civil Engineering			2.8	1.89
6	1FY2-20	Engineering Physics Lab			2.7	1.64
7	1FY1-23	Human Values Activities and Sports			2.65	1.32
8	1FY3-24	Computer Programming Lab			2.65	1.86
9	1FY3-27	Basic Civil Engineering Lab			2.73	2.67
10	1FY3-28	Computer Aided Engineering Graphics			2.59	1.87
11	2FY2-01	Engineering Mathematics-II			2.09	1.48
12	2FY2-03	Engineering Chemistry			2.1	1.99
13	2FY1-04	Communication Skills			2.95	1.78
14	1FY3-07	Basic Mechanical Engineering	2021-25	I Year	2.87	1.78
15	2FY3-08	Basic Electrical Engineering			2.8	1.67
16	2FY2-21	Engineering Chemistry Lab			2.9	1.82
17	2FY1-22	Language Lab			2.78	1.67
18	2FY3-26	Basic Electrical Engineering Lab			2.33	2.7
19	1FY3-25	Manufacturing Practices Workshop			2.98	1.53
20	2FY3-29	Computer Aided Machine Drawing			2.82	1.99
21	3EC2-01	Advanced Engineering Mathematics-I			2.04	1.78
22	3EC1-03	Managerial Economics and Financial Accounting			2.8	1.89
23	3EC4-04	Digital System Design			2.7	1.64
24	3EC4-05	Signal & System			2.65	1.32
25	3EC4-06	Network Theory			2.65	1.86
26	3EC4-07	Electronics Devices			2.8	1.89
27	3EC4-21	Electronics Devices Lab			2.7	1.64

Head of Department
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28	3EC4-22	Digital System Design Lab			2.65	1.32
29	3EC4-23	Signal Processing Lab			2.65	1.86
30	3EC4-24	Computer Programming Lab-I			2.73	2.67
31	3EC7-30	Industrial Training			2.59	1.87
32	4EC2-01	Advanced Engineering Mathematics-II			2.09	1.48
33	4EC1-02	Technical Communication			2.1	1.99
34	4EC4-04	Analog Circuits			2.95	1.78
35	4EC4-05	Microcontrollers			2.04	1.64
36	4EC3-06	Electronics Measurement & Instrumentation			2.69	1.78
37	4EC4-07	Analog and Digital Communication			2.9	2.32
38	4EC4-21	Analog and Digital Communication Lab			2.99	1.48
39	4EC4-22	Analog Circuits Lab			2.82	1.99
40	4EC4-23	Microcontrollers Lab			2.04	1.78
41	4EC4-24	Electronics Measurement & Instrumentation Lab			2.8	1.89
42	5EC3-01	Computer Architecture	2020-24	II Year	2.7	1.64
43	5EC4-02	Electromagnetic Wave			2.8	1.67
44	5EC4-03	Control System			2.9	1.82
45	5EC4-04	Digital Signal Processing			2.78	1.67
46	5EC4-05	Microwave Theory & Techniques			2.33	2.7
47	5EC5-12	Satellite Communication			2.98	1.53
48	5EC4-21	RF Simulation Lab			2.82	1.99
49	5EC4-22	Digital Signal Processing Lab			2.04	1.78
50	5EC4-23	Microwave Lab			2.8	1.89
51	5EC7-30	Industrial Training			2.7	1.64
52	6EC 3-01	Power Electronics			2.65	1.32
53	6EC 4-02	Computer Network			2.65	1.86
54	6EC 4-03	Fiber Optics Communications			2.8	1.89
55	6EC 4-04	Antennas & Propagation			2.7	1.64
56	6EC 4-05	Information Theory & Coding			2.65	1.32
57	6EC 5-11	Introduction to MEMS (Elective-1)			2.65	1.86
58	6EC 5-12	Nano Electronics (Elective-2)	2019-23	III Year	2.73	2.67
59	6EC 4-21	Computer Network Lab			2.82	1.99
60	6EC 4-22	Antenna & Wave Propagation Lab			2.04	1.78
61	6EC 4-23	Electronics Design Lab			2.8	1.89
62	6EC 4-24	Power Electronics Lab			2.7	1.64
63	7EC5-11	VLSI Design			2.65	1.32

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| 64	7EC5-13	CMOS design			2.65	1.86
65	7EC7-21	VLSI Design Lab			2.73	2.67
66	7EC4-22	Advance communication lab			2.59	1.87
67	7EC4-23	Optical Communication Lab			2.09	1.48
68	7EC7-30	Industrial Training			2.1	1.99
69	7EC7-40	Practical Training Seminar			2.95	1.78
70	7EE6-60.1	Electrical Machines and Drives			2.87	1.78
71	7EE6-60.2	Power Generation Sources			2.8	1.67
72	7CE6-60.1	Environmental Impact Analysis (EIA)			2.82	1.99
73	7CE6-60.2	Disaster Management (DM)			2.04	1.78
74	7CS6-60.1	Quality Management / ISO 9000 (Open Elective-1)			2.8	1.89
75	7CS6-60.2	Cyber Security (Open Elective-1)			2.7	1.64
76	7ME6-60.1	Finite Element Analysis			2.65	1.32
77	7ME6-60.2	Quality Management			2.65	1.86
78	8EC5-11	Artificial Intelligence and Expert Systems			2.73	2.67
79	8EC5-12	Digital Image and Video Processing			2.59	1.87
80	8ME6-60.2	Simulation Modeling and Analysis			2.09	1.48
81	8ME6-60.1	Operations Research			2.1	1.99
82	8EE6-60.1	Energy Audit and Demand side Management			2.95	1.78
83	8EE6-60.2	Soft Computing	2018-22	IV Year	2.87	1.78
84	8CE6-60.1	Composite Materials (CM)			2.8	1.67
85	8CE6-60.2	Fire and Safety Engineering (F&SE)			2.95	1.78
86	8CS6-60.1	Big Data Analytics (Open Elective-II)			2.87	1.78
87	8CS6-60.2	IPR, Copyright and Cyber Law of India (Open Elective-II)			2.8	1.67
88	8EC4-22	Skill Development Lab			2.82	1.99
89	8EC7-50	Project			2.65	1.86
90	8EC4-21	Internet of Things (IOT) Lab			2.73	2.67

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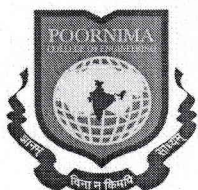
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1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge			1.00	0.53
2	PO2: Problem analysis			1.00	0.55
3	PO3: Design/development of solutions			1.00	0.33
4	PO4: Conduct investigations of complex Problems.			2.00	0.88
5	PO5: Modern tool usage			2.00	0.90
6	PO6: The engineer and society			2.00	1.20
7	PO7: Environment and sustainability			3.00	1.66
8	PO8: Ethics	2021-25	I Year	2.00	0.50
9	PO9: Individual and team work.			2.00	1.23
10	PO10: Communication			2.00	1.35
11	PO11: Project management and finance			2.00	1.31
12	PO12: Life-long learning			2.00	1.12
13	PSO1 (Basic knowledge of core Electronics & Communication Engineering)			1.53	0.35
14	PSO2 (Modern IT tools)			1.82	0.54
15	PSO3 (Interpersonal Skills & Leadership qualities)			1.76	0.62
16	PO1: Engineering knowledge			1.38	0.40
17	PO2: Problem analysis			2.00	1.29
18	PO3: Design/development of solutions			2.00	1.21
19	PO4: Conduct investigations of complex problems.			1.33	0.55
20	PO5: Modern tool usage			1.19	0.37
21	PO6: The engineer and society			1.74	1.10
22	PO7: Environment and sustainability			2.40	1.29
23	PO8: Ethics	2020-24	II Year	2.00	1.32
24	PO9: Individual and team work.			2.00	1.17
25	PO10: Communication			3.00	1.78
26	PO11: Project management and finance			3.00	1.67
27	PO12: Life-long learning			2.00	1.54
28	PSO1 (Basic knowledge of core Electronics & Communication Engineering)			2.00	1.28
29	PSO2 (Modern IT tools)			2.00	1.30
30	PSO3 (Interpersonal Skills & Leadership qualities)			1.76	0.62
31	PO1: Engineering knowledge			1.38	0.40
32	PO2: Problem analysis			2.00	1.29
33	PO3: Design/development of solutions	2019-23	III Year	2.00	1.21
34	PO4: Conduct investigations of complex problems.			2.00	1.23
35	PO5: Modern tool usage			2.00	1.32
36	PO6: The engineer and society			2.00	1.34

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37	PO7: Environment and sustainability			2.00	1.50
38	PO8: Ethics			3.00	2.56
39	PO9: Individual and team work.			2.00	2.04
40	PO10: Communication			1.33	0.55
41	PO11: Project management and finance			1.19	0.37
42	PO12: Life-long learning			2.00	1.17
43	PSO1 (Basic knowledge of core Electronics & Communication Engineering)			3.00	1.78
44	PSO2 (Modern IT tools)			3.00	1.67
45	PSO3 (Interpersonal Skills & Leadership qualities)			2.00	1.47
46	PO1: Engineering knowledge			2.00	1.37
47	PO2: Problem analysis			2.89	2.79
48	PO3: Design/development of solutions			1.38	0.4
49	PO4: Conduct investigations of complex problems.			2.00	1.29
50	PO5: Modern tool usage			2.00	1.21
51	PO6: The engineer and society			2.00	1.23
52	PO7: Environment and sustainability			2.00	1.72
53	PO8: Ethics	2018-22	IV Year	2.00	1.74
54	PO9: Individual and team work.			2.00	1.24
55	PO10: Communication			2.00	1.50
56	PO11: Project management and finance			2.00	2.04
57	PO12: Life-long learning			2.00	1.47
58	PSO1 (Basic knowledge of core Electronics & Communication Engineering)			2.00	1.32
59	PSO2 (Modern IT tools)			2.00	1.17
60	PSO3 (Interpersonal Skills & Leadership qualities)			3.00	1.78

Figure 1.1: Analysis of PO and PSO Attainment (Batch 2021-25)

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2020-24

Figure 1.2: Analysis of PO and PSO Attainment (Batch 2020-24)
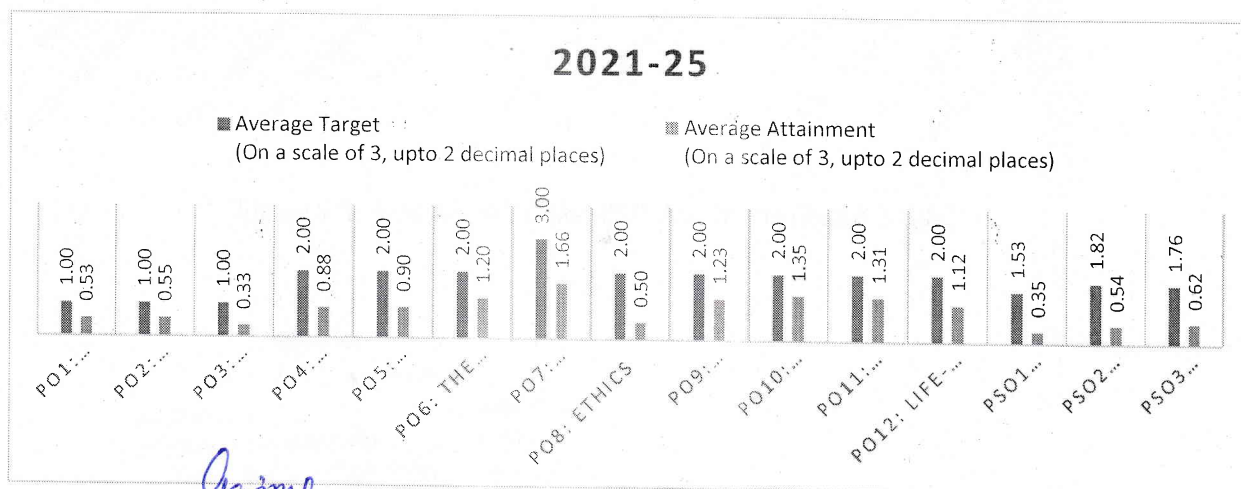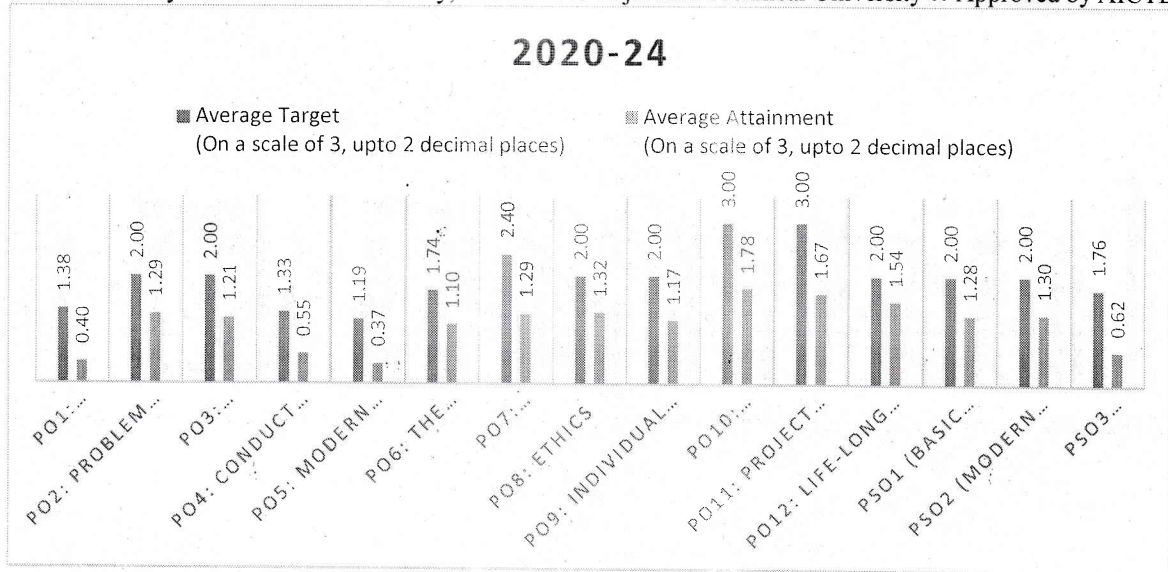
2019-23

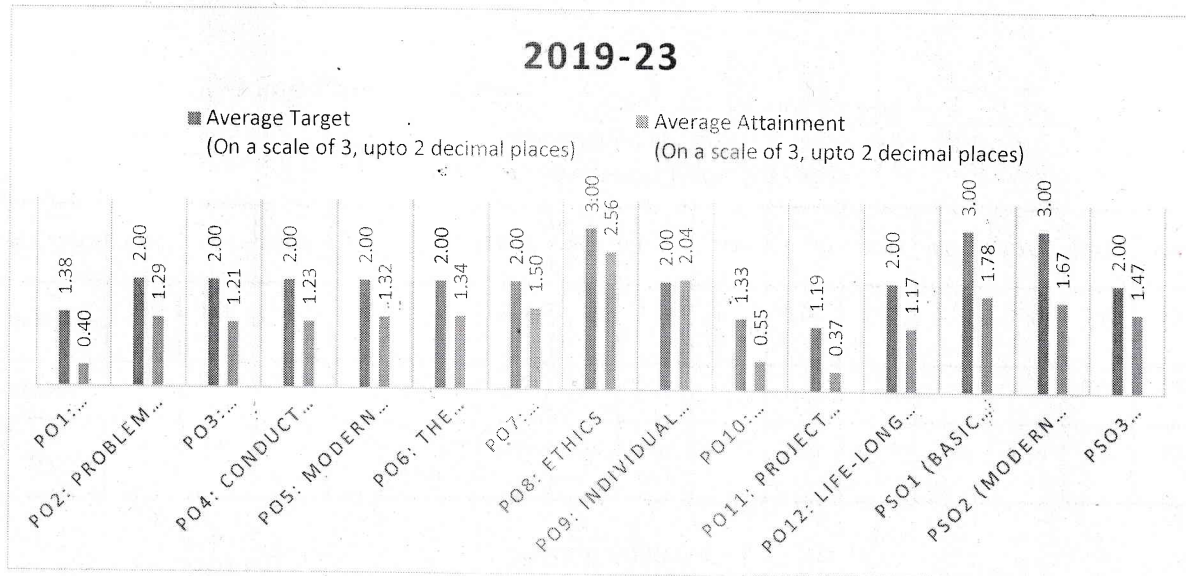Figure 1.3: Analysis of PO and PSO Attainment (Batch 2019-23)

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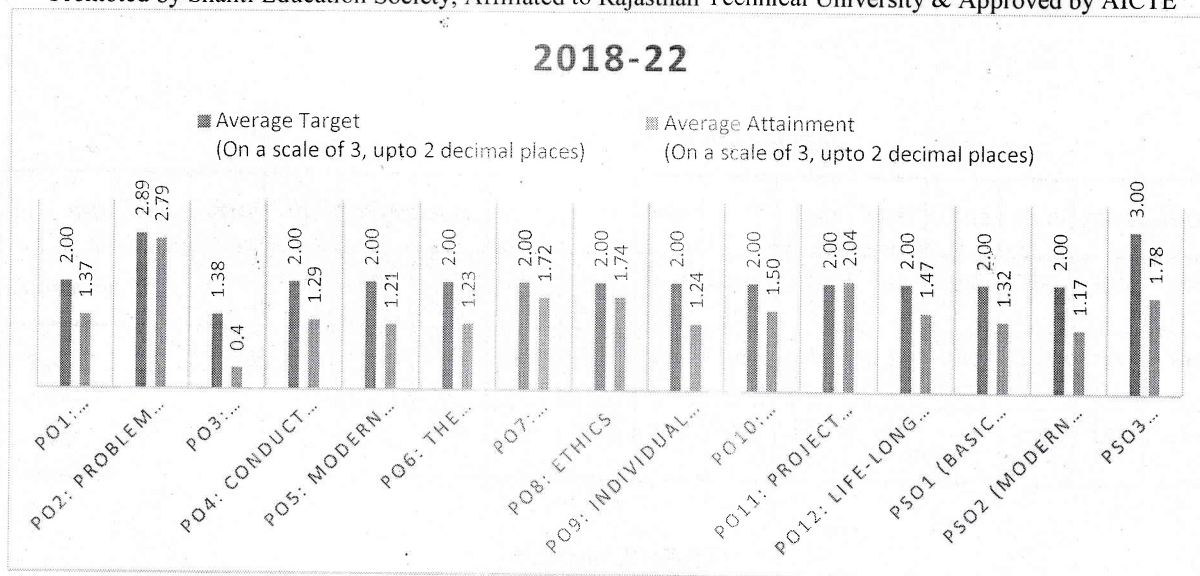
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Figure 1.4: Analysis of PO and PSO Attainment (Batch 2018-22)

1.3 Analysis of PO and PSO Attainment

Session 2021-25
Table 1.1: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.00	1.00	1.00	2.00	2.00	2.00	3.00	2.00	2.00	2.00	2.00	2.00	1.53	1.82	1.76
Target	0.53	0.55	0.33	0.88	0.90	1.20	1.66	0.50	1.23	1.35	1.31	1.12	0.35	0.54	0.62
Gap	0.47	0.45	0.67	1.12	1.10	0.80	1.34	1.50	0.77	0.65	0.69	0.88	1.18	1.28	1.14

Session 2020-24
Table 1.2: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.38	2.00	2.00	1.33	1.19	1.74	2.40	2.00	2.00	3.00	3.00	2.00	2.00	2.00	1.76
Target	0.40	1.29	1.21	0.55	0.37	1.10	1.29	1.32	1.17	1.78	1.67	1.54	1.28	1.30	0.62
Gap	0.98	0.71	0.79	0.78	0.82	0.64	1.11	0.68	0.83	1.22	1.33	0.46	0.72	0.70	1.14

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Session 2019-23
Table 1.3: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.38	2.00	2.00	2.00	2.00	2.00	2.00	3.00	2.00	1.33	1.19	2.00	3.00	3.00	2.00
Target	0.40	1.29	1.21	1.23	1.32	1.34	1.50	2.56	2.04	0.55	0.37	1.17	1.78	1.67	1.47
Gap	0.98	0.71	0.79	0.77	0.68	0.66	0.50	0.44	0.04	0.78	0.82	0.83	1.22	1.33	0.53

Session 2018-22
Table 1.4: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	2.00	2.89	1.38	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	3.00
Target	1.37	2.79	0.40	1.29	1.21	1.23	1.72	1.74	1.24	1.50	2.04	1.47	1.32	1.17	1.78
Gap	0.63	0.10	0.98	0.71	0.79	0.77	0.28	0.26	0.76	0.50	0.04	0.53	0.68	0.83	1.22

1.4 Observations

Table 1.5: Achieved Level of PO / PSO (Batch 2021-25)

PO / PSO	Achieved Level
PO3, PO4, PO5, PO8, PSO1, PSO2 and PSO3	Below Average (<50%)
PO1, PO2, PO6, PO7, PO9, PO10, PO11 and PO12	Average (>=50% but <70%)
-	Above Average (>=70%)

Batch (2021-25): After analysis of table 1.5 of PO / PSO attainment for batch 2021-25, it has been observed that the attainment level of PO-3,4,5,8 and PSO1,2,3 are falling below average (<50%). PO-1, 2, 6, 7, 9, 10, 11, 12 are attained on an average level (>50% but less than 70%).

Table1.6: Achieved Level of PO / PSO (Batch 2020-24)

PO / PSO	Achieved Level
PO1, PO4, PO5 and PSO3	Below Average (<50%)

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PO2, PO3, PO6, PO7, PO8, PO9, PO10, PO11, PSO1 and PSO2	Average (>=50% but <70%)
PO12	Above Average (>=70%)

Batch (2020-24): After analysis of table 1.6 of PO / PSO attainment for batch 2020-24, it has been observed that the attainment level of PO1, PO4, PO5 and PSO3 falling below average (<50%). PO2, PO3, PO6, PO7, PO8, PO9, PO10, PO11 and PSO1 and PSO2 are on an average level (>50% but less than 70%). The attainment level of PO12 is above average (>70 %).

Table 1.7: Achieved Level of PO / PSO (Batch 2019-23)

PO / PSO	Achieved Level
PO1, PO10 and PO11	Below Average (<50%)
PO2, PO3, PO4, PO5, PO6, PO12, PSO1, PSO2, PSO3	Average (>=50% but <70%)
PO7, PO8 and PO9	Above Average (>=70%)

Batch (2019-23): After analysis of table 1.7 of PO / PSO attainment for batch 2019-23, it has been observed that the attainment level of PO1, PO10 and PO11 are falling below average (<50%). PO2, PO3, PO4, PO5, PO6, PO12, PSO1, PSO2 and PSO3 are attained on average level (>50% but less than 70%). The attainment level of PO7, PO8 and PO9 are above average (>70 %).

Table 1.8: Achieved Level of PO / PSO (Batch 2018-22)

PO / PSO	Achieved Level
PO3	Below Average (<50%)
PO1, PO4, PO5, PO6, PO9, PSO1, PSO2 and PSO3	Average (>=50% but <70%)
PO2, PO7, PO8, PO10, PO11 and PO12	Above Average (>=70%)

Batch (2018-22): After analysis of table 1.8 of PO / PSO attainment for batch 2018-22, it has been observed that the attainment level of PO3 is falling below average (<50%). PO1, PO4, PO5, PO6, PO9, PSO1, PSO2 and PSO3 are attained on average level (>50% but less than 70%). The attainment level of PO2, PO7, PO8, PO10, PO11 and PO12 are above average (>70 %).

1.5 Action Taken

- To improve PO1, open book tests were conducted.
- To improve PO3, pedagogical tools like expert lectures, quizzes, workshops and hands-on practice sessions based on complex problem were conducted.
- To improve PO4, new research based project were designed.
- To improve PO5, modern tools like CST, Xilinx and MATLAB were added.
- To improve PO8, social activities were organized.
- To improve PO10, more group discussions and seminar presentations were conducted.
- To improve PO11, hardware projects and workshops were conducted.

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- To improve PSO1, PSO2 and PSO3 new pedagogical tools like expert lectures, Seminars, and quizzes, were conducted, and the question bank and solution of last years were provided.

- To improve PSO3, Conference was held in interdisciplinary emerging areas.

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Department of Civil Engineering
Session 2021-22
CO, PO and PSO Target and Attainment and Observations and Action Taken Report (CE)

1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I			2	1.05
2	1FY2-02	Engineering Physics			2	1.25
3	1FY1-05	Human Values			2.11	1.93
4	1FY3-06	Programming for Problem Solving			2	1.36
5	1FY3-09	Basic Civil Engineering			1.66	1.38
6	1FY2-20	Engineering Physics Lab			1.9	1.84
7	1FY1-23	Human Values Activities and Sports			1.75	1.61
8	1FY3-24	Computer Programming Lab			2	1.83
9	1FY3-27	Basic Civil Engineering Lab			2	1.44
10	1FY3-28	Computer Aided Engineering Graphics	2021-25	I Year	1.68	1.63
11	2FY2-01	Engineering Mathematics-II			2.12	1.1
12	2FY2-03	Engineering Chemistry			2	1.27
13	2FY1-04	Communication Skills			2	1.49
14	1FY3-07	Basic Mechanical Engineering			1.53	1.02
15	2FY3-08	Basic Electrical Engineering			1.83	1.38
16	2FY2-21	Engineering Chemistry Lab			1.87	1.6
17	2FY1-22	Language Lab			2	1.69
18	2FY3-26	Basic Electrical Engineering Lab			2.05	1.71
19	1FY3-25	Manufacturing Practices Workshop			1.9	1.86
20	2FY3-29	Computer Aided Machine Drawing			1.8	1.66
21	3CE2-01	Advance Engineering Mathematics-I			1.62	1.23
22	3CE1-02	Technical Communication			1.7	1.61
23	3CE3-04	Engineering Mechanics			1.93	1.78
24	3CE4-05	Surveying			1.9	1.28
25	3CE4-06	Fluid Mechanics			2.18	1.81
26	3CE4-07	Building Materials and Construction			1.53	1.33
27	3CE4-08	Engineering Geology	2020-24	II Year	1.72	1.47
28	3CE4-21	Surveying Lab			1.88	1.77
29	3CE4-22	Fluid Mechanics Lab			1.94	1.76
30	3CE4-23	Computer Aided Building Design Lab			1.84	1.5
31	3CE4-24	Civil Engineering Materials Lab			1.83	1.7
32	3CE4-25	Geology Lab			1.92	1.43

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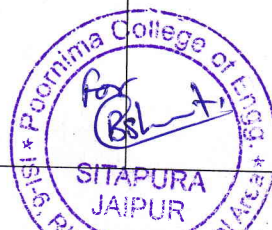
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33	4CE2-01	Advance Engineering Mathematics-II			1.65	-
34	4CE1-03	Managerial Economics & Financial			1.94	-
35	4CE3-04	Basic Electronics for Civil Engineering Applications			1.86	-
36	4CE4-05	Strength of Materials			2.06	-
37	4CE4-06	Hydraulics Engineering			1.69	-
38	4CE4-07	Building Planning			1.48	-
39	4CE4-08	Concrete Technology			1.97	-
40	4CE4-21	Material Testing Lab			1.73	-
41	4CE4-22	Hydraulics Engineering Lab			1.94	-
42	4CE4-23	Building Drawing			1.89	-
43	4CE4-24	Advanced Surveying Lab			1.83	-
44	4CE4-25	Concrete Lab			1.76	-
45	5CE3-01	Construction Technology And Equipment			1.61	1.46
46	5CE4-02	Structure Analysis- I			2.09	1.73
47	5CE4-03	Design Of Concrete Structures			1.82	1.23
48	5CE4-04	Geotechnical Engineering			1.9	1.63
49	5CE4-05	Water Resources Engineering			1.86	1.49
50	5CE5-12	Disaster Management			1.85	1.74
51	5CE5-13	Town Planning			2.2	2.07
52	5CE5-14	Repair And Rehabilitation of Structures			2.38	2.06
53	5CE5-15	Ground Improvement Technique			1.84	1.59
54	5CE4-21	Concrete Structures Design			2.11	1.43
55	5CE4-22	Geotechnical Engineering Lab			1.43	1.17
56	5CE4-23	Water Resource Engineering Design Lab			2	1.81
57	6CE03-01	Wind & Seismic Analysis	2019-23	II Year	1.83	1.74
58	6CE4-02	Structural Analysis-II			1.63	1.12
59	6CE4-03	Environmental Engineering			2.04	1.75
60	6CE4-04	Design of Steel Structures			1.63	1.27
61	6CE4-05	Estimating and Costing			1.9	1.85
62	6CE5-12	Solid and Hazardous Waste Management			1.68	1.2
63	6CE5-13	Traffic Engineering & Management			1.48	1.1
64	6CE5-14	Bridge Engineering			1.62	1.6
65	6CE5-15	Rock Engineering			1.75	0
66	6CE5-16	GIS & Remote Sensing			1.78	1.38
67	6CE4-21	Environmental Engineering Design and Lab			2	1.95
68	6CE4-22	Steel Structures Design Lab			1.61	1.42
69	6CE4-23	Quantity Surveying And Costing			1.77	1.68
70	6CE4-24	Water and Earth Retaining Structure design lab			1.75	1.45

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71	6CE4- 25	Foundation Design			1.66	1.58
72	7CE4-01	Transportation Engineering			1.81	1.74
73	7EC6-60.1	Principle of Electronic communication			-	-
74	7EC6.60.2	Micro System Smart Technology			-	-
75	7ME6-60.1	Finite Element Analysis			3	2.8
76	7ME6-60.2	Quality Management			2	1.86
77	7EE6-60.1	Electrical Machines and Drives			2.29	2.29
78	7EE6-60.2	Power Generation Sources			2.5	2.22
79	7CS6-60.1	Quality Management / ISO 9000			2.5	1.9
80	7CS6-60.2	Cyber Security			2.33	2.05
81	7CE4-21	Road Material Testing Lab			1.75	1.43
82	7CE4-22	Professional Practices & Field Engineering Lab			1.88	1.62
83	7CE4-23	Soft Skills Lab			1.73	1.68
84	7CE4-24	Environmental Monitoring and Design Lab			2.41	2.1
85	7CE7-30	Practical Training	2018-22	IV Year	2.8	2.8
86	7CE7-40	Seminar			2.57	2.57
87	8CE4-01	Project Planning and Construction Management			1.96	1.87
88	8CS6-60.1	Big Data Analytics (Open Elective-II)			2.25	2.07
89	8CS6-60.2	IPR, Copyright and Cyber Law of India (Open Elective-II)			2.75	2.15
90	8EE6-60.1	Energy Audit and Demand side Management			2.5	2.5
91	8EE6-60.2	Soft Computing			-	-
92	8ME6-60.2	Simulation Modeling and Analysis			2.75	2.75
93	8ME6-60.1	Operations Research			2.75	2.38
94	8EC6.60.1	Industrial and Medical applications of RF Energy			2.43	1.9
95	8EC6-60.2	Robotics and Control			2.83	2.6
96	8CE7-50	Project			1.87	1.87
97	8CE4-21	PPCM Lab			1.85	1.82
98	8CE4-22	Pavement Design Lab			1.61	1.41

1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge			1.90	1.46
2	PO2: Problem analysis			1.68	1.17
3	PO3: Design/development of solutions	2020-24	I Year	1.78	1.12
4	PO4: Conduct investigations of complex problems.			1.58	1.01
5	PO5: Modern tool usage			2.50	2.17

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6	PO6: The engineer and society			2.00	1.50
7	PO7: Environment and sustainability			2.00	1.44
8	PO8: Ethics			2.00	1.46
9	PO9: Individual and team work.			2.70	2.52
10	PO10: Communication			2.00	1.43
11	PO11: Project management and finance			2.22	1.32
12	PO12: Life-long learning			2.00	1.47
13	PSO1: to plan, design and quality execution of construction			2.00	1.00
14	PSO2: to solve problems related to the all disciplines of Civil engineering			1.80	1.04
15	PSO3: social awareness, interdisciplinary aspects and environmental necessity			1.79	0.97
16	PO1: Engineering knowledge			2.59	1.85
17	PO2: Problem analysis			2.42	1.65
18	PO3: Design/development of solutions			1.83	1.16
19	PO4: Conduct investigations of complex problems.			2.11	1.40
20	PO5: Modern tool usage			1.85	1.28
21	PO6: The engineer and society			1.62	1.47
22	PO7: Environment and sustainability			1.39	1.23
23	PO8: Ethics	2019-23	II Year	1.44	1.20
24	PO9: Individual and team work.			1.60	1.50
25	PO10: Communication			1.68	1.17
26	PO11: Project management and finance			2.33	1.91
27	PO12: Life-long learning			1.86	1.11
28	PSO1: to plan, design and quality execution of construction			1.47	0.81
29	PSO2: to solve problems related to the all disciplines of Civil engineering			1.54	1.11
30	PSO3: social awareness, interdisciplinary aspects and environmental necessity			1.78	1.17
31	PO1: Engineering knowledge			1.92	1.38
32	PO2: Problem analysis			2.31	1.23
33	PO3: Design/development of solutions			1.93	1.40
34	PO4: Conduct investigations of complex problems.			2.00	1.46
35	PO5: Modern tool usage			1.50	1.77
36	PO6: The engineer and society	2018-22	III Year	1.73	2.02
37	PO7: Environment and sustainability			1.64	1.83
38	PO8: Ethics			3.00	2.00
39	PO9: Individual and team work.			2.00	2.07
40	PO10: Communication			1.17	1.87
41	PO11: Project management and finance			2.00	1.53
42	PO12: Life-long learning			1.17	1.65

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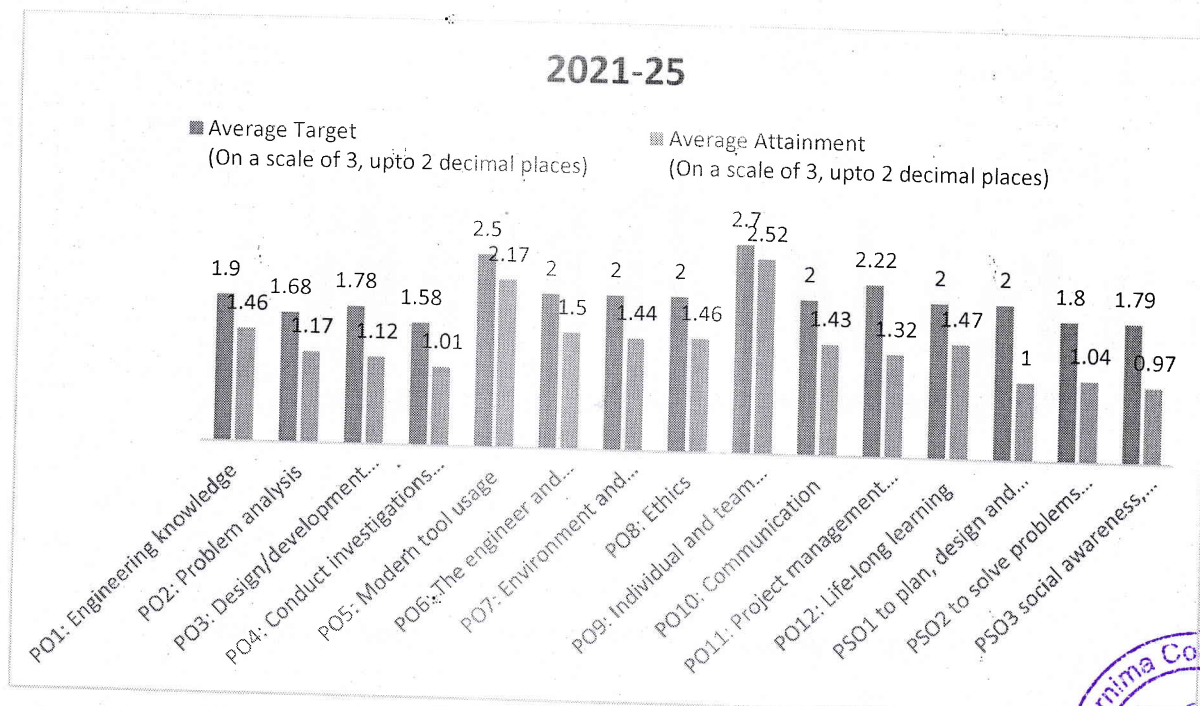|					
43	PSO1: to plan, design and quality execution of construction			1.93	0.99
44	PSO2: to solve problems related to the all disciplines of Civil engineering			1.65	0.73
45	PSO3: social awareness, interdisciplinary aspects and environmental necessity			1.44	0.83
46	PO1: Engineering knowledge			1.50	1.32
47	PO2: Problem analysis			1.81	1.32
48	PO3: Design/development of solutions			1.36	0.91
49	PO4: Conduct investigations of complex problems.			1.08	0.86
50	PO5: Modern tool usage			0.20	1.00
51	PO6: The engineer and society			1.25	0.97
52	PO7: Environment and sustainability	2017-21	IV Year	0.75	0.76
53	PO8: Ethics			1.30	1.08
54	PO9: Individual and team work.			1.67	1.25
55	PO10: Communication			1.20	1.08
56	PO11: Project management and finance			1.60	1.24
57	PO12: Life-long learning			1.45	1.07
58	PSO1: to plan, design and quality execution of construction			1.35	1.03
59	PSO2: to solve problems related to the all disciplines of Civil engineering			0.69	1.01
60	PSO3: social awareness, interdisciplinary aspects and environmental necessity			1.88	0.98

Figure 1.1: Analysis of PO and PSO Attainment (Batch 2021-25)

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2020-24

■ Average Target
(On a scale of 3, upto 2 decimal places)

■ Average Attainment
(On a scale of 3, upto 2 decimal places)

Figure 1.2: Analysis of PO and PSO Attainment (Batch 2020-24)

2019-23

■ Average Target
(On a scale of 3, upto 2 decimal places)

■ Average Attainment
(On a scale of 3, upto 2 decimal places)

Figure 1.3: Analysis of PO and PSO Attainment (Batch 2019-23)

2018-22
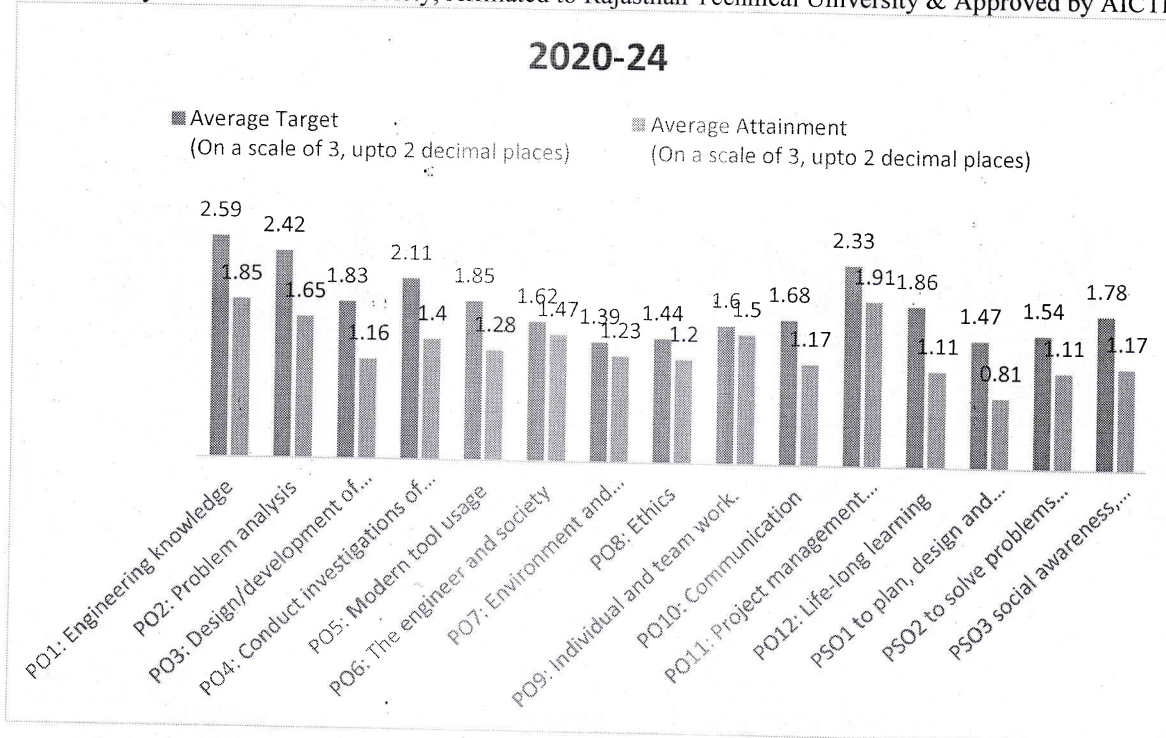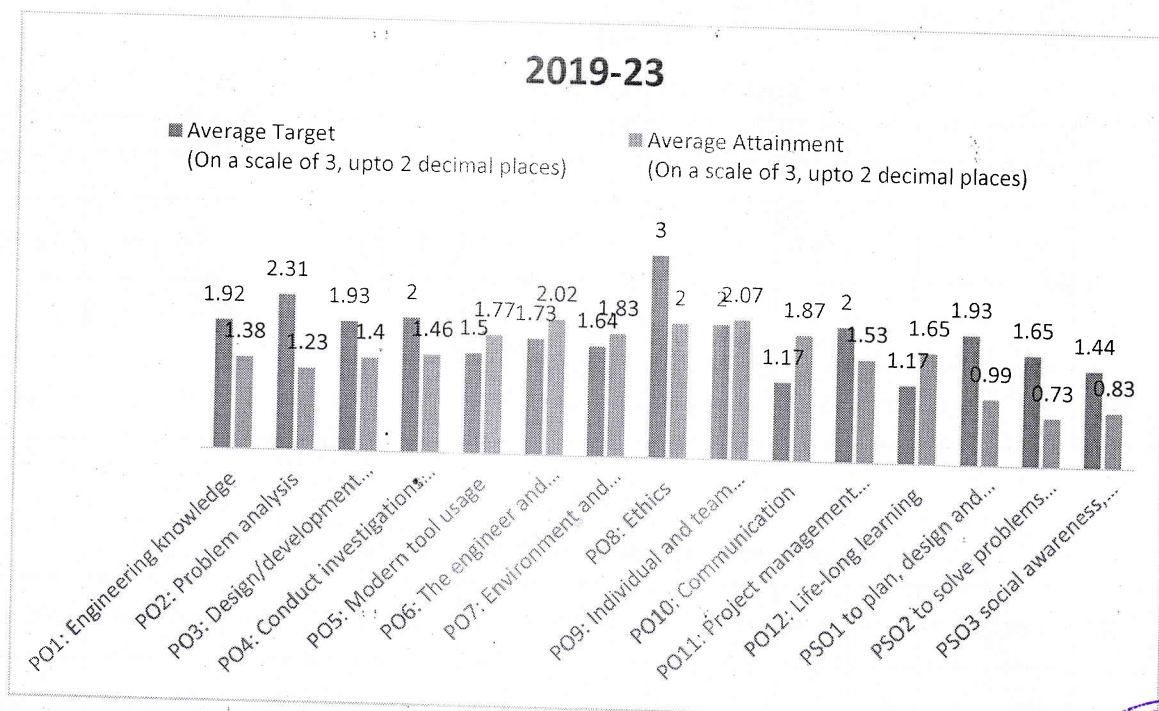
Figure 1.4: Analysis of PO and PSO Attainment (Batch 2018-22)

1.3 Analysis of PO and PSO Attainment

2021-25

Table 1.1: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.46	1.17	1.12	1.01	2.17	1.50	1.44	1.46	2.52	1.43	1.32	1.47	1.00	1.04	0.97
Target	1.9	1.68	1.78	1.58	2.5	2	2	2.00	2.7	2	2.22	2	2.00	1.80	1.79
Gap	0.44	0.51	0.66	0.57	0.33	0.50	0.56	0.54	0.18	0.57	0.90	0.53	1.00	0.76	0.82

2020-24

Table 1.2: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.85	1.65	1.16	1.40	1.28	1.47	1.23	1.20	1.50	1.17	1.91	1.11	0.81	1.11	1.17
Target	2.59	2.42	1.83	2.11	1.85	1.62	1.39	1.44	1.6	1.68	2.33	1.86	1.47	1.54	1.78
Gap	0.74	0.77	0.67	0.71	0.57	0.15	0.16	0.24	0.10	0.51	0.42	0.75	0.66	0.43	0.61

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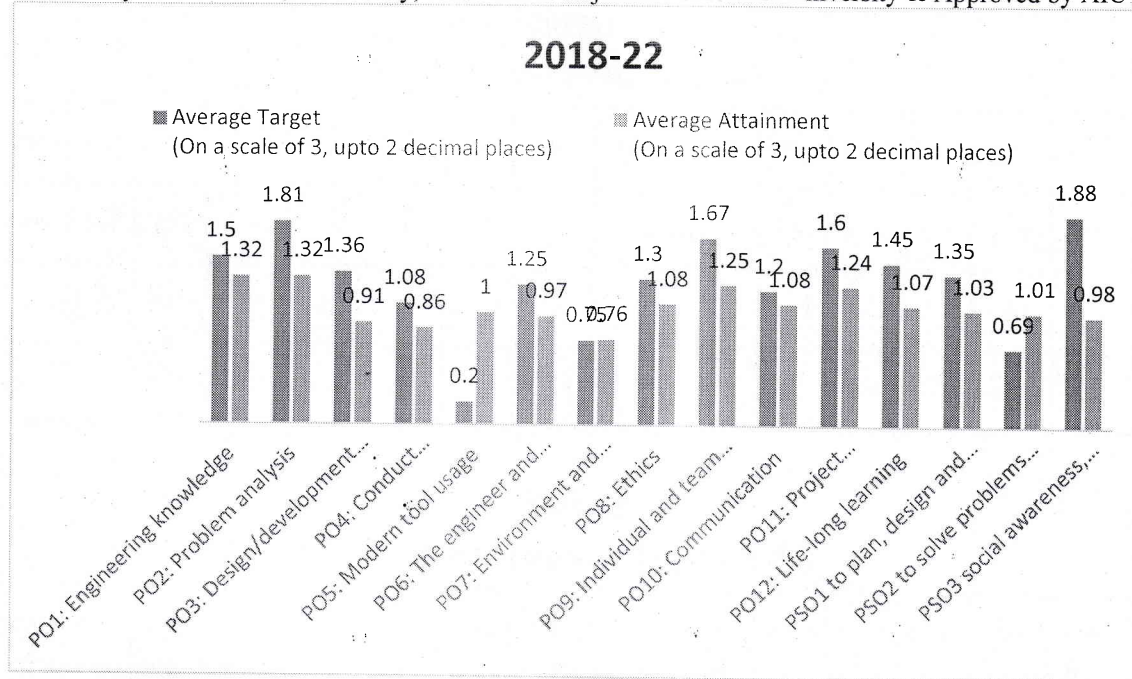
2019-23

Table 1.3: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.38	1.23	1.4	1.46	1.77	2.02	1.83	2	2.07	1.87	1.53	1.65	0.99	0.73	0.83
Target	1.92	2.31	1.93	2	1.5	1.73	1.64	3	2	1.17	2	1.17	1.93	1.65	1.44
Gap	0.54	1.08	0.53	0.54	0.27	0.29	0.19	1	0.07	0.7	0.47	0.48	0.94	0.92	0.61

2018-22

Table 1.4: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.32	1.32	0.91	0.86	1.00	0.97	0.76	1.08	1.25	1.08	1.24	1.07	1.03	1.01	0.98
Target	1.5	1.81	1.36	1.08	0.2	1.25	0.75	1.30	1.67	1.2	1.60	1.45	1.35	0.69	1.88
Gap	0.18	0.49	0.45	0.22	0.80	0.28	0.01	0.22	0.42	0.12	0.36	0.38	0.32	0.32	0.90

1.4 Observations
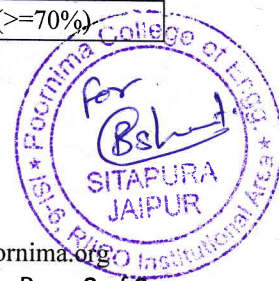
Table 1.5: Achieved Level of PO / PSO (Batch 2021-25)

PO / PSO	Achieved Level
-	Below Average (<50%)
PSO1, PSO2, PSO3	Average (>=50% but <70%)
PO1 - PO12	Above Average (>=70%)

Batch (2021-25): After analysis of table 1.5 of PO / PSO attainment for batch 2021-25, it has been observed that the attainment level of PSO1 PSO2 and PSO3 are on average level (>50% but less than 70%). All POs have achieved above average level (>=70%).

Table1.6: Achieved Level of PO / PSO (Batch 2020-24)

PO / PSO	Achieved Level
-	Below Average (<50%)
PO2, PO3, PO4, PO5, PO10, PO12, PSO1, PSO3	Average (>=50% but <70%)
PO1, PO6, PO7, PO8, PO9, PO11	Above Average (>=70%)

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Batch (2020-24): After analysis of table 1.6 of PO / PSO attainment for batch 2020-24, it has been observed that the attainment level of PO2, PO3, PO4, PO5, PO10, PO12, PSO1 and PSO3 are attained at average level Average (>=50% but <70%). PO1, PO6, PO7, PO8, PO9 and PO11 have achieved above average level (>=70%).

Table 1.7: Achieved Level of PO / PSO (Batch 2019-23)

PO / PSO	Achieved Level
PSO2	Below Average (<50%)
PO2, PO8, PSO1, PSO2 and PSO3	Average (>=50% but <70%)
PO1, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11, PO12	Above Average (>=70%)

Batch (2019-23): After analysis of table 1.7 of PO / PSO attainment for batch 2019-23, it has been observed that the attainment level of PSO3 is falling below average (<50%). PO2, PO8, PSO1, PSO2 and PSO3 are attained on average level (>50% but less than 70%). The attainment level of PO1, PO3, PO4, PO5, PO6, PO7, PO9, PO10, PO11 and PO12 are above average (>70 %).

Table 1.8: Achieved Level of PO / PSO (Batch 2018-22)

PO / PSO	Achieved Level
-	Below Average (<50%)
PSO3	Average (>=50% but <70%)
PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1 and PSO2	Above Average (>=70%)

Batch (2018-22): After analysis of table 1.8 of PO / PSO attainment for batch 2018-22, it has been observed that the attainment level of PSO3 is falling on average level (>50% but less than 70%). PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1 and PSO2 are falling on above average level (>70 %).

1.5 Actions Taken

- Department focused more on design based questions in numerical subjects, emphasized on design software to solve the real life problem based projects to enhance PO2, PO3, PO4 and PSO2.

- Department targeted to have more case studies of local problems in groups of students and provide engineering solutions for the betterment of the society to boost the attainment levels of PO6, PO9 and PSO3.

- Department emphasized more on GD, PI, Debate, Play in English, mock drive and more emphasis on design software to create new entrepreneurs in civil engineering works to boost the levels of PO10, PO12 and PSO1.

- After analyzing POs / PSOs, it was found that PO5 needs to improved therefore, department decided that faculty need to teach few topics in theoretical subjects via PPTs, videos and other ICT tools and in labs they can utilize virtual lab platforms developed by NPTEL and IITs.

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Department of Electrical Engineering
Session 2021-22
CO, PO and PSO Target and Attainment and Observations and Action Taken Report (EE)

1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I	2021-25	I Year	2.10	1.27
2	1FY2-02	Engineering Physics			2.00	0.73
3	1FY1-05	Human Values			2.20	1.50
4	1FY3-06	Programming for Problem Solving			2.00	1.21
5	1FY3-09	Basic Civil Engineering			2.00	1.16
6	1FY2-20	Engineering Physics Lab			1.58	0.39
7	1FY1-23	Human Values Activities and Sports			1.80	0.68
8	1FY3-24	Computer Programming Lab			3.00	1.11
9	1FY3-27	Basic Civil Engineering Lab			1.86	1.05
10	1FY3-28	Computer Aided Engineering Graphics			1.87	1.37
11	2FY2-01	Engineering Mathematics-II			2.00	1.09
12	2FY2-03	Engineering Chemistry			2.00	0.96
13	2FY1-04	Communication Skills			2.00	0.93
14	2FY3-07	Basic Mechanical Engineering			1.75	0.63
15	2FY3-08	Basic Electrical Engineering			2.00	1.25
16	2FY2-21	Engineering Chemistry Lab			1.87	1.85
17	2FY1-22	Language Lab			2.00	1.84
18	2FY3-25	Manufacturing Practices Workshop			1.87	0.65
19	2FY3-26	Basic Electrical Engineering Lab			2.08	0.70
20	2FY3-29	Computer Aided Machine Drawing			1.87	1.82
21	3EE2-01	Advance Mathematics	2020-24	II Year	2.80	2.56
22	3EE1-02	Technical Communication			2.83	2.67
23	3EE3-04	Power Generation Process			2.57	2.06
24	3EE4-05	Electrical circuit analysis			2.52	1.97
25	3EE4-06	Analog Electronics			2.45	1.93
26	3EE4-07	Electrical Machine-I			2.53	1.92
27	3EE4-08	Electromagnetic field			2.25	1.26
28	3EE4-21	Analog Electronics Lab			2.36	1.97
29	3EE4-22	Electrical Machine-I Lab			2.37	1.98
30	3EE4-23	Electrical circuit Design Lab			2.47	2.06
31	3EE7-30	Industrial Training			1.82	2.19

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No.	Code	Subject	Batch	Year		
32	4EE2-01	Biology			2.50	1.72
33	4EE1-03	Managerial Economics and financial Accounting			2.64	1.95
34	4EE3-04	Electronic Measurement & Instrumentation			2.54	1.42
35	4EE4-05	Electrical Machine - II			2.39	1.34
36	4EE4-06	Power Electronics			2.29	1.28
37	4EE4-07	Signals & Systems			2.75	1.58
38	4EE4-08	Digital Electronics			2.66	1.49
39	4EE4-21	Electrical Machine – II Lab			2.57	1.94
40	4EE4-22	Power Electronics Lab			2.33	1.97
41	4EE4-23	Digital Electronics Lab			2.66	2.09
42	4EE4-24	Measurement Lab			2.52	2.28
43	5EE3-01	Electrical Materials			2.52	1.99
44	5EE4-02	Power System - I			2.41	1.77
45	5EE4-03	Control System			2.90	2.23
46	5EE4-04	Microprocessor			2.69	2.20
47	5EE4-05	Electrical Machine Design			2.75	2.31
48	5EE5-11	Restructured Power System			2.35	1.51
49	5EE4-21	Power System - I Lab			2.59	2.13
50	5EE4-22	Control System Lab			2.31	1.80
51	5EE4-23	Microprocessor Lab			2.49	1.90
52	5EE4-24	System Programming Lab			2.40	1.77
53	5EE7-30	Industrial Training	2019-23	III Year	2.70	2.17
54	6EE3-01	Computer Architecture			2.46	1.91
55	6EE4-02	Power System - II			2.53	1.81
56	6EE4-03	Power System Protection			2.40	1.98
57	6EE4-04	Electrical Energy Conversion and Auditing			2.58	2.06
58	6EE4-05	Electric Drives			2.20	2.13
59	6EE5-11	Power System Planning.			2.41	1.83
60	6EE5-13	Electrical and Hybrid Vehicles.			2.85	2.32
61	6EE4-21	Power System - II Lab			2.63	1.95
62	6EE4-22	Electric Drives Lab			2.69	2.34
63	6EE4-23	Power System Protection Lab			2.27	1.65
64	6EE4-24	Modelling and simulation lab			2.67	2.46
65	7EE5-11	Wind and Solar Energy Systems.			2.47	1.62
66	7EE4-12	Power Quality and Facts			2.62	2.06
67	7EE6-60.1	Electrical Machines and Drives	2018-22	IV Year	2.00	1.15
68	7EE6-60.2	Power Generation Sources			2.55	1.79

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69	7EE4-21	Embedded Systems Lab			2.43	1.87
70	7EE4-22	Advance control system lab			2.65	2.02
71	7EE7-30	Industrial Training			2.63	2.07
72	7EE7-40	Seminar			2.76	2.58
73	8EE4-11	HVDC Transmission System.			2.45	1.75
74	8EE4-13	Advanced Electric Drives			2.70	2.20
75	8EE6-60.1	Energy Audit and Demand side Management			2.56	2.13
76	8EE6-60.2	Soft Computing			2.58	2.00
77	8EE4-21	Energy Systems Lab			2.70	2.35
78	8EE7-50	Project			2.86	2.65

1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge			2.92	1.70
2	PO2: Problem analysis			2.42	1.62
3	PO3: Design/development of solutions			2.22	1.70
4	PO4: Conduct investigations of complex problems.			2.00	1.53
5	PO5: Modern tool usage			2.06	1.40
6	PO6: The engineer and society			2.31	1.82
7	PO7: Environment and sustainability			2.46	1.97
8	PO8: Ethics			2.45	1.74
9	PO9: Individual and team work.	2021-25	I Year	2.37	1.77
10	PO10: Communication			2.50	1.84
11	PO11: Project management and finance			1.64	1.50
12	PO12: Life-long learning			2.39	1.83
13	PSO1: Fundamental knowledge for the society benefit.			1.62	0.89
14	PSO2: Professionally communicate using modern tools.			1.29	0.89
15	PSO3: Specific knowledge of renewable and green energy, EV and smart grids.			1.41	1.03
16	PO1: Engineering knowledge			2.21	2.19
17	PO2: Problem analysis	2020-24	II Year	1.85	1.47
18	PO3: Design/development of solutions			1.68	1.37

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19	PO4: Conduct investigations of complex problems.			1.42	0.97
20	PO5: Modern tool usage			1.59	1.74
21	PO6: The engineer and society			1.41	1.23
22	PO7: Environment and sustainability			1.70	1.20
23	PO8: Ethics			2.37	1.93
24	PO9: Individual and team work.			1.64	1.98
25	PO10: Communication			2.12	1.89
26	PO11: Project management and finance			1.57	1.37
27	PO12: Life-long learning			1.77	1.49
28	PSO1: Fundamental knowledge for the society benefit.			1.72	0.82
29	PSO2: Professionally communicate using modern tools.			1.77	0.65
30	PSO3: Specific knowledge of renewable and green energy, EV and smart grids.			1.47	0.58
31	PO1: Engineering knowledge			2.50	1.99
32	PO2: Problem analysis			2.17	1.56
33	PO3: Design/development of solutions			2.28	1.31
34	PO4: Conduct investigations of complex problems.			2.33	1.09
35	PO5: Modern tool usage			2.48	2.19
36	PO6: The engineer and society			2.32	1.51
37	PO7: Environment and sustainability			2.31	1.81
38	PO8: Ethics	2019-23	III Year	2.46	1.60
39	PO9: Individual and team work.			2.70	2.02
40	PO10: Communication			2.40	1.97
41	PO11: Project management and finance			2.41	1.87
42	PO12: Life-long learning			2.34	1.62
43	PSO1: Fundamental knowledge for the society benefit.			1.68	0.89
44	PSO2: Professionally communicate using modern tools.			1.37	0.70
45	PSO3: Specific knowledge of renewable and green energy, EV and smart grids.			1.23	0.58
46	PO1: Engineering knowledge			2.82	1.73
47	PO2: Problem analysis	2018-22	IV Year	2.42	1.73
48	PO3: Design/development of solutions			2.08	1.14
49	PO4: Conduct investigations of complex problems.			2.20	1.80

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| 50	PO5: Modern tool usage			2.42	2.12
51	PO6: The engineer and society			2.37	2.63
52	PO7: Environment and sustainability			2.50	2.62
53	PO8: Ethics			2.54	2.65
54	PO9: Individual and team work.			2.51	2.62
55	PO10: Communication			2.47	2.39
56	PO11: Project management and finance			2.26	1.66
57	PO12: Life-long learning			2.45	2.57
58	PSO1: Fundamental knowledge for the society benefit.			1.60	0.93
59	PSO2: Professionally communicate using modern tools.			1.46	1.38
60	PSO3: Specific knowledge of renewable and green energy, EV and smart grids.			1.51	1.14
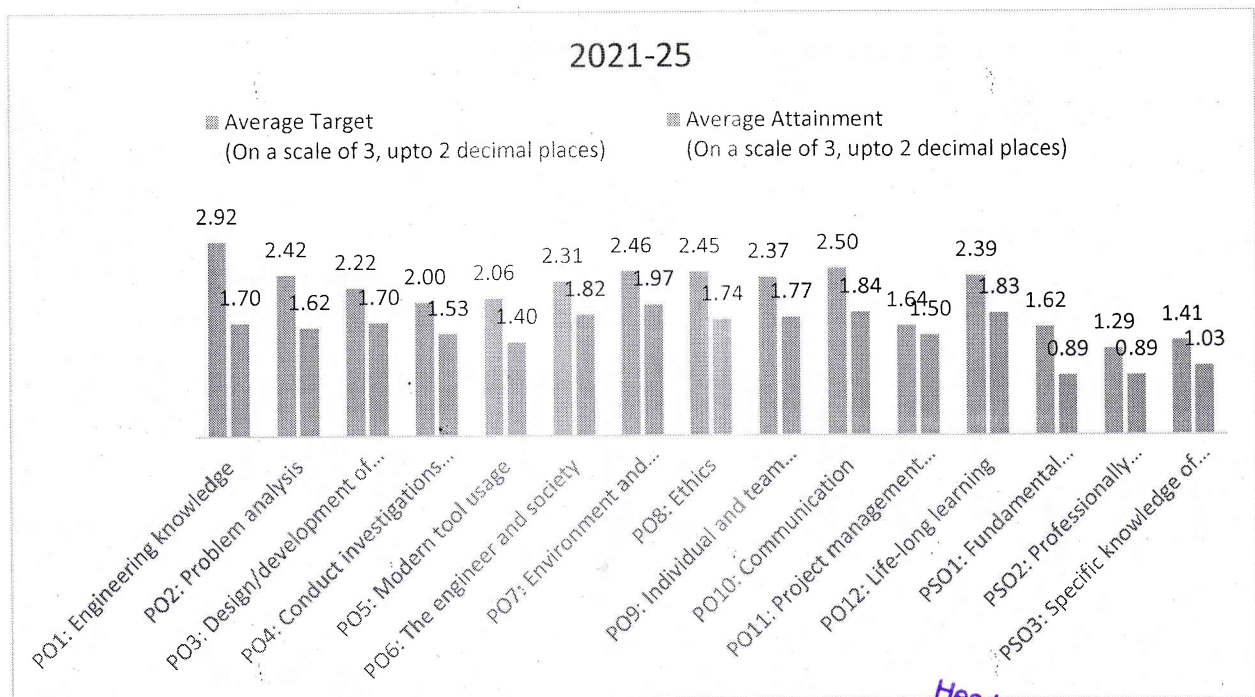
Figure 1.1: PO/PSO Average Target and Attainment Achievement (2021-25)

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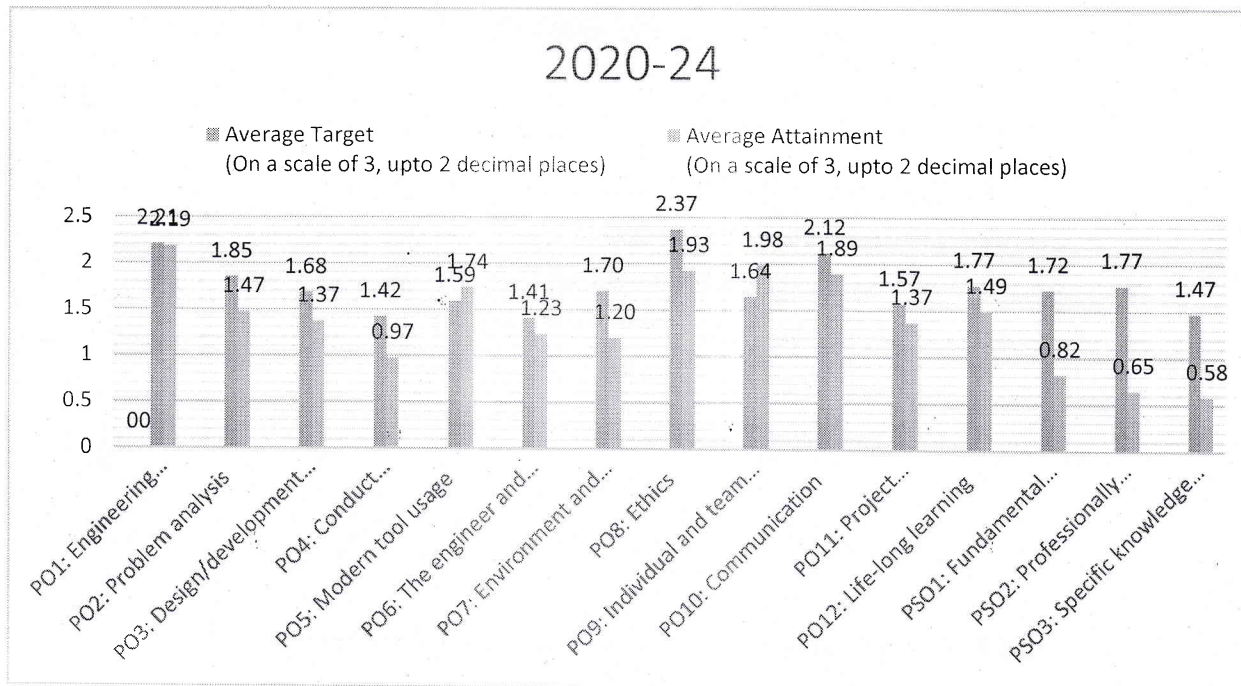
Figure 1.2: PO/PSO Average Target and Attainment Achievement (2020-24)
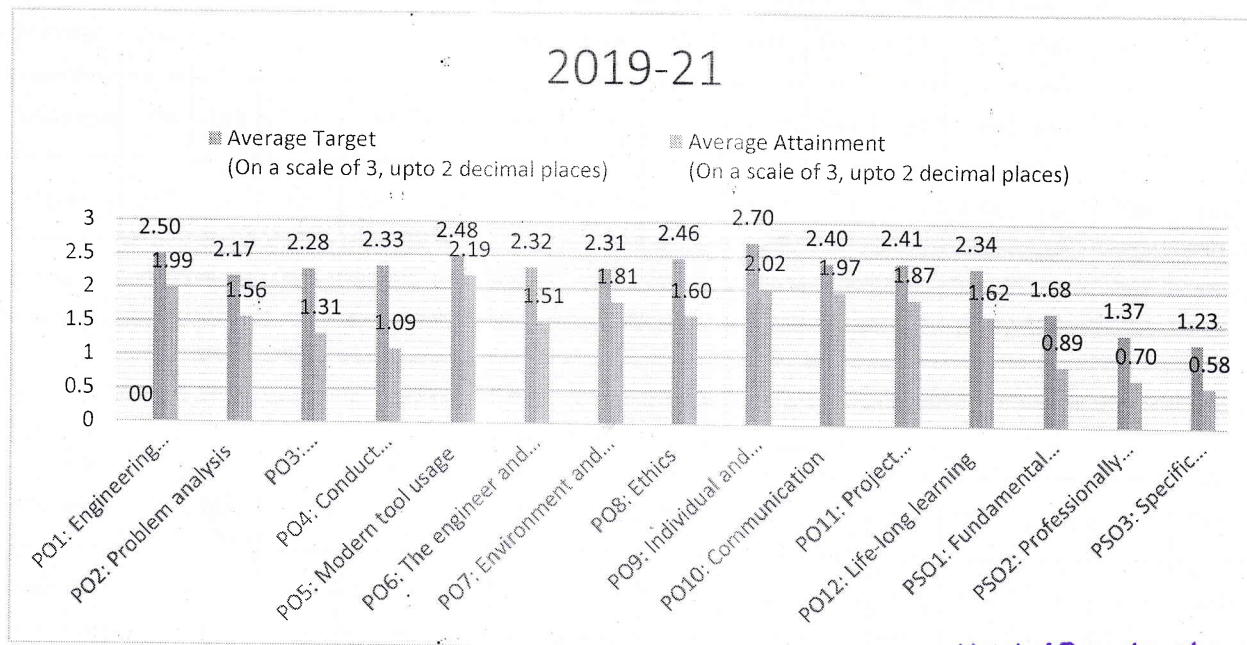
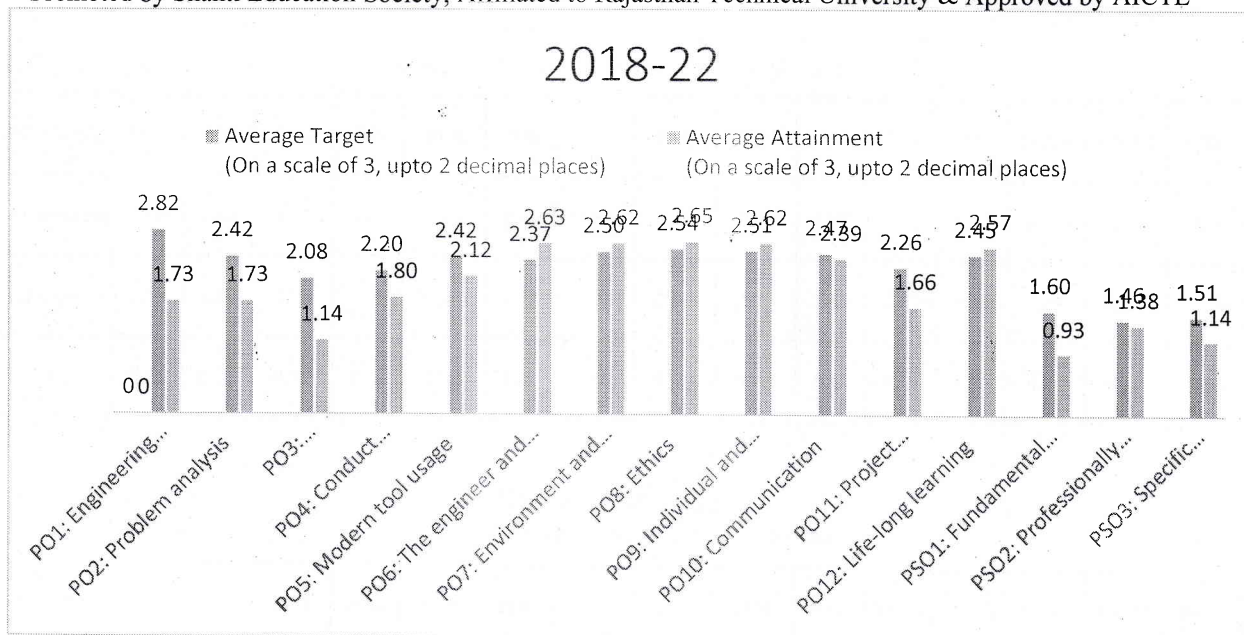Figure 1.3: PO/PSO Average Target and Attainment Achievement (2019-23)

2018-22

Figure 1.4: PO/PSO Average Target and Attainment Achievement (2018-22)

1.3 Analysis of PO and PSO Attainment

Batch 2021-2025
Table 1.1: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.70	1.62	1.70	1.53	1.40	1.82	1.97	1.74	1.77	1.84	1.50	1.83	0.89	0.89	1.03
Target	2.92	2.42	2.22	2.00	2.06	2.31	2.46	2.45	2.37	2.50	1.64	2.39	1.62	1.29	1.41
Gap	1.22	0.80	0.52	0.47	0.66	0.49	0.49	0.71	0.60	0.66	0.14	0.56	0.73	0.40	0.38

Batch 2020-2024
Table 1.2: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	2.19	1.47	1.37	0.97	1.59	1.23	1.20	1.93	1.64	1.89	1.37	1.49	0.82	0.65	0.58
Target	2.21	1.85	1.68	1.42	1.59	1.41	1.70	2.37	1.64	2.12	1.57	1.77	1.72	1.77	1.47
Gap	0.02	0.38	0.31	0.45	0.00	0.18	0.50	0.44	0.00	0.23	0.20	0.28	0.90	1.12	0.89

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Batch 2019-2023
Table 1.3: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.99	1.56	1.31	1.09	2.19	1.51	1.81	1.60	2.02	1.97	1.87	1.62	0.89	0.70	0.58
Target	2.50	2.17	2.28	2.33	2.48	2.32	2.31	2.46	2.70	2.40	2.41	2.34	1.68	1.37	1.23
Gap	0.51	0.61	0.97	1.24	0.29	0.81	0.50	0.86	0.68	0.43	0.54	0.72	0.79	0.67	0.65

Batch 2018-2022
Table 1.4: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.73	1.73	1.14	1.80	2.12	2.34	2.50	2.52	2.51	2.39	1.66	2.35	0.93	1.38	1.14
Target	2.82	2.42	2.08	2.20	2.42	2.37	2.50	2.54	2.51	2.47	2.26	2.45	1.60	1.46	1.51
Gap	1.09	0.69	0.94	0.40	0.30	0.03	0.00	0.02	0.00	0.08	0.60	0.10	0.67	0.08	0.37

1.4 Observations

Table 1.5: Achieved Level of PO / PSO (Batch 2021-25)

PO / PSO	Achieved Level
-	Below Average (<50%)
PO1, PO2, PO5, PSO1, PSO2	Average (>=50% but <70%)
PO3, PO4, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO3	Above Average (>=70%)

Batch (2021-25): After analysis of the table 1.5 of PO / PSO attainment for batch 2021-25, it has been observed that no attainment are falling below average (<50%). PO1, PO2, PO5, PSO1 and PSO2 are falling below average are attainment on average level (>50% but less than 70%). PO3, PO4, PO6, PO7, PO8, PO9, PO10, PO11, PO12 and PSO3 are above average (>70 %).

Table 1.6: Achieved Level of PO / PSO (Batch 2020-24)

PO / PSO	Achieved Level
PSO1, PSO2, PSO3	Below Average (<50%)
PO4	Average (>=50% but <70%)
PO1, PO2, PO3, PO5, PO6 PO7, PO8, PO9, PO10, PO11, PO12	Above Average (>=70%)

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Batch (2020-24): After analysis of the table 1.6 of PO / PSO attainment for batch 2020-24, it has been observed that attainment PSO1, PSO2 and PSO3 are falling below average (<50%). PO4 is falling below average are attainment on average level (>50% but less than 70%). PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO9, PO10, PO11 and PO12 are above average (>70 %).

Table 1.7: Achieved Level of PO / PSO (Batch 2019-23)

PO / PSO	Achieved Level
PO4, PSO3	Below Average (<50%)
PO3, PO6, PO8, PO12, PSO1, PSO2	Average (>=50% but <70%)
PO1, PO2, PO5, PO7, PO9, PO10, PO11	Above Average (>=70%)

Batch (2019-23): After analysis of the table 1.7 of PO / PSO attainment for batch 2019-23, it has been observed that the attainment level of PO4 and PSO3 are falling below average (<50%). PO3, PO6, PO8, PO12, PSO1 and PSO2 are attainment on average level (>50% but less than 70%). The attainment level of PO1, PO2, PO5, PO7, PO9, PO10 and PO11 are above average (>70 %).

Table 1.8: Achieved Level of PO / PSO (Batch 2018-22)

PO / PSO	Achieved Level
-	Below Average (<50%)
PO1, PO3, PSO1	Average (>=50% but <70%)
PO2, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO2, PSO3	Above Average (>=70%)

Batch (2018-22): After analysis of the table 1.8 of PO / PSO attainment for batch 2018-22, it has been observed that the no attainment are falling below average (<50%). PO1, PO3, and PSO1 are attainment on average level (>50% but less than 70%). The attainment level of PO2, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO2 and PSO3 are above average (>70 %).

1.5 Actions Taken

- Industry interactions/Industry sessions are increased for building the problem analysis (PO1) and engineering knowledge (PO2) domain of the students.

- Demonstrations of industry projects are carried out in an interactive sessions with industrial experts to improve the attainment level in PO5.

- Add on courses for hands on in power point presentation, Google meet, and latex are planned for strengthening PSO2.

- Students are encouraged for pursuing the internships in the industries dealing with the renewable energy/smart grids/EV projects for improving the attainment level in PSO3.

- Additional assignments are allotted to students for reporting/tabulating the design and structure of the complex engineering machinery/devices.

- Additional lecture hours are allocated for those courses which are having the lower attainment for PO12.

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Department of Information Technology
Session 2021-22
CO, PO and PSO Target and Attainment and Observations and Action Taken Report (IT)

1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Average Attainment
1	1FY2-01	Engineering Mathematics-I			2.10	2.55
2	1FY2-03	Engineering Chemistry			1.60	2.66
3	1FY1-04	Communication Skills			1.80	2.94
4	1FY3-07	Basic Mechanical Engineering			1.40	2.84
5	1FY3-08	Basic Electrical Engineering			2.00	2.89
6	1FY2-21	Engineering Chemistry Lab			1.87	2.97
7	1FY1-22	Language Lab			2.00	2.94
8	1FY3-26	Basic Electrical Engineering Lab			2.83	2.98
9	1FY3-25	Manufacturing Practices Workshop			1.87	2.97
10	1FY3-28	Computer Aided Engineering Graphics	2021-25	I Year	1.62	2.93
11	2FY2-01	Engineering Mathematics-II			2.00	2.24
12	2FY2-02	Engineering Physics			2.00	1.95
13	2FY1-05	Human Values			2.20	2.67
14	2FY3-06	Programming for Problem Solving			2.00	2.77
15	2FY3-09	Basic Civil Engineering			2.00	2.74
16	2FY2-20	Engineering Physics Lab			1.34	2.92
17	2FY1-23	Human Values Activities and Sports			1.80	2.74
18	2FY3-24	Computer Programming Lab			1.37	2.97
19	2FY3-27	Basic Civil Engineering Lab			1.87	2.89
20	2FY3-29	Computer Aided Machine Drawing			1.87	2.85
21	3IT1-03	Managerial Economics and Financial Accounting			2.43	2.87
22	3IT4-05	Data Structures and Algorithms			2.50	2.45
23	3IT3-04	Digital Electronics			2.62	2.82
24	3IT4-06	Object Oriented Programming	2020-24	II Year	2.79	2.65
25	3IT4-07	Software Engineering			2.45	2.83
26	3IT2-01	Advanced Engineering Mathematics			2.26	2.87
27	3IT4-23	Software Engineering Lab			2.28	2.97
28	3IT4-21	Data Structures and Algorithms Lab			2.67	3.00

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29	3IT4-24	Digital Electronics Lab			2.20	2.94
30	3IT4-22	Object Oriented Programming Lab			2.66	2.89
31	3IT7-30	Industrial Training			2.10	2.90
32	4IT2-01	Discrete Mathematics Structure			2.22	2.95
33	4IT1-02	Technical Communication			2.28	2.94
34	4IT3-04	Principle of Communication			2.40	2.98
35	4IT4-05	Database Management System			2.88	2.97
36	4IT4-06	Theory of Computation			2.80	2.98
37	4IT4-07	Data Communication and Computer Networks			2.80	2.97
38	4IT4-21	Linux Shell Programming Lab			2.67	2.97
39	4IT4-22	Database Management System Lab			2.38	2.94
40	4IT4-23	Network Programming Lab			2.50	3.00
41	4IT4-24	Java Lab			2.18	2.97
42	4IT4-25	Web Technology Lab			2.37	2.91
43	5IT3-01	Microprocessor And Interfaces			3.00	2.13
44	5IT4-02	Compiler Design			2.70	2.33
45	5IT4-03	Operating System			2.67	2.21
46	5IT4-04	Computer Graphics & Multimedia			2.53	2.03
47	5IT4-05	Analysis of Algorithms			2.71	2.27
48	5IT5-12	Software Testing and Project Management			2.40	2.73
49	5IT4-21	Computer Graphics & Multimedia Lab			2.41	2.81
50	5IT4-22	Compiler Design Lab			2.41	2.48
51	5IT4-23	Analysis of Algorithms Lab			2.80	2.77
52	5IT4-24	Advanced Java Lab			2.42	2.70
53	5IT7-30	Industrial Training	2019-23	III Year	3.00	2.91
54	6IT3-01	Digital Image Processing			2.90	2.81
55	6IT4-02	Machine Learning			2.80	2.89
56	6IT4-03	Information Security System			2.80	2.73
57	6IT4-04	Computer Architecture and Organization			2.70	2.89
58	6IT4-05	Artificial Intelligence			2.60	2.45
59	6IT4-06	Distributed System			2.60	2.03
60	6IT5-12	Cloud Computing			2.63	2.70
61	6IT4-21	Digital Image Processing Lab			2.40	2.75
62	6IT4-22	Machine Learning Lab			2.30	2.60
63	6IT4-23	Python Lab			2.38	2.46
64	6IT4-24	Mobile Application Development Lab			2.38	2.58

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65	7IT4-01	Big Data Analytics			2.70	2.91
66	7EE6-60.1	Electrical Machines and Drives (OPEN ELECTIVE)			2.90	2.75
67	7ME6-60.2	Quality Management (OPEN ELECTIVE)			2.90	2.75
68	7EC6-60.1	Principle of Electronic communication (OPEN ELECTIVE)			2.90	2.75
69	7EC6-60.2	Micro and Smart System Technology (OPEN ELECTIVE)			2.90	2.75
70	7CE6-60.1	Environmental Impact Analysis (OPEN ELECTIVE)			2.90	2.75
71	7CE6-60.2	Disaster Management (OPEN ELECTIVE)			2.90	2.75
72	7IT4-21	Big Data Analytics Lab			2.90	2.55
73	7IT4-22	Cyber Security Lab			2.90	2.35
74	7IT7-30	Industrial Training			2.90	1.85
75	7IT7-40	Seminar	2018-22	IV Year	2.90	1.13
76	8IT4-01	Internet of Things			2.80	2.70
77	8EE6-60.1	Energy Audit and Demand side management (OPEN ELECTIVE)			2.85	2.75
78	8EE6-60.2	Soft Computing (OPEN ELECTIVE)			2.86	2.81
79	8ME6-60.1	Operations Research (OPEN ELECTIVE)			2.86	2.81
80	8ME6-60.2	Simulation Modeling and Analysis (OPEN ELECTIVE)			2.86	2.81
81	8EC6-60.1	Industrial and Biomedical applications of RF Energy (OPEN ELECTIVE)			2.86	2.81
82	8CE6-60.1	Composite Materials (OPEN ELECTIVE)			2.86	2.81
83	8CE6-60.2	Fire and Safety Engineering (OPEN ELECTIVE)			2.86	2.81
84	8IT4-21	Internet of Things Lab			2.87	2.78
85	8IT4-22	Software Testing and Validation Lab			2.87	2.30
86	8IT7-50	Project			2.87	2.60

1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge			1.78	0.86
2	PO2: Problem analysis			1.63	0.55
3	PO3: Design/development of solutions			1.42	0.50
4	PO4: Conduct investigations of complex problems.	2021-25	I Year	1.05	0.29
5	PO5: Modern tool usage			1.33	0.74
6	PO6: The engineer and society			1.19	0.67
7	PO7: Environment and sustainability			1.74	0.92
8	PO8: Ethics			2.40	1.10

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#	Outcome	Batch	Year		
9	PO9: Individual and team work.			1.26	0.78
10	PO10: Communication			2.29	1.04
11	PO11: Project management and finance			1.33	0.35
12	PO12: Life-long learning			1.53	0.68
13	PSO1 -Analyze, design algorithms and software applications			1.82	0.51
14	PSO2-apply knowledge of contemporary areas			1.76	0.48
15	PSO3-modern programming languages and open source platforms			1.38	0.62
16	PO1: Engineering knowledge	2020-24	II Year	1.99	1.16
17	PO2: Problem analysis			1.66	0.88
18	PO3: Design/development of solutions			1.42	0.68
19	PO4: Conduct investigations of complex problems.			1.09	0.55
20	PO5: Modern tool usage			1.29	0.61
21	PO6: The engineer and society			1.12	0.48
22	PO7: Environment and sustainability			1.49	0.77
23	PO8: Ethics			2.29	1.29
24	PO9: Individual and team work.			1.26	0.71
25	PO10: Communication			1.98	0.94
26	PO11: Project management and finance			1.33	0.58
27	PO12: Life-long learning			1.54	0.83
28	PSO1 -Analyze, design algorithms and software applications			1.69	0.71
29	PSO2-apply knowledge of contemporary areas			1.90	0.89
30	PSO3-modern programming languages and open source platforms			1.51	0.70
31	PO1: Engineering knowledge	2019-23	III Year	2.23	1.36
32	PO2: Problem analysis			1.71	1.08
33	PO3: Design/development of solutions			1.47	0.88
34	PO4: Conduct investigations of complex problems.			1.24	0.72
35	PO5: Modern tool usage			1.53	0.93
36	PO6: The engineer and society			1.33	0.59
37	PO7: Environment and sustainability			1.49	0.62
38	PO8: Ethics			2.03	1.00
39	PO9: Individual and team work.			1.46	0.69
40	PO10: Communication			1.9	0.90
41	PO11: Project management and finance			1.39	0.60
42	PO12: Life-long learning			1.71	0.92

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|					
43	PSO1 -Analyze, design algorithms and software applications			1.55	0.83
44	PSO2-apply knowledge of contemporary areas			1.76	0.92
45	PSO3-modern programming languages and open source platforms			1.64	0.89
46	PO1: Engineering knowledge			2.74	1.77
47	PO2: Problem analysis			2.62	1.58
48	PO3: Design/development of solutions			2.45	1.59
49	PO4: Conduct investigations of complex problems.			2.31	1.36
50	PO5: Modern tool usage			2.32	1.44
51	PO6: The engineer and society			1.96	0.89
52	PO7: Environment and sustainability			1.67	0.78
53	PO8: Ethics	2018-22	IV Year	2.02	1.24
54	PO9: Individual and team work.			2.12	1.09
55	PO10: Communication			2.10	1.07
56	PO11: Project management and finance			2.28	1.16
57	PO12: Life-long learning			2.28	1.39
58	PSO1 -Analyze, design algorithms and software applications			2.30	1.32
59	PSO2-apply knowledge of contemporary areas			1.99	1.22
60	PSO3-modern programming languages and open source platforms			2.19	1.37
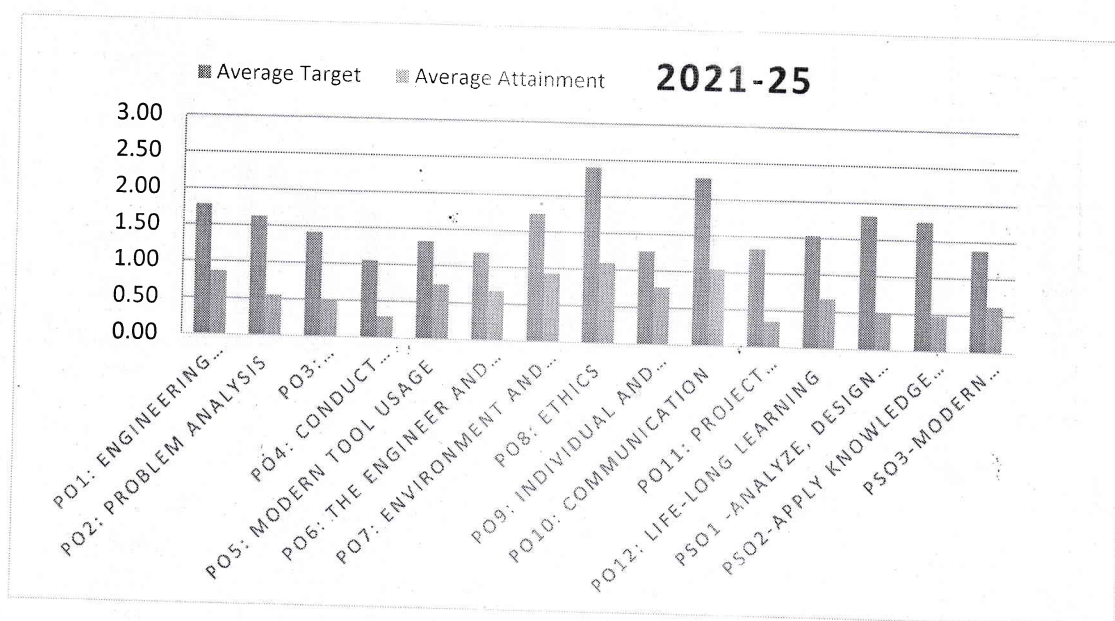
Figure 1.1: Analysis of PO and PSO Attainment (2021-25)
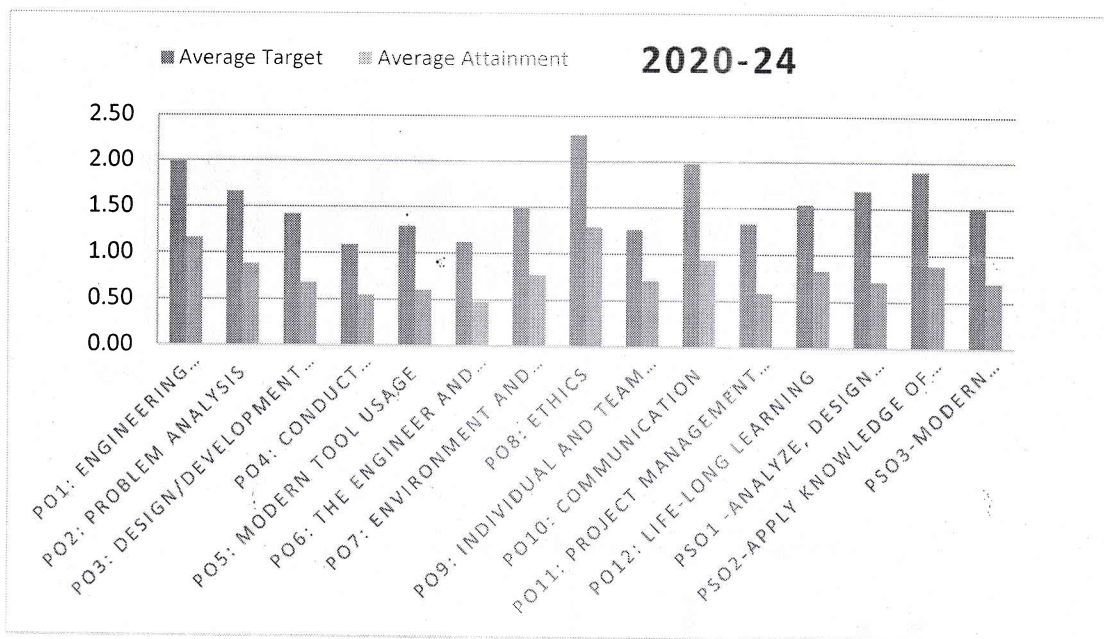
Figure 1.2: Analysis of PO and PSO Attainment (2020-24)

Figure 1.3: Analysis of PO and PSO Attainment (2019-23)

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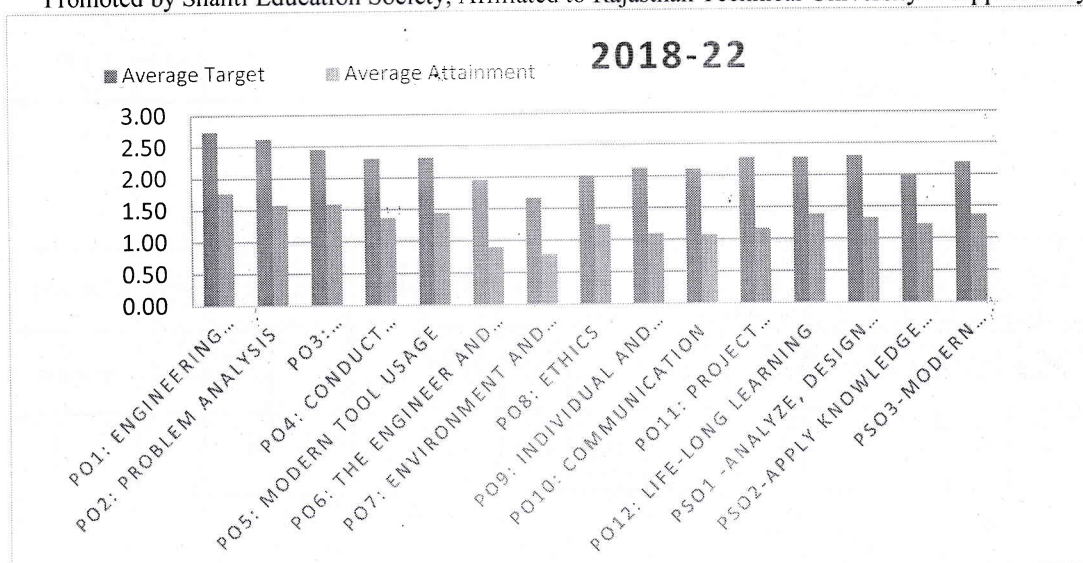
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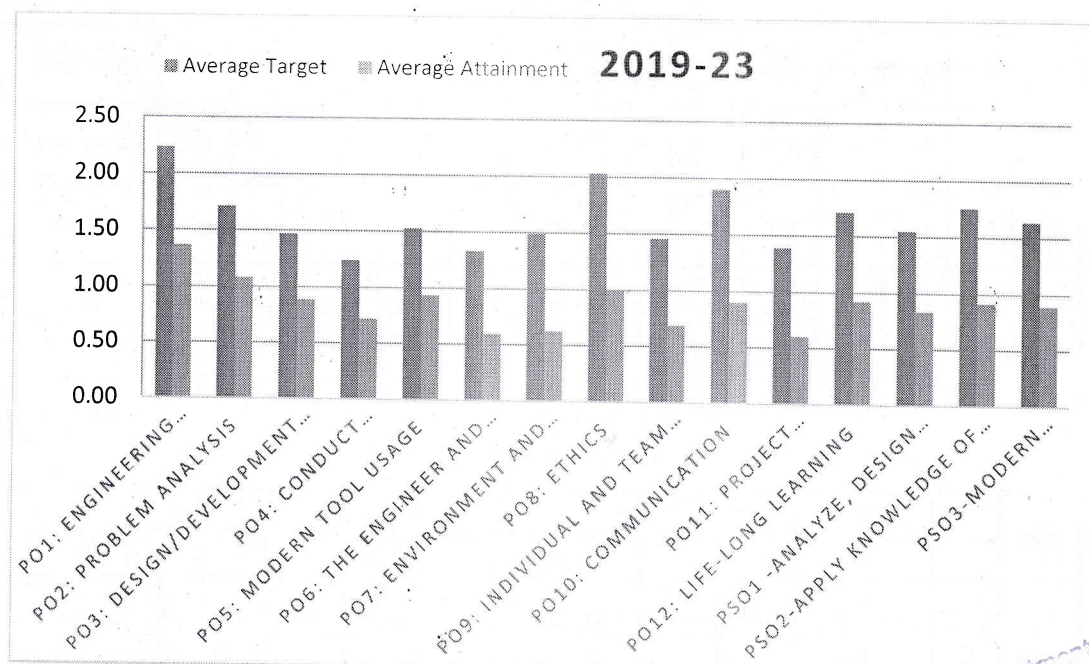
Figure 1.4: Analysis of PO and PSO Attainment (2018-22)

1.3 Analysis of PO and PSO Attainment

Table 1.1

Batch 2021-25

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.78	1.63	1.42	1.05	1.33	1.19	1.74	2.40	1.26	2.29	1.33	1.53	1.82	1.76	1.38
Target	0.86	0.55	0.50	0.29	0.74	0.67	0.92	1.10	0.78	1.04	0.35	0.68	0.51	0.48	0.62
Gap	0.92	1.08	0.92	0.76	0.59	0.52	0.82	1.30	0.48	1.25	0.98	0.85	1.31	1.28	0.76

Table 1.2

Batch 2020-24

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.99	1.66	1.42	1.09	1.29	1.12	1.49	2.29	1.26	1.98	1.33	1.54	1.69	1.90	1.51
Target	1.16	0.88	0.68	0.55	0.61	0.48	0.77	1.29	0.71	0.94	0.58	0.83	0.71	0.89	0.70

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Gap	0.83	0.78	0.74	0.54	0.68	0.64	0.72	1.00	0.55	1.04	0.75	0.71	0.98	1.01	0.81

Table 1.3

Batch 2019-23

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	2.23	1.71	1.47	1.24	1.53	1.33	1.49	2.03	1.46	1.90	1.39	1.71	1.55	1.76	1.64
Target	1.36	1.08	0.88	0.72	0.93	0.59	0.62	1.00	0.69	0.90	0.60	0.92	0.83	0.92	0.89
Gap	0.87	0.63	0.59	0.52	0.60	0.74	0.87	1.03	0.77	1.00	0.79	0.79	0.72	0.84	0.75

Table 1.3

Batch 2018-22

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	2.74	2.62	2.45	2.31	2.32	1.96	1.67	2.02	2.12	2.10	2.28	2.28	2.30	1.99	2.19
Target	1.77	1.58	1.59	1.36	1.44	0.89	0.78	1.24	1.09	1.07	1.16	1.39	1.32	1.22	1.37
Gap	0.97	1.04	0.86	0.95	0.88	1.07	0.89	0.78	1.03	1.03	1.12	0.89	0.98	0.77	0.82

1.4 Observations

Table 1.5: Achieved Level of PO / PSO (Batch 2021-25)

PO / PSO	Achieved Level
PO2, PO3, PO4, PO7, PO8, PO10, PO11, PO12 PSO1, PSO2 and PSO3	Below Average (<50%)
PO5, PO6, PO7 and PO9	Average (>=50% but <70%)
-	Above Average (>=70%)

Batch (2021-25): After analysis of the table 1.5 of PO / PSO attainment for batch 2021-25, it has been observed that the attainment level of PO-2, 3, 4, 7, 8, 10, 11, 12 and PSO 1, 2, 3 are falling below average. PO-5, 6, 7, 9 are attainment on average level.

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Table 1.6: Achieved Level of PO / PSO (Batch 2020-24)

PO / PSO	Achieved Level
PO3, PO5, PO6, PO10, PO11, PSO1, PSO2, PSO3	Below Average (<50%)
PO1, PO2, PO4, PO7, PO8, PO9, PO12,	Average (>=50% but <70%)
-	Above Average (>=70%)

Batch (2020-24): After analysis of the table 1.6 of PO / PSO attainment for batch 2020-24, it has been observed that the attainment level of PO-3, 5, 6, 10, 11 and PSO-1, 2, 3 are falling below average. PO-1, 2, 4, 7, 8, 9, 12 are attainment on average level.

Table 1.7: Achieved Level of PO / PSO (Batch 2019-23)

PO / PSO	Achieved Level
PO6, PO7, PO8, PO9, PO10, PO11 PSO1, PSO2 and PSO3	Below Average (<50%)
PO1, PO2, PO3, PO4, PO5 and PO12	Average (>=50% but <70%)
-	Above Average (>=70%)

Batch (2019-23): After analysis of the table 1.6 of PO / PSO attainment for batch 2019-23, it has been observed that the attainment level of PO-6, 7, 8, 9, 10, 11 and PSO-1, 2, 3 are falling below average. PO- 1, 2, 3, 4, 5, 12 are attainment on average level.

Table 1.8: Achieved Level of PO / PSO (Batch 2018-22)

PO / PSO	Achieved Level
PO6 and PO7	Below Average (<50%)
PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2, PSO3	Average (>=50% but <70%)
-	Above Average (>=70%)

Batch (2018-22): After analysis of the table 1.6 of PO / PSO attainment for batch 2018-22, it has been observed that the attainment level of PO- 6, 7 are falling below average PO- 1, 2, 3, 4, 5, 8, 9, 10, 11, 12 And PSO- 1, 2, 3 are attainment on average level.

1.5 Actions Taken

- Expert sessions from industry and academia were conducted to enhance PO1, PO2, PO3 and PO4.
- Technical presentation is included as a component for assigning internal marks to improve PO10.
- Project work is assigned to them in SHG group to improve PO11 and PO12.
- Organizing events through associations/clubs as a team to enhance PO9.
- Organizing dept. / college functions as a team to boost PO9.

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Department of Mechanical Engineering
Session 2021-22
CO, PO and PSO Target and Attainment and Observations and Action Taken Report (ME)

1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I	2021-25	I Year	2.10	1.53
2	1FY2-02	Engineering Physics			2.00	1.37
3	1FY1-05	Human Values			2.20	2.20
4	1FY3-07	Basic Mechanical Engineering			1.40	0.98
5	1FY3-09	Basic Civil Engineering			2.00	1.93
6	1FY2-20	Engineering Physics Lab			1.58	1.47
7	1FY1-23	Human Values Activities and Sports			1.80	1.80
8	1FY3-25	Manufacturing Practices Workshop			1.88	1.88
9	1FY3-27	Basic Civil Engineering Lab			1.86	1.74
10	1FY3-28	Computer Aided Engineering Graphics			1.38	1.33
11	2FY2-01	Engineering Mathematics-II			2.00	1.11
12	2FY2-03	Engineering Chemistry			1.60	0.94
13	2FY1-04	Communication Skills			1.80	1.65
14	2FY3-06	Programming for Problem Solving			2.00	1.43
15	2FY3-08	Basic Electrical Engineering			2.00	1.63
16	2FY2-21	Engineering Chemistry Lab			1.88	1.73
17	2FY1-22	Language Lab			2.00	1.62
18	2FY3-24	Computer Programming Lab			2.00	2.00
19	2FY3-26	Basic Electrical Engineering Lab			2.08	1.89
20	2FY3-29	Computer Aided Machine Drawing			1.62	1.52
21	3ME1-02	Technical Communications	2020-24	II Year	2.08	1.04
22	3ME2-01	Advanced Engineering Mathematics			2.00	1.93
23	3ME3-04	Engineering Mechanics			2.00	1.80
24	3ME4-05	Engineering Thermodynamics			2.00	1.80
25	3ME4-06	Material Science And Engineering			2.25	1.80
26	3ME4-07	Mechanics of Solids			2.50	2.00
27	3ME4-21	Machine Drawing Practice			2.50	2.50
28	3ME4-22	Material Testing Lab-I			2.40	2.18
29	3ME4-23	Basic Mechanical Engineering Lab			2.00	2.00
30	3ME4-24	Programming Using MATLAB			2.60	2.47
31	3ME7-30	Industrial Training			2.60	2.60

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31	4ME1-03	Managerial Economics and Financial Accounting			2.34	2.34
32	4ME2-01	Data Analytics			2.17	1.30
33	4ME3-04	Digital Electronics			2.25	1.80
34	4ME4-05	Fluid Mechanics and Fluid Machines			2.63	2.28
35	4ME4-06	Manufacturing Processes			1.50	0.90
36	4ME4-07	Theory of Machines			2.25	1.13
37	4ME3-21	Digital Electronics Lab			2.00	2.00
38	4ME4-22	Fluid Mechanics Lab			2.25	2.18
39	4ME4-23	Production Practice Lab			2.00	1.94
40	4ME4-24	Theory of Machines Lab			2.50	2.35
41	5ME3-01	Mechatronic Systems			2.00	2.00
42	5ME4-02	Heat Transfer			2.00	1.93
43	5ME4-03	Manufacturing Technology			2.25	2.25
44	5ME4-04	Design of Machine Elements I			2.25	1.28
45	5ME4-05	Principles of Management			2.75	1.93
46	5ME5-12	Automobile Engineering			2.00	1.73
47	5ME5-11	NDET			2.00	2.00
48	5ME3-21	Mechatronics Lab			2.40	2.23
49	5ME4-22	Heat Transfer Lab			2.60	2.24
50	5ME4-23	Production Engineering Lab			2.07	2.07
51	5ME4-24	Machine Design Practice - I Lab			2.25	2.07
52	5ME7-30	Industrial Training	2019-23	III Year	2.59	2.20
53	6ME3-01	Measurement and Metrology			2.25	2.25
54	6ME4-02	CIMS			3.00	2.40
55	6ME4-03	Mechanical Vibrations			2.25	2.03
56	6ME4-04	Design of Machine Elements II			2.25	2.18
57	6ME4-05	Quality Management			2.00	1.60
58	6ME4-21	CIMS Lab			2.13	1.81
59	6ME4-22	Vibration Lab			2.00	1.70
60	6ME4-23	Machine Design Practice - II Lab			2.25	1.91
61	6ME4-24	Thermal Engineering Lab I			2.31	1.89
62	6ME5-11	Refrigeration and Air Conditioning (Elective-1)			2.50	1.50
63	6ME5-12	Non-Conventional Machining Methods (Elective-2)			2.00	1.80
64	7ME5-11	I. C. Engines			2.50	1.75
65	7ME5-13	Turbo Machine			2.00	1.20
66	7EE6-60.1	Electrical Machines and Drives	2018-22	IV Year	2.75	2.48
67	7EE6-60.2	Power Generation Sources			1.98	1.98
68	7CE6-60.1	Environmental Impact Analysis (EIA)			1.38	1.10

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69	7CE6-60.2	Disaster Management (DM)			1.53	0.92
70	7CS6-60.1	Quality Management / ISO 9000 (Open Elective-1)			3.00	2.70
71	7CS6-60.2	Cyber Security (Open Elective-1)			2.25	1.65
72	7EC6-60.1	Principle of Electronic communication			2.43	0.24
73	7EC6.60.2	Micro System Smart Technology			2.43	1.70
74	7ME4-21	FEA Lab			2.50	2.15
75	7ME4-22	Thermal Engineering Lab-II			2.25	1.78
76	7ME4-23	Quality Control Lab			2.50	2.05
77	7ME7-30	Industrial Training			2.80	1.96
78	7ME7-40	Seminar			2.50	2.13
79	8ME5-11	Hybrid and Electric Vehicles			2.00	1.53
80	8ME5-12	Supply and Operations Management			-	-
81	8ME5-13	Additive Manufacturing			2.80	1.96
82	8EE6-60.1	Energy Audit and Demand side Management			2.52	2.27
83	8EE6-60.2	Soft Computing			2.67	2.40
84	8CE6-60.1	Composite Materials (CM)			1.46	-
85	8CE6-60.2	Fire and Safety Engineering (F&SE)			1.22	1.10
86	8CS6-60.1	Big Data Analytics (Open Elective-II)			3.00	2.40
87	8CS6-60.2	IPR, Copyright and Cyber Law of India (Open Elective-II)			2.75	2.20
88	8EC6.60.1	Industrial and Medical applications of RF Energy			2.22	1.70
89	8EC6.60.2	Robotics and Control			2.52	2.27
90	8ME4-21	Industrial Engineering Lab			2.25	2.05
91	8ME4-22	Metrology Lab			2.00	1.82
92	8ME7-50	Project			2.63	1.84

1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge			1.81	1.06
2	PO2: Problem analysis			1.65	0.88
3	PO3: Design/development of solutions			-	-
4	PO4: Conduct investigations of complex problems.			-	-
5	PO5: Modern tool usage	2021-25	I Year	2.50	2.02
6	PO6: The engineer and society			2.00	1.38
7	PO7: Environment and sustainability			2.00	1.28
8	PO8: Ethics			1.94	1.25
9	PO9: Individual and team work.			2.72	2.30
10	PO10: Communication			2.00	1.23
11	PO11: Project management and finance			-	-

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12	PO12: Life-long learning			2.00	1.47
13	PSO1: (Design, Analyze and Innovate Solutions)			1.44	0.76
14	PSO2: (Mechanical, Allied Engineering Concept)			1.67	0.90
15	PSO3: (Skills, HVAC&R and Automobile Engineering)			1.00	0.42
16	PO1: Engineering knowledge			2.40	1.87
17	PO2: Problem analysis			2.30	1.52
18	PO3: Design/development of solutions			2.22	1.42
19	PO4: Conduct investigations of complex problems.			2.58	1.59
20	PO5: Modern tool usage			2.00	1.26
21	PO6: The engineer and society			1.67	1.42
22	PO7: Environment and sustainability	2020-24	II Year	2.00	-
23	PO8: Ethics			2.00	1.11
24	PO9: Individual and team work.			2.05	1.25
25	PO10: Communication			2.25	1.33
26	PO11: Project management and finance			2.50	1.60
27	PO12: Life-long learning			2.08	1.27
28	PSO1: (Design, Analyze and Innovate Solutions)			2.45	1.93
29	PSO2: (Mechanical, Allied Engineering Concept)			2.06	1.40
30	PSO3: (Skills, HVAC&R and Automobile Engineering)			2.01	1.34
31	PO1: Engineering knowledge			2.30	1.56
32	PO2: Problem analysis			2.18	1.34
33	PO3: Design/development of solutions			2.55	1.45
34	PO4: Conduct investigations of complex problems.			-	-
35	PO5: Modern tool usage			2.60	1.68
36	PO6: The engineer and society			2.00	1.00
37	PO7: Environment and sustainability			-	-
38	PO8: Ethics	2019-23	III Year	2.13	1.10
39	PO9: Individual and team work.			2.06	1.03
40	PO10: Communication			2.17	1.09
41	PO11: Project management and finance			2.33	1.41
42	PO12: Life-long learning			2.22	1.10
43	PSO1: (Design, Analyze and Innovate Solutions)			2.57	1.90
44	PSO2: (Mechanical, Allied Engineering Concept)			2.09	1.35
45	PSO3: (Skills, HVAC&R and Automobile Engineering)			2.04	1.29
46	PO1: Engineering knowledge			2.39	1.79
47	PO2: Problem analysis			2.37	1.57
48	PO3: Design/development of solutions			2.25	1.45
49	PO4: Conduct investigations of complex problems.			2.25	1.31
50	PO5: Modern tool usage			1.98	1.27
51	PO6: The engineer and society			1.84	1.22
52	PO7: Environment and sustainability	2018-22	IV Year	1.96	1.17
53	PO8: Ethics			2.22	1.53
54	PO9: Individual and team work.			2.45	1.52
55	PO10: Communication			2.38	1.34
56	PO11: Project management and finance			2.00	1.46
57	PO12: Life-long learning			2.45	1.78
58	PSO1: (Design, Analyze and Innovate Solutions)			2.04	1.45

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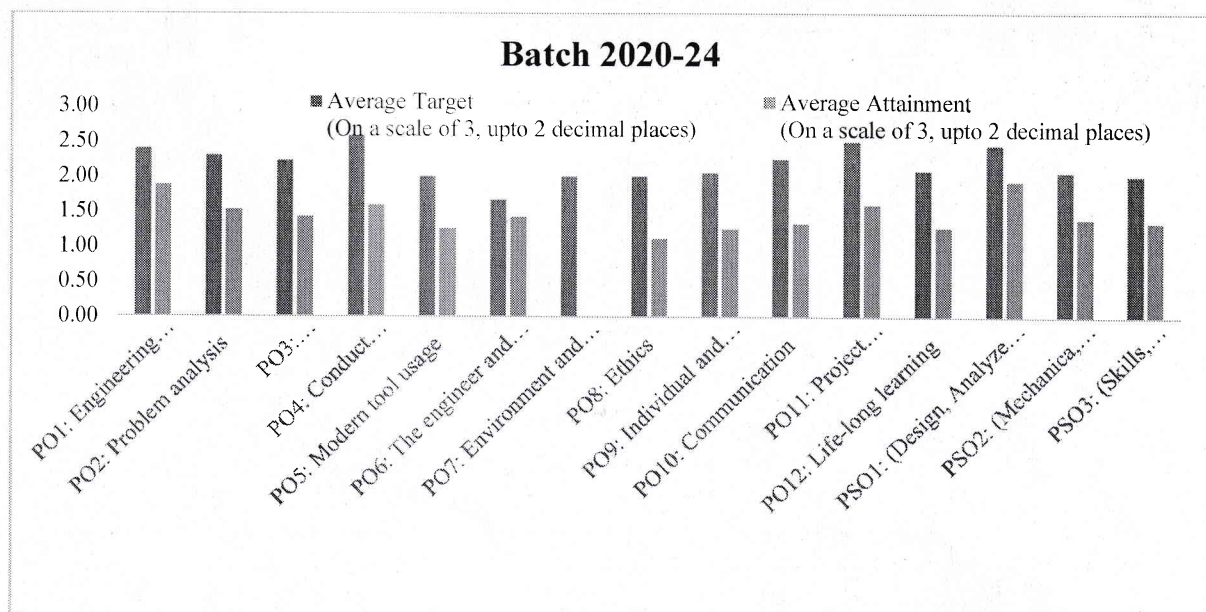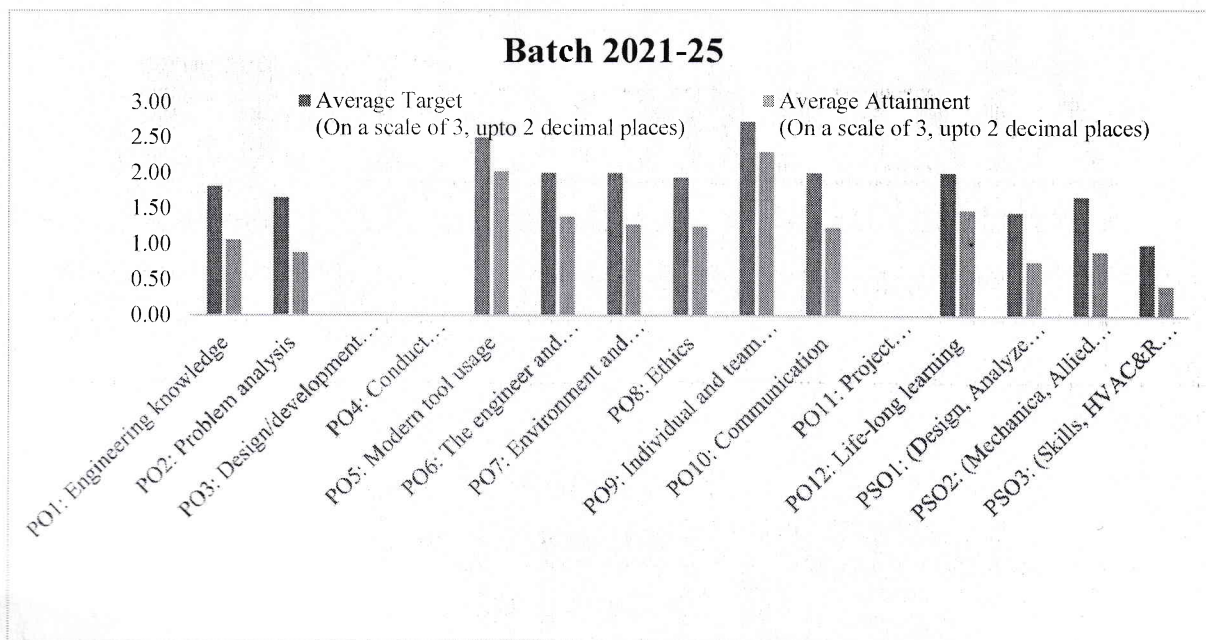• Phone: +91-9829255102 • E-mail: registrar.pce@poornima.org • Website: www.pce.poornima.org

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59	PSO2: (Mechanical, Allied Engineering Concept)			1.83	1.17
60	PSO3: (Skills, HVAC&R and Automobile Engineering)			1.81	1.05

Batch 2021-25

Batch 2020-24

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Batch 2019-23

Average Target (On a scale of 3, upto 2 decimal places) — Average Attainment (On a scale of 3, upto 2 decimal places)

Batch 2018-22

Average Target (On a scale of 3, upto 2 decimal places) — Average Attainment (On a scale of 3, upto 2 decimal places)

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1.3 Analysis of PO and PSO Attainment
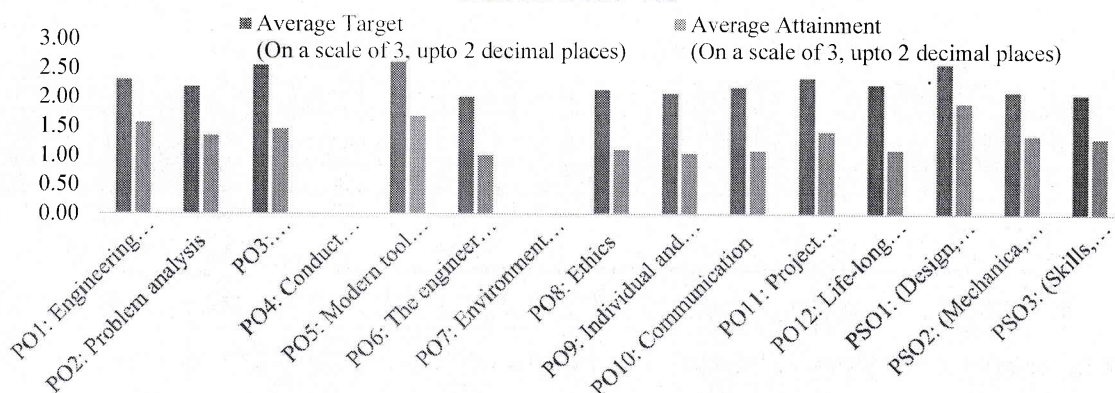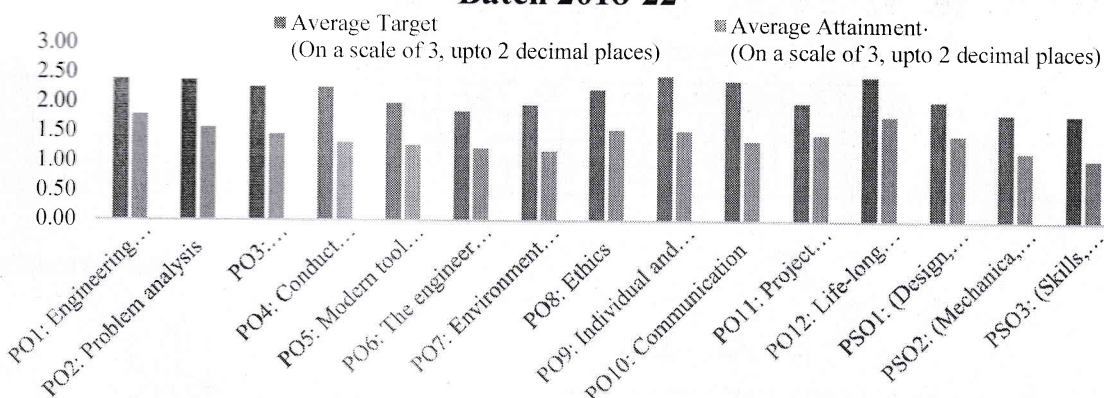
Table 1.1: PO Attainment, Target and Gaps (Batch 2021-25, First Year)

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.06	0.88	-	-	2.02	1.38	1.28	1.25	2.30	1.23	-	1.47	0.76	0.90	0.42
Target	1.81	1.65	-	-	2.50	2.00	2.00	1.94	2.72	2.00	-	2.00	1.44	1.67	1.00
Gap	0.75	0.77	-	-	0.48	0.62	0.72	0.69	0.42	0.77	-	0.53	0.68	0.77	0.58

Table 1.2: PO Attainment, Target and Gaps (Batch 2020-24)

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.87	1.52	1.42	1.59	1.26	1.42	-	1.11	1.25	1.33	1.60	1.27	1.93	1.40	1.34
Target	2.40	2.30	2.22	2.58	2.00	1.67	2.00	2.00	2.05	2.25	2.50	2.08	2.45	2.06	2.01
Gap	0.53	0.78	0.80	1.00	0.74	0.25	-	0.89	0.80	0.92	0.90	0.81	0.52	0.66	0.66

Table 1.3: PO Attainment, Target and Gaps (Batch 2019-23)

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.56	1.34	1.45	-	1.68	1.00	-	1.10	1.03	1.09	1.41	1.10	1.90	1.35	1.29
Target	2.30	2.18	2.55	-	2.60	2.00	-	2.13	2.06	2.17	2.33	2.22	2.57	2.09	2.04
Gap	0.74	0.84	1.10	-	0.92	1.00	-	1.02	1.03	1.08	0.93	1.12	0.67	0.74	0.75

Table 1.4: PO Attainment, Target and Gaps (Batch 2018-22)

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.79	1.57	1.45	1.31	1.27	1.22	1.17	1.53	1.52	1.34	1.46	1.78	1.45	1.17	1.05
Target	2.39	2.37	2.25	2.25	1.98	1.84	1.96	2.22	2.45	2.38	2.00	2.45	2.04	1.83	1.81
Gap	0.60	0.80	0.80	0.94	0.71	0.62	0.79	0.69	0.94	1.03	0.54	0.68	0.59	0.66	0.76

1.4 Observations

Table 1.5: Achieved Level of PO / PSO (Batch 2021-25)

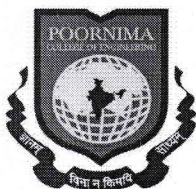| PO / PSO	Achieved Level
PSO3	Below Average (<50%)
PO 1-2,PO6-8,PO10/PSO 1-2	Average (>=50% but <70%)
PO5, PO9, PO12	Above Average (>=70%)

PO-

1. As per Table 1.1 and 1.5, it has been observed that attainment of some of POs achieved up to average level like, PO1, PO2, PO6, PO7, PO8 and PO10.

PSO-

1. As per Table 1.1 and 1.5, it has been observed that PSOs achieved below average due to less understanding of subjects like Engineering Thermodynamics and HVAC&R and Automobile Engineering will be offered in coming semesters of theses batch students.

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Table 1.6: Achieved Level of PO / PSO (Batch 2020-24)

PO / PSO	Achieved Level
-	Below Average (<50%)
PO 2-5,PO 8-12/ PSO 2-3	Average (>=50% but <70%)
PO1, PO6/ PSO1	Above Average (>=70%)

PO-
1. After analysis of the Table 1.2 and Table 1.6 it has been observed that attainment of PO2-PO5 & PO8-PO12 achieved up to average level.

PSO-
1. PSO1 attainment achieved above average level but PSO 2 & 3 achieved up to average level due to not coverage of courses like HVAC&R and Automobile Engineering and open elective courses and COVID effect also impacted the attainment.

Table 1.7: Achieved Level of PO / PSO (Batch 2019-23)

PO / PSO	Achieved Level
PO12	Below Average (<50%)
PO1-3, PO5, PO6,PO8-11/PSO 2-3	Average (>=50% but <70%)
PSO1	Above Average (>=70%)

PO-
1. After analysis of the table 1.3 and Table 1.7 of POs Attainment, it has been observed that the attainment of PO12: Life-long learning is below average, and PO1-3, PO5: Modern tool usage, PO6: The engineer and society, PO8-11are found average.

PSO-
1. As per 1.3 and Table 1.7 there is no any attainment of PSOs are below average, PSO 2-3 are found average and PSO1: Design, Analyze and Innovate Solutions is found above average.

Table 1.8: Achieved Level of PO / PSO (Batch 2018-22)

PO / PSO	Achieved Level
-	Below Average (<50%)
PO 2-10/ PSO 2-3	Average (>=50% but <70%)
PO1, PO11, PO12/PSO1	Above Average (>=70%)

PO-
1. After analysis of the Table 1.4 and Table 1.8 of POs Attainment, it has been observed there is no any attainment of POs are below average, and PO2-10 are average and PO1: Engineering knowledge, PO11: Project management and finance, PO12: Life-long learning are above average.

PSO-
1. As per Table 1.4 and Table 1.8 there is no any attainment of PSOs are below average, PSO 2-3 are found average and PSO1: is above average.
2.

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1.4 Actions Taken For session 2021-22

- Various interdisciplinary courses as electives were introduced by RTU in the new revised curriculum from 2020-21 session. Additionally add on courses were run by the department for the same purpose, therefore; it will help to attain PO4, PO5, PSO2 and PSO3.

- A proposal has been approved for the development of advance automobile and e-vehicle lab for achieving PSO3, PO6 & PO7

- High speed 3D Printing M/C has been ordered to achieve PO5 & PO12.

- For improvement in attainment of PO1-PO4, 5 workshop, 07 technical seminar/ expert lecture and 04 industrial visit were conducted.

- More focus were given on ICT tools for the improvement of teaching learning process (For improvement in attainment of PO1-PO4)

- NSP Projects are given to all the year students to make them understand the importance of team work and upgrade themselves with latest technologies and in turn to have future industrial exposure. They were grouped into teams of choice of their area of interest and are motivated to come up with innovative projects to solve real world problems (For improvement in attainment of PO8-PO12)

- Laboratory and library timing has been extended to improve hands on practice (For improvement in attainment of PO12)

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