



POORNIMA
COLLEGE OF ENGINEERING

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CO, PO and PSO Target and Attainment, Observation and Action Taken Report (2023-24)

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Dr. Mahesh Bunde
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ISI-6, RIICO Institutional Area
Sitapura, JAIPUR



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COLLEGE OF ENGINEERING

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

Department of Electrical Engineering Session 2023-24

B.Tech. in Electrical Engineering

CO, PO and PSO Target and Attainment and Observations and Action Taken Report (EE)

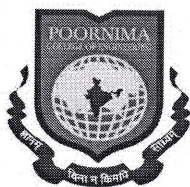
1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I	2023-27	I Year	2.00	1.51
2	1FY2-03	Engineering Chemistry			2.00	1.63
3	1FY1-04	Communication Skills			2.00	1.70
4	1FY3-07	Basic Mechanical Engineering			1.75	1.64
5	1FY3-08	Basic Electrical Engineering			3.00	2.78
6	1FY2-21	Engineering Chemistry Lab			1.88	1.88
7	1FY1-22	Language Lab			2.00	2.00
8	1FY3-25	Manufacturing Practices Workshop			1.87	1.87
9	1FY3-26	Basic Electrical Engineering Lab			3.00	3.00
10	1FY3-28	Computer Aided Engineering Graphics			1.88	1.88
11	2FY2-01	Engineering Mathematics-II			2.50	2.04
12	2FY2-02	Engineering Physics			1.50	1.02
13	2FY1-05	Human Values			2.20	2.20
14	2FY3-06	Programming for Problem Solving			2.00	1.75
15	2FY3-09	Basic Civil Engineering			1.75	1.60
16	2FY2-20	Engineering Physics Lab			1.62	1.62
17	2FY1-23	Human Values Activities and Sports			1.75	1.75
18	2FY3-24	Computer Programming Lab			2.00	2.00
19	2FY3-27	Basic Civil Engineering Lab			1.64	1.64
20	2FY3-29	Computer Aided Machine Drawing			1.87	1.87
21	3EE2-01	Advance Mathematics	2022-26	II Year	2.20	1.22
22	3EE1-02	Technical Communication			2.75	2.65
23	3EE3-04	Power Generation Process			2.37	1.94
24	3EE4-05	Electrical circuit analysis			2.37	1.03
25	3EE4-06	Analog Electronics			2.50	1.73
26	3EE4-07	Electrical Machine-I			2.50	1.28
27	3EE4-08	Electromagnetic field			2.62	1.75
28	3EE4-21	Analog Electronics Lab			2.75	2.52
29	3EE4-22	Electrical Machine-I Lab			2.20	2.08
30	3EE4-23	Electrical circuit Design Lab			2.25	2.16

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31	3EE7-30	Industrial Training			2.75	2.35
32	4EE2-01	Biology			2.50	2.23
33	4EE1-03	Managerial Economics and financial Accounting			2.75	2.52
34	4EE3-04	Electronic Measurement & Instrumentation			2.50	1.74
35	4EE4-05	Electrical Machine - II			2.25	1.17
36	4EE4-06	Power Electronics			2.87	1.84
37	4EE4-07	Signals & Systems			2.75	1.60
38	4EE4-08	Digital Electronics			2.90	1.74
39	4EE4-21	Electrical Machine – II Lab			2.40	2.26
40	4EE4-22	Power Electronics Lab			3.00	2.31
41	4EE4-23	Digital Electronics Lab			2.87	2.77
42	4EE4-24	Measurement Lab			3.00	2.69
43	5EE3-01	Electrical Materials	2021-25	III Year	2.20	2.02
44	5EE4-02	Power System - I			2.50	2.25
45	5EE4-03	Control System			2.50	2.10
46	5EE4-04	Microprocessor			2.37	1.77
47	5EE4-05	Electrical Machine Design			2.37	1.81
48	5EE5-11	Restructured Power System			1.70	1.33
49	5EE4-21	Power System - I Lab			2.25	2.22
50	5EE4-22	Control System Lab			2.90	2.90
51	5EE4-23	Microprocessor Lab			2.73	2.73
52	5EE4-24	System Programming Lab			2.20	2.17
53	5EE7-30	Industrial Training			2.75	2.68
54	6EE3-01	Computer Architecture			2.37	2.18
55	6EE4-02	Power System - II			2.37	1.68
56	6EE4-03	Power System Protection			2.50	2.17
57	6EE4-04	Electrical Energy Conversion and Auditing			2.75	2.75
58	6EE4-05	Electric Drives			2.37	1.80
59	6EE5-11	Power System Planning.			-	-
60	6EE5-13	Electrical and Hybrid Vehicles.			2.75	2.22
61	6EE4-21	Power System - II Lab			2.30	2.12
62	6EE4-22	Electric Drives Lab			2.20	2.17
63	6EE4-23	Power System Protection Lab			3.00	2.68
64	6EE4-24	Modelling and simulation lab			3.00	3.00
65	7EE5-11	Wind and Solar Energy Systems.	2020-24	IV Year	-	-
66	7EE4-12	Power Quality and Facts			3.00	2.89
67	7CE6-60.1	EIA			1.37	1.37
68	7CS6-60.1	QM ISO 9001			-	-
69	7CS6-60.2	CS			-	-

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70	7EC6-60.1	PEC			2.43	2.43
71	7EC6-60.2	MSST			3.00	3.00
72	7ME6-60.2	QM			-	-
73	7EE4-21	Embedded Systems Lab			2.41	2.41
74	7EE4-22	Advance control system lab			2.30	2.30
75	7EE7-30	Industrial Training			2.75	2.59
76	7EE7-40	Seminar			2.25	2.06
77	8EE4-11	HVDC Transmission System.			2.37	2.17
78	8EE4-13	Advanced Electric Drives			-	-
79	8CE6-60.1	CM			1.45	1.13
80	8CE6-60.2	FSE			-	-
81	8CS6-60.1	BDA			-	-
82	8CS6-60.2	IPR			2.75	0.92
83	8EC6-60.1	IBRF			2.77	2.40
84	8EC6-60.2	RC			2.51	2.51
85	8ME6-60.2	OR			-	-
86	8EE4-21	Energy Systems Lab			2.50	2.33
87	8EE7-50	Project			3.00	2.83

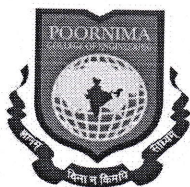
1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge	2023-27	I Year	1.94	1.04
2	PO2: Problem analysis			1.90	1.01
3	PO3: Design/development of solutions			2.50	0.17
4	PO4: Conduct investigations of complex problems.			2.00	0.16
5	PO5: Modern tool usage			2.38	1.69
6	PO6: The engineer and society			1.80	0.89
7	PO7: Environment and sustainability			1.84	0.80
8	PO8: Ethics			1.94	0.89
9	PO9: Individual and team work.			2.34	1.65
10	PO10: Communication			2.00	1.04
11	PO11: Project management and finance			2.50	1.81
12	PO12: Life-long learning			2.00	1.08
13	PSO1: Fundamental knowledge for the society benefit.			-	-
14	PSO2: Professionally communicate using modern tools.			-	-

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15	PSO3: Specific knowledge of renewable and green energy, EV and smart grids.			-	-
16	PO1: Engineering knowledge	2022-26	II Year	2.32	1.22
17	PO2: Problem analysis			2.12	0.91
18	PO3: Design/development of solutions			2.25	1.06
19	PO4: Conduct investigations of complex problems.			2.33	0.86
20	PO5: Modern tool usage			2.63	2.02
21	PO6: The engineer and society			2.67	1.88
22	PO7: Environment and sustainability			2.00	0.88
23	PO8: Ethics			2.25	1.18
24	PO9: Individual and team work.			2.63	1.99
25	PO10: Communication			2.25	1.15
26	PO11: Project management and finance			2.50	1.52
27	PO12: Life-long learning			2.50	1.70
28	PSO1: Fundamental knowledge for the society benefit.			2.27	0.93
29	PSO2: Professionally communicate using modern tools.			2.00	1.18
30	PSO3: Specific knowledge of renewable and green energy, EV and smart grids.			2.25	1.00
31	PO1: Engineering knowledge	2021-25	III Year	2.31	1.28
32	PO2: Problem analysis			2.29	1.25
33	PO3: Design/development of solutions			1.70	0.73
34	PO4: Conduct investigations of complex problems.			2.21	0.86
35	PO5: Modern tool usage			2.34	1.48
36	PO6: The engineer and society			2.45	1.66
37	PO7: Environment and sustainability			2.07	1.03
38	PO8: Ethics			2.36	1.38
39	PO9: Individual and team work.			2.45	1.59
40	PO10: Communication			2.08	1.12
41	PO11: Project management and finance			1.60	0.63
42	PO12: Life-long learning			2.45	1.71
43	PSO1: Fundamental knowledge for the society benefit.			1.82	0.75
44	PSO2: Professionally communicate using modern tools.			1.90	1.01
45	PSO3: Specific knowledge of renewable and green energy, EV and smart grids.			1.67	0.72

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Sl. No.	PO/PSO	2020-24	IV Year	2023-24	2022-23
46	PO1: Engineering knowledge			2.41	1.54
47	PO2: Problem analysis			2.28	1.34
48	PO3: Design/development of solutions			2.47	1.37
49	PO4: Conduct investigations of complex problems.			2.43	1.19
50	PO5: Modern tool usage			2.52	1.69
51	PO6: The engineer and society			2.35	1.41
52	PO7: Environment and sustainability			2.17	1.19
53	PO8: Ethics			2.48	1.65
54	PO9: Individual and team work.			2.65	1.83
55	PO10: Communication			2.46	1.55
56	PO11: Project management and finance			2.37	1.47
57	PO12: Life-long learning			2.24	1.23
58	PSO1: Fundamental knowledge for the society benefit.			1.78	0.71
59	PSO2: Professionally communicate using modern tools.			1.67	0.71
60	PSO3: Specific knowledge of renewable and green energy, EV and smart grids.			1.49	0.59

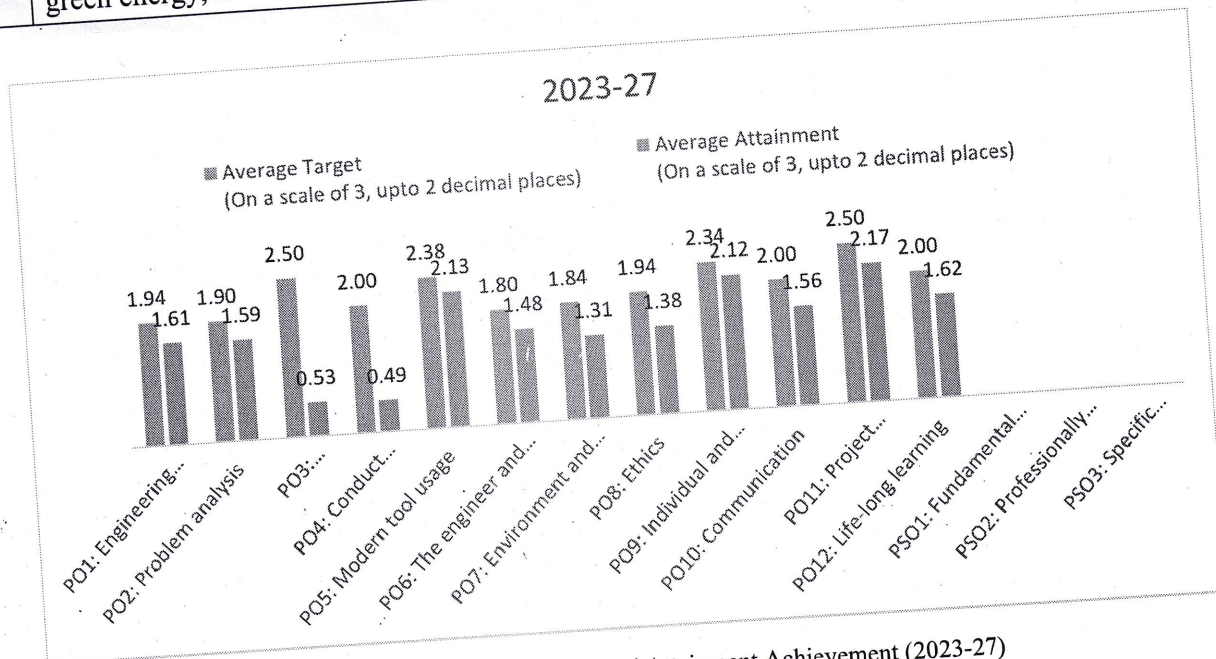


Figure 1.1: PO/PSO Average Target and Attainment Achievement (2023-27)

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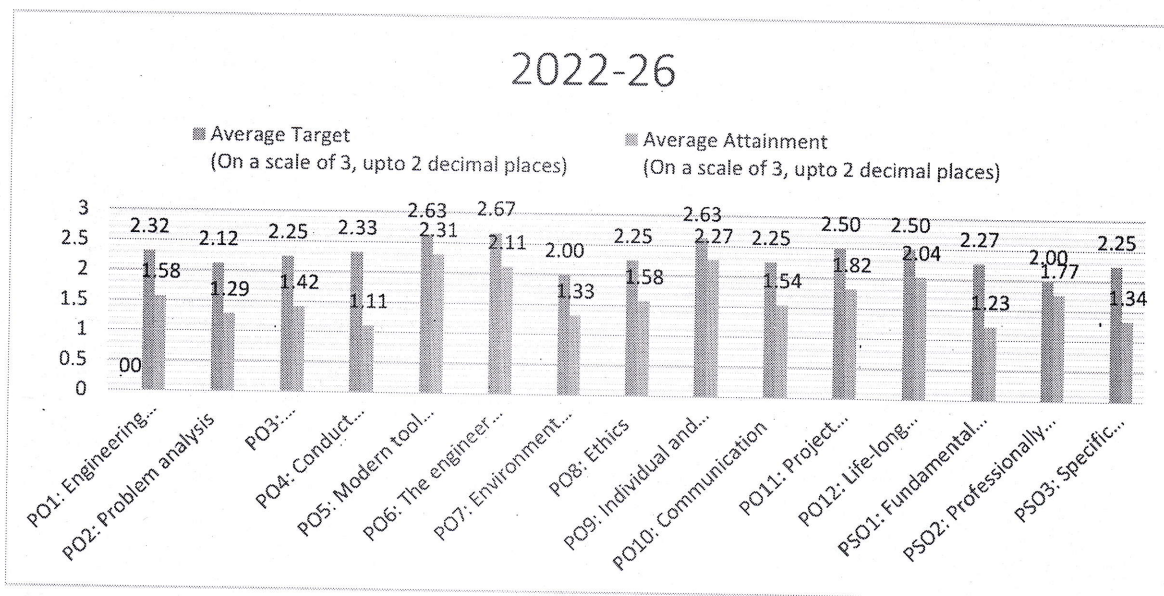


Figure 1.2: PO/PSO Average Target and Attainment Achievement (2022-26)

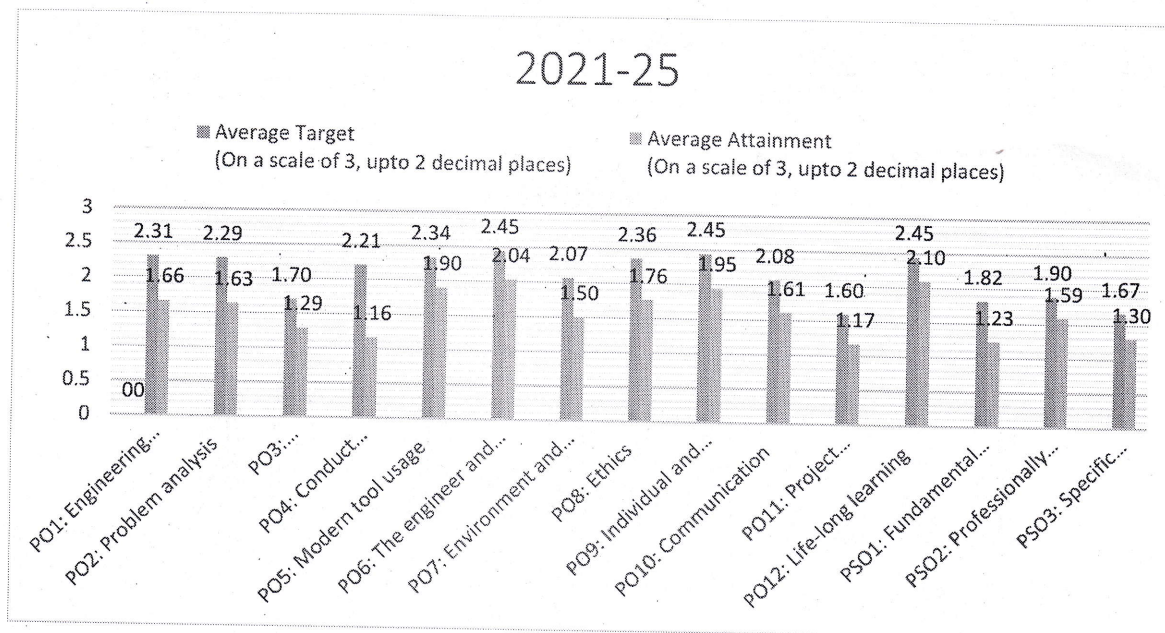


Figure 1.3: PO/PSO Average Target and Attainment Achievement (2021-25)



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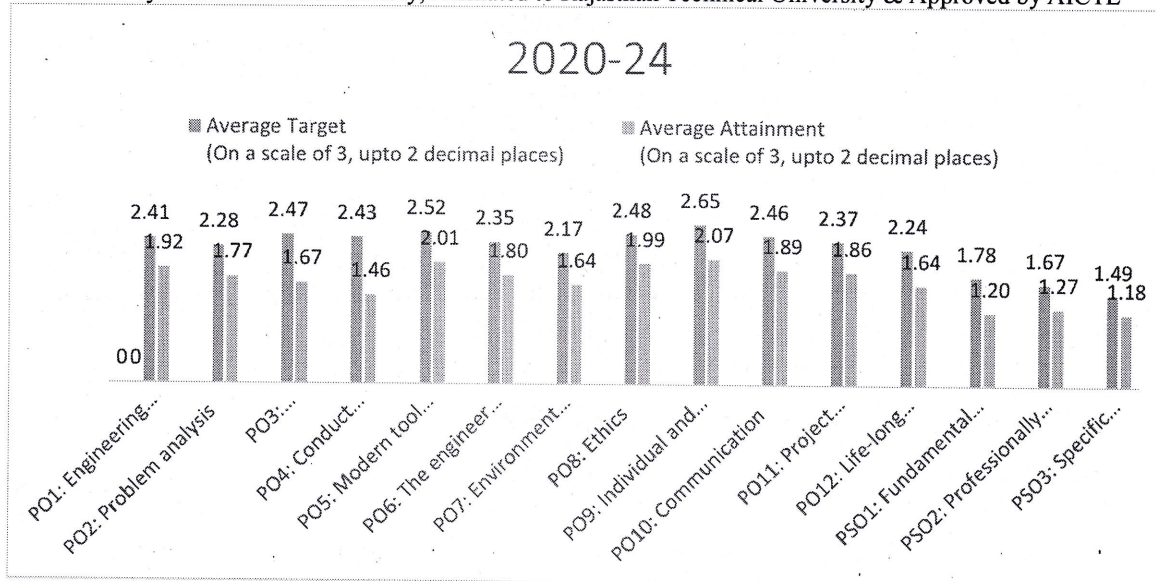


Figure 1.4: PO/PSO Average Target and Attainment Achievement (2020-24)

1.3 Analysis of PO and PSO Attainment

Batch 2023-2027

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	1.34	1.31	2.16	0.67	2.01	1.20	0.97	1.19	2.06	1.43	2.19	1.38	-	-	-
Target	1.94	1.90	2.50	2.00	2.38	1.80	1.84	1.94	2.34	2.00	2.50	2.00	-	-	-
Gap	0.60	0.59	0.34	1.34	0.38	0.60	0.87	0.75	0.28	0.58	0.32	0.63	-	-	-

Batch 2022-2026

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	1.31	0.96	1.11	0.78	2.25	2.02	1.00	1.45	2.25	1.41	1.79	1.94	0.88	1.61	1.02
Target	2.32	2.12	2.25	2.33	2.63	2.67	2.00	2.25	2.63	2.25	2.50	2.50	2.27	2.00	2.25
Gap	1.01	1.17	1.15	1.55	0.38	0.65	1.00	0.81	0.38	0.85	0.71	0.56	1.39	0.40	1.23

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Batch 2021-2025

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	1.40	1.37	0.92	0.83	1.72	1.90	1.21	1.66	1.84	1.48	0.96	2.01	0.87	1.36	0.96
Target	2.31	2.29	1.70	2.21	2.34	2.45	2.07	2.36	2.45	2.08	1.60	2.45	1.82	1.90	1.67
Gap	0.91	0.93	0.78	1.39	0.62	0.55	0.86	0.70	0.61	0.60	0.64	0.44	0.95	0.54	0.71

Batch 2020-2024

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	1.53	1.40	1.21	1.85	1.60	1.39	1.93	1.97	1.80	1.76	1.43	0.83	0.95	0.82
Target	2.41	2.28	2.47	2.43	2.52	2.35	2.17	2.48	2.65	2.46	2.37	2.24	1.78	1.67	1.49
Gap	0.68	0.75	1.07	1.22	0.67	0.75	0.78	0.55	0.68	0.67	0.61	0.81	0.95	0.72	0.67

1.4 Observations

Table 1.5: Achieved Level of PO / PSO (Batch 2023-27)

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

Batch (2023-27): After analysis of the table 1.5 of PO / PSO attainment for batch 2023-27, it has been observed that There is no attainment are falling are above average (<50). PO1, PO2, PO4, PO6, PO7, PO8 and PO12 are falling below average are attainment on average level (>50% but less than 70%). PO3, PO5, PO9, PO10 and PO11 are above average (>70 %).

Table 1.6: Achieved Level of PO / PSO (Batch 2022-26)

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

Batch (2022-26): After analysis of the table 1.6 of PO / PSO attainment for batch 2022-26, it has been observed that PO2, PO3, PO4, PSO1 and PSO3 are falling below average (<50%). PO1, PO7, PO8 and PO10 is falling

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Table 1.7: Achieved Level of PO / PSO (Batch 2021-25)

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

Batch (2021-25): After analysis of the table 1.7 of PO / PSO attainment for batch 2021-25, it has been observed that PO4 and PSO1 are falling below average ($<50\%$). PO1, PO2, PO3, PO7, PO11 and PSO2 attainment on average level ($>50\%$ but less than 70%). There is PO5, PO6, PO8, PO9, PO10, PO12 and PSO2 are falling are above average ($>70\%$).

Table 1.8: Achieved Level of PO / PSO (Batch 2020-24)

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

Batch (2020-24): After analysis of the table 1.8 of PO / PSO attainment for batch 2020-24, it has been observed that PO3, PSO1, PSO2 and PSO3 attainment are falling below average ($<50\%$). PO2, PO3, PO6, PO7 and PO12 attainment on average level ($>50\%$ but less than 70%). There is PO1, PO5, PO8, PO9, PO10 and PO11 are falling 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 session with industrial experts to improve the attainment level in PO3 and PO4.
- Add on courses for hands on in power point presentation, Google meet, and latex are planned for strengthening PSO1.
- 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 PO2.



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Department of Advance Computing

Session 2023-24

B. Tech. in Artificial Intelligence (AI) & Data Science

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1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I	2023-27	I Year	2.00	1.68
2	1FY2-03	Engineering Chemistry			2.00	1.75
3	1FY1-04	Communication Skills			1.80	1.79
4	1FY3-07	Basic Mechanical Engineering			1.75	1.69
5	1FY3-08	Basic Electrical Engineering			3.00	2.56
6	1FY2-21	Engineering Chemistry Lab			1.88	1.88
7	1FY1-22	Language Lab			2.00	2.00
8	1FY3-26	Basic Electrical Engineering Lab			3.00	3.00
9	1FY3-25	Manufacturing Practices Workshop			1.88	1.88
10	1FY3-28	Computer Csed Engineering Graphics			1.38	1.38
11	2FY2-01	Engineering Mathematics-II			2.50	2.03
12	2FY2-02	Engineering Physics			1.50	1.15
13	2FY1-05	Human Values			2.20	2.19
14	2FY3-06	Programming For Problem Solving			2.00	1.95
15	2FY3-09	Basic Civil Engineering			2.00	1.95
16	2FY2-20	Engineering Physics Lab			1.63	1.63
17	2FY1-23	Human Values Activities And Sports			1.75	1.75
18	2FY3-24	Computer Programming Lab			2.00	2.00
19	2FY3-27	Basic Civil Engineering Lab			1.75	1.75
20	2FY3-29	Computer Csed Machine Drawing			1.63	1.63
21	3AID2-01	Advanced Engineering Mathematics	2022-26	II Year	2.25	1.50
22	3AID1-03	Managerial Economics And Financial Accounting			1.41	0.56
23	3AID3-04	Digital Electronics			2.25	1.46
24	3AID4-05	Data Structures And Algorithms			2.75	1.83
25	3AID4-06	Object Oriented Programming			2.33	1.55
26	3AID4-07	Software Engineering			2.50	1.67
27	3AID4-21	Data Structures And Algorithms Lab			2.00	1.95
28	3AID4-22	Object Oriented Programming Lab			2.00	1.95

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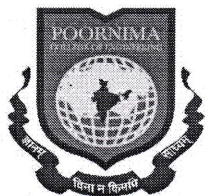
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29	3AID4-23	Software Engineering Lab			2.00	1.92
30	3AID4-24	Digital Electronics Lab			2.00	1.95
31	3AID7-30	Industrial Training			2.92	1.46
32	4AID2-01	Discrete Mathematics Structure			2.25	1.80
33	4AID1-02	Technical Communication			2.75	1.83
34	4AID3-04	Microprocessor & Interfaces			2.20	1.44
35	4AID4-05	Database Management System			1.88	1.31
36	4AID4-06	Theory Of Computation			2.00	1.40
37	4AID4-07	Data Communication And Computer Networks			2.00	1.40
38	4AID4-21	Microprocessor & Interfaces Lab			1.80	1.75
39	4AID4-22	Database Management System Lab			2.23	2.19
40	4AID4-23	Network Programming Lab			2.00	1.96
41	4AID4-24	Linux Shell Programming Lab			2.00	2.00
42	4AID4-25	Java Lab			2.00	2.25
43	5AID3-01	Data Mining-Concepts And Techniques	2021-25	III Year	2.08	1.64
44	5AID4-02	Compiler Design			2.75	2.16
45	5AID4-03	Operating System			2.75	1.99
46	5AID4-04	Computer Graphics & Multimedia			2.25	1.77
47	5AID4-05	Analysis Of Algorithms			2.75	2.16
48	5AID5-11	Fundamentals Of Blockchain			2.00	1.53
49	5AID5-12	Probability & Statistics For Data			2.50	1.61
50	5AID4-21	Computer Graphics & Multimedia Lab			2.60	2.53
51	5AID4-22	Compiler Design Lab			2.75	1.94
52	5AID4-23	Analysis Of Algorithms Lab			2.60	2.53
53	5AID4-24	Advance Java Lab			3.00	2.92
54	5AID7-30	Industrial Training			2.95	2.85
55	6AID3-01	Digital Image Processing			2.00	1.63
56	6AID4-02	Machine Learning			2.75	2.25
57	6AID4-03	Information Security System			2.33	1.90
58	6AID4-04	Computer Architecture And Organization			2.60	2.12
59	6AID4-05	Principals Of Artificial Intelligence			2.50	2.04
60	6AID4-06	Cloud Computing			2.00	1.55
61	6AID5-11	Artificial Neural Network			3.00	2.46
62	6AID5-12	Natural Language Processing (Nlp)			2.42	1.54
63	6AID5-13	Nature Inspired Computing			2.13	1.90
64	6AID4-21	Digital Image Processing Lab			2.00	1.95
65	6AID4-22	Machine Learning Lab			2.00	1.93

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66	6AID4-23	Python Lab			2.00	1.95
67	6AID4-24	Mobile Application Development Lab			2.00	1.99

1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge	2023-27	I Year	1.87	1.41
2	PO2: Problem analysis			1.89	1.42
3	PO3: Design/development of solutions			3	2.45
4	PO4: Conduct investigations of complex problems.			3	1.17
5	PO5: Modern tool usage			2.50	2.00
6	PO6: The engineer and society			2.00	1.39
7	PO7: Environment and sustainability			2.00	1.42
8	PO8: Ethics			2.00	1.35
9	PO9: Individual and team work.			2.17	1.90
10	PO10: Communication			1.84	1.39
11	PO11: Project management and finance			3	2.78
12	PO12: Life-long learning			2.00	1.36
13	PSO1: Computing Knowledge			1.00	0.58
14	PSO2 :Evolutionary changes in computing				
15	PSO3: Modern computing tools				
16	PO1: Engineering knowledge	2022-26	II Year	2.02	1.31
17	PO2: Problem analysis			2.05	1.23
18	PO3: Design/development of solutions			2.70	1.91
19	PO4: Conduct investigations of complex problems.			2.52	1.61
20	PO5: Modern tool usage			2.29	1.65
21	PO6: The engineer and society			1.50	1.35
22	PO7: Environment and sustainability			1.67	1.39
23	PO8: Ethics			1.88	1.17
24	PO9: Individual and team work.			2.19	1.79
25	PO10: Communication			2.31	1.68
26	PO11: Project management and finance			2.67	2.09
27	PO12: Life-long learning			2.13	1.53
28	PSO1: Computing Knowledge			2.05	1.19

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29	PSO2 :Evolutionary changes in computing	2021-25	III	1.95	1.03
30	PSO3: Modern computing tools			2.04	1.08
31	PO1: Engineering knowledge			2.21	1.49
32	PO2: Problem analysis			2.23	1.52
33	PO3: Design/development of solutions			2.15	1.71
34	PO4: Conduct investigations of complex problems.			2.39	1.36
35	PO5: Modern tool usage			2.28	1.52
36	PO6: The engineer and society			2.10	1.42
37	PO7: Environment and sustainability			2.17	1.47
38	PO8: Ethics			2.00	1.19
39	PO9: Individual and team work.			2.47	1.77
40	PO10: Communication			2.31	1.49
41	PO11: Project management and finance			2.56	1.67
42	PO12: Life-long learning			2.01	1.25
43	PSO1:Computing Knowledge			1.95	1.26
44	PSO2 :Evolutionary changes in computing			2.05	1.34
45	PSO3: Modern computing tools			1.84	1.21

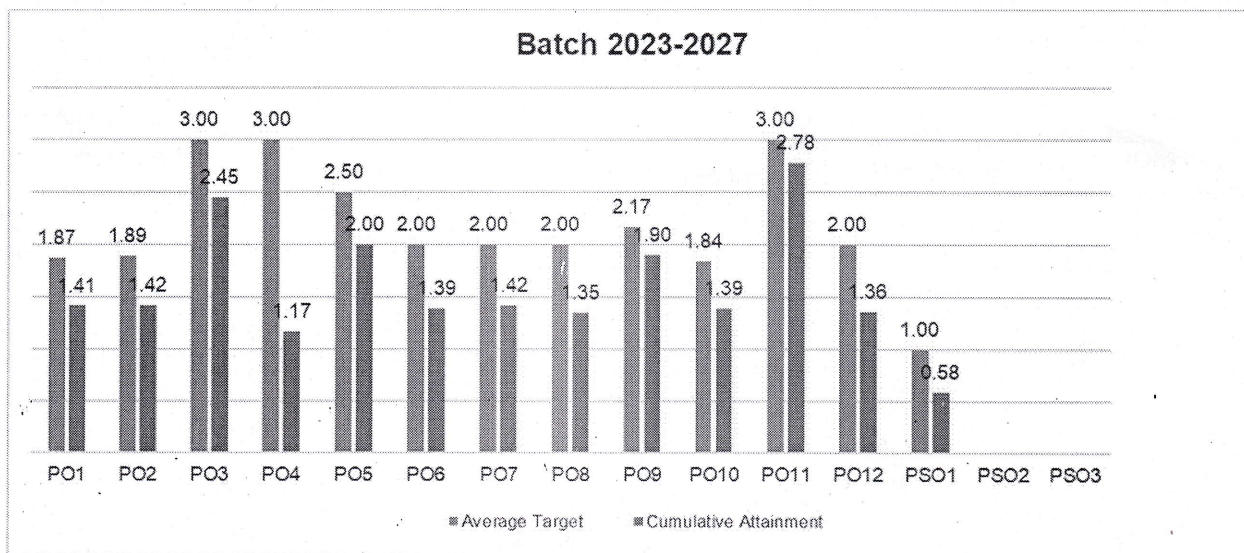


Figure 1: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2023-27

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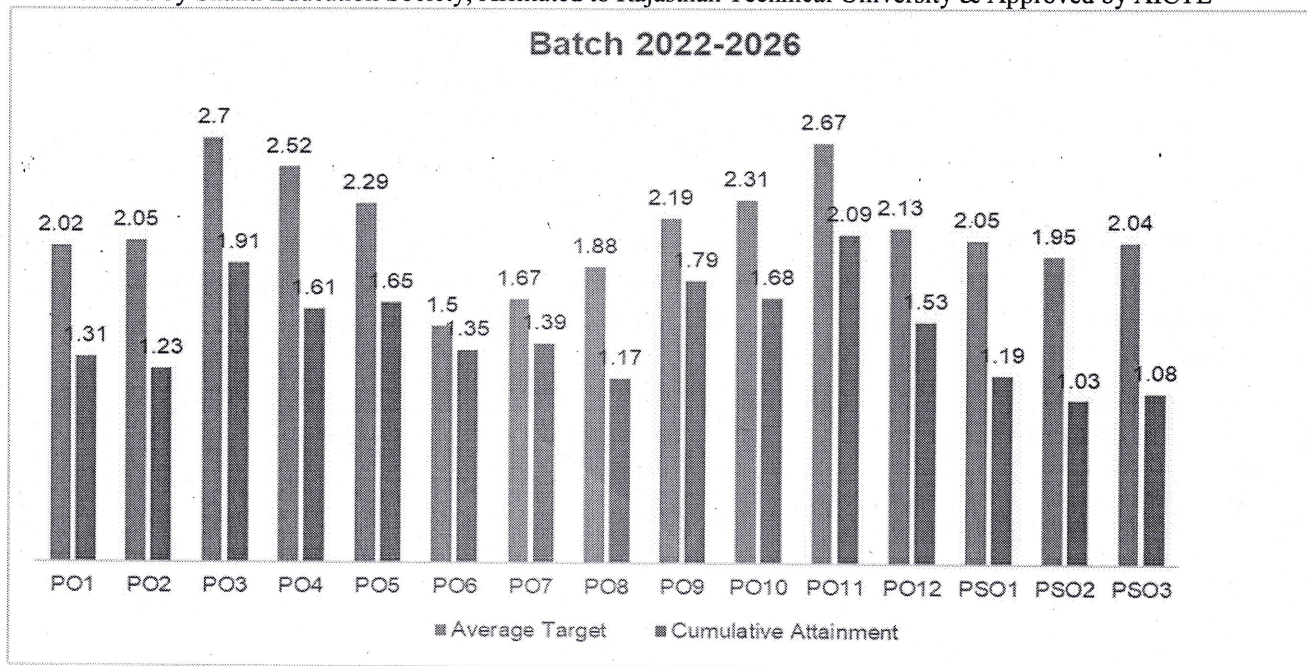


Figure 2: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2022-26

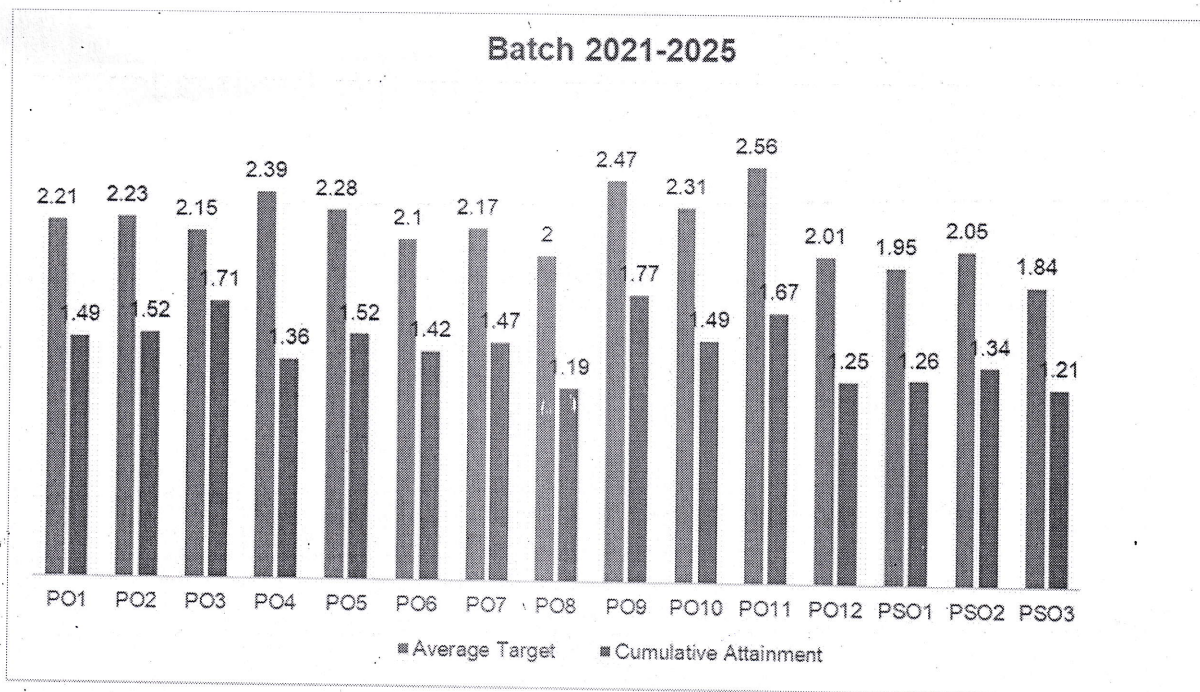


Figure 3: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2021-25

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1.3 Analysis of PO and PSO Attainment

Batch: 2023-27

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	1.41	1.42	2.45	1.17	2.00	1.39	1.42	1.35	1.90	1.39	2.78	1.36	0.58	-	-
Target	1.87	1.89	3.00	3.00	2.50	2.00	2.00	2.00	2.17	1.84	3.00	2.00	1.00	-	-
Gap	0.87	0.86	0.31	0.61	1.10	1.08	0.41	0.76	0.94	0.99	0.71	0.85	0.62	-	-

Batch: 2022-26

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	1.31	1.23	1.91	1.61	1.65	1.35	1.39	1.17	1.79	1.68	2.09	1.53	1.19	1.03	1.08
Target	2.02	2.05	2.7	2.52	2.29	1.50	1.67	1.88	2.19	2.31	2.67	2.13	2.05	1.95	2.04
Gap	0.69	0.69	1.24	1.24	1.18	1.08	0.41	0.89	0.70	0.74	0.71	0.74	0.47	0.92	0.07

Batch: 2021-25

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	1.37	1.21	1.36	1.58	1.29	1.07	1.29	1.20	1.67	1.35	2.09	1.18	1.00	1.19	0.93
Target	1.49	1.52	1.71	1.36	1.52	1.42	1.47	1.19	1.77	1.49	1.67	1.25	1.26	1.34	1.21
Gap	0.87	0.86	0.31	0.61	1.10	1.08	0.41	0.76	0.94	0.99	0.71	0.85	0.62	1.90	0.51

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1.4 Observations

Table 1.4: Achieved Level of PO / PSO (Batch 2023-27)

PO / PSO	Achieved Level
PO4	Below Average (<50%)
PO6, PO8, PO12, PSO1	Average ($\geq 50\%$ but $< 70\%$)
PO1, PO2, PO3, PO5, PO6, PO7, PO9, PO11	Above Average ($\geq 70\%$)

Batch (2023-27): After analysis of the table 1.4 of PO / PSO achieved level for batch 2023-27, it has been observed that PO4 attainment level are falling below average. PO6, PO8, PO12, PSO1 are attainment on average level. PO1, PO2, PO3, PO5, PO6, PO7, PO9, PO11 are attainment on above average level.

Table 1.5: Achieved Level of PO / PSO (Batch 2022-26)

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

Batch (2022-26): After analysis of the table 1.5 of PO / PSO achieved level for batch 2022-26, it has been observed that attainment level PO1, PO2, PO4, PO8, PSO1, PSO2 and PSO3 are attainment on average level. PO3, PO5, PO6, PO7, PO9, PO10, PO11, PO12 are attainment on above average level.

Table 1.6: Achieved Level of PO / PSO (Batch 2021-25)

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

Batch (2021-25): After analysis of the table 1.6 of PO / PSO achieved level for batch 2021-25, it has been observed that attainment level are falling below average. PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2, PSO3 are attainment on average level.

1.5 Actions Taken

- Introduced targeted workshops and supplementary learning resources focusing on the areas of **PO4**..
- Special remediation classes were organized to address the weaknesses identified in **PO7, PO10, and PO12**..
- Guided project-based learning sessions incorporating research methodologies and data analysis techniques for intricate engineering problem-solving involving NSP Projects in **PO3**.

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- Across the batches, outcomes such as **PO7**, **PO10**, and **PO12** consistently show below-average performance. Identifying the underlying reasons—whether it's curriculum design, teaching methods, or student engagement—could help address these issues.
- Supplementary online resources, including video tutorials, online quizzes, and discussion forums, were made available to students to facilitate self-learning and better understanding of PO6, PO8, PO12, PSO1
- Conducted workshops integrating AI tools for software development; provided cybersecurity training for emerging threats, fostering teamwork for ethical solutions in industry and society for PSO1, PSO2, PSO3



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Department of Computer Engineering

Session 2023-24

B. Tech in Computer Engineering

CO, PO and PSO Target and Attainment and Observations and Action Taken Report

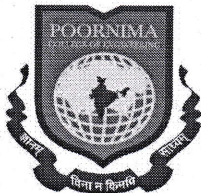
1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I	2023-27	I Year	2.00	1.54
2	1FY2-03	Engineering Chemistry			2.00	1.75
3	1FY1-04	Communication Skills			2.00	1.93
4	1FY3-07	Basic Mechanical Engineering			1.75	1.69
5	1FY3-08	Basic Electrical Engineering			3.00	2.64
6	1FY2-21	Engineering Chemistry Lab			1.87	1.83
7	1FY1-22	Language Lab			2.00	2.00
8	1FY3-26	Basic Electrical Engineering Lab			3.00	2.97
9	1FY3-25	Manufacturing Practices Workshop			1.87	1.86
10	1FY3-28	Computer Aided Engineering Graphics			1.87	1.86
11	2FY2-01	Engineering Mathematics-II			2.50	2.17
12	2FY2-02	Engineering Physics			1.50	1.14
13	2FY1-05	Human Values			2.20	2.08
14	2FY3-06	Programming for Problem Solving			2.00	1.82
15	2FY3-09	Basic Civil Engineering			1.75	1.64
16	2FY2-20	Engineering Physics Lab			1.75	1.74
17	2FY1-23	Human Values Activities and Sports			1.75	1.72
18	2FY3-24	Computer Programming Lab			2.00	1.96
19	2FY3-27	Basic Civil Engineering Lab			1.64	1.60
20	2FY3-29	Computer Aided Machine Drawing			1.88	1.83
1	3CS2-01	Advanced Engineering Mathematics	2022-26	II Year	2.25	1.81
2	3CS1-03	Managerial Economics and Financial Accounting			2.14	0.85
3	3CS3-04	Digital Electronics			2.25	1.62
4	3CS4-05	Data Structures and Algorithms			2.75	2.22
5	3CS4-06	Object Oriented Programming			2.50	1.86
6	3CS4-07	Software Engineering			2.50	2.16

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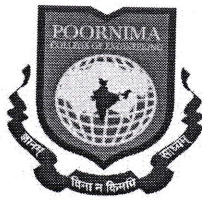
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7	3CS4-21	Data Structures and Algorithms Lab			2.00	1.66
8	3CS4-22	Object Oriented Programming Lab			2.13	2.05
9	3CS4-23	Software Engineering Lab			2.50	2.41
10	3CS4-24	Digital Electronics Lab			2.00	1.86
11	3CS7-30	Industrial Training			2.50	2.06
12	4CS2-01	Discrete Mathematics Structure			2.25	1.84
13	4CS1-02	Technical Communication			2.75	2.13
14	4CS3-04	Microprocessor & Interfaces			2.20	1.46
15	4CS4-05	Database Management System			1.87	1.25
16	4CS4-06	Theory of Computation			2.00	1.34
17	4CS4-07	Data Communication and Computer Networks			2.00	1.33
18	4CS4-21	Microprocessor & Interfaces Lab			1.80	1.75
19	4CS4-22	Database Management System Lab			2.23	2.17
20	4CS4-23	Network Programming Lab			2.00	1.96
21	4CS4-24	Linux Shell Programming Lab			2.00	1.97
22	4CS4-25	Java Lab			2.25	2.19
23	5CS3-01	Information Theory & Coding	2021-25	III Year	2.25	1.87
24	5CS4-02	Compiler Design			2.75	2.42
25	5CS4-03	Operating System			2.75	2.28
26	5CS4-04	Computer Graphics & Multimedia			2.25	1.79
27	5CS4-05	Analysis of Algorithms			2.75	2.08
28	5CS5-11	Wireless Communication			2.50	2.23
29	5CS5-12	Human Computer Interaction			2.50	1.99
30	5CS4-21	Computer Graphics & Multimedia Lab			2.00	1.84
31	5CS4-22	Compiler Design Lab			2.00	1.77
32	5CS4-23	Analysis of Algorithms Lab			2.40	1.69
33	5CS4-24	Advance Java Lab			2.00	1.95
34	5CS7-30	Industrial Training			2.00	1.73
35	6CS3-01	Digital Image Processing			2.00	1.70
36	6CS4-02	Machine Learning			2.75	2.26
37	6CS4-03	Information Security System			2.33	2.07
38	6CS4-04	Computer Architecture and Organization			2.60	2.24
39	6CS4-05	Artificial Intelligence			2.50	2.31
40	6CS4-06	Cloud Computing			2.00	1.76
41	6CS5-11	Distributed System			2.40	1.89
42	6CS5-13	Ecommerce and ERP			2.25	1.42

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43	6CS4-21	Digital Image Processing Lab			2.00	1.94
44	6CS4-22	Machine Learning Lab			3.00	2.95
45	6CS4-23	Python Lab			2.00	1.97
46	6CS4-24	Mobile Application Development Lab			2.00	1.86
47	7CS4-01	Internet of Things	2020-24	IV Year	2.50	1.86
50	7CS4-21	Internet of Things Lab			3.00	2.92
51	7CS4-22	Cyber Security Lab			2.00	1.92
52	7CS7-30	Industrial Training			2.50	1.46
53	7CS7-40	Seminar			2.00	1.22
54	7CE6-60.1	Environmental Impact Analysis			1.75	1.43
55	7CE6-60.2	Disaster Management			1.85	1.23
56	7EE6-60.1	Electrical Machines and Drives			2.25	2.05
57	7EE6-60.2	Power Generation Sources			2.60	2.60
58	7EC6-60.1	Principle of Electronic communication			3.00	2.38
59	7EC6-60.2	Micro and Smart System Technology			3.00	2.32
60	7ME6-60.1	Finite Element Analysis			1.00	0.11
61	7ME6-60.2	Quality Management			2.50	2.08
62	8CS4-01	Big Data Analytics			2.00	1.63
63	8CS4-21	Big Data Analytics Lab			3.00	2.91
64	8CS4-22	Software Testing and Validation Lab			3.00	2.91
65	8CS7-50	Project			2.85	1.90
66	8CE6-60.1	Composite Materials			2	1.43
67	8CE6-60.2	Fire and Safety Engineering			2.5	2.10
68	8EC6-60.1	Industrial and Biomedical applications of RF Energy			3	2.55
69	8EC6-60.2	Robotics and control			3	1.98
70	8EE6-60.1	Energy Audit and Demand side Management			2.25	2.20
71	8EE6-60.2	Soft Computing			3	3.00
72	8ME6-60.1	Operations Research			2	1.49
73	8ME6-60.2	Simulation Modeling and Analysis			2.75	2.69

1.2 PO and PSO-Target and Attainment

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S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge	2023-27	I Year	2.03	1.56
2	PO2: Problem analysis			1.97	1.52
3	PO3: Design/development of solutions			2.5	1.95
4	PO4: Conduct investigations of complex problems.			2	0.94
5	PO5: Modern tool usage			2.38	2.03
6	PO6: The engineer and society			1.80	1.53
7	PO7: Environment and sustainability			1.75	1.31
8	PO8: Ethics			1.94	1.42
9	PO9: Individual and team work.			2.34	2.01
10	PO10: Communication			2.17	1.51
11	PO11: Project management and finance			2.5	2.21
12	PO12: Life-long learning			2.00	1.39
13	PSO1: Computing Knowledge			1.00	0.84
14	PSO2: Evolutionary changes in computing			-	-
15	PSO3: Modern computing tools			-	-
16	PO1: Engineering knowledge	2022-26	II Year	2.02	1.36
17	PO2: Problem analysis			2.05	1.42
18	PO3: Design/development of solutions			2.70	2.04
19	PO4: Conduct investigations of complex problems.			2.52	1.45
20	PO5: Modern tool usage			2.29	1.70
21	PO6: The engineer and society			2.00	1.38
22	PO7: Environment and sustainability			1.67	1.47
23	PO8: Ethics			1.88	1.48
24	PO9: Individual and team work.			2.19	1.78
25	PO10: Communication			2.31	1.79
26	PO11: Project management and finance			2.67	1.86
27	PO12: Life-long learning			2.13	1.62
28	PSO1: Computing Knowledge			2.05	1.19
29	PSO2: Evolutionary changes in computing			1.95	1.11
30	PSO3: Modern computing tools	2021-25	III Year	2.04	1.27
31	PO1: Engineering knowledge			2.13	1.56
32	PO2: Problem analysis			2.24	1.57
33	PO3: Design/development of solutions			2.61	1.98
34	PO4: Conduct investigations of complex problems.			2.44	1.52

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35	PO5: Modern tool usage			2.32	1.81
36	PO6: The engineer and society			2.00	1.52
37	PO7: Environment and sustainability			2.22	1.66
38	PO8: Ethics			1.97	1.40
39	PO9: Individual and team work.			2.29	1.82
40	PO10: Communication			2.07	1.41
41	PO11: Project management and finance			2.56	1.94
42	PO12: Life-long learning			2.03	1.44
43	PSO1: Computing Knowledge			1.99	1.29
44	PSO2 :Evolutionary changes in computing			2.03	1.34
45	PSO3: Modern computing tools			1.87	1.36
46	PO1: Engineering knowledge	2020-24	IV Year	2.18	1.53
47	PO2: Problem analysis			2.27	1.60
48	PO3: Design/development of solutions			2.69	1.83
49	PO4: Conduct investigations of complex problems.			2.60	1.66
50	PO5: Modern tool usage			2.29	1.67
51	PO6: The engineer and society			2.45	1.65
52	PO7: Environment and sustainability			2.40	1.73
53	PO8: Ethics			2.17	1.42
54	PO9: Individual and team work.			2.63	1.77
55	PO10: Communication			2.47	1.62
56	PO11: Project management and finance			2.89	1.95
57	PO12: Life-long learning			2.33	1.49
58	PSO1: Computing Knowledge			2.17	1.42
59	PSO2: Evolutionary changes in computing			2.18	1.39
60	PSO3: Modern computing tools			2.52	1.68

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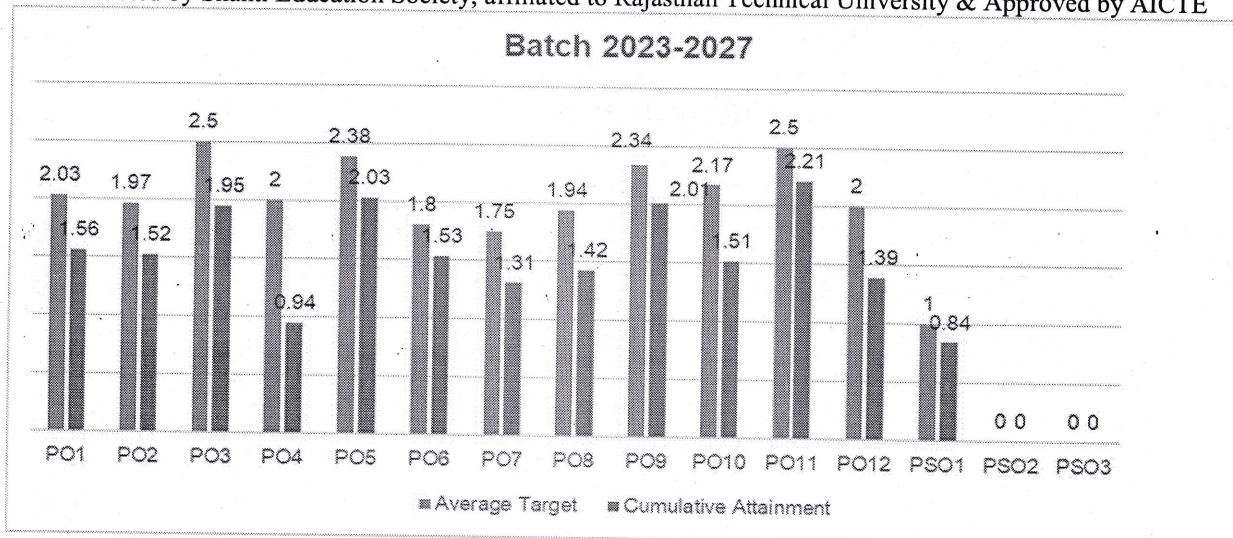


Figure 1: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2023-27

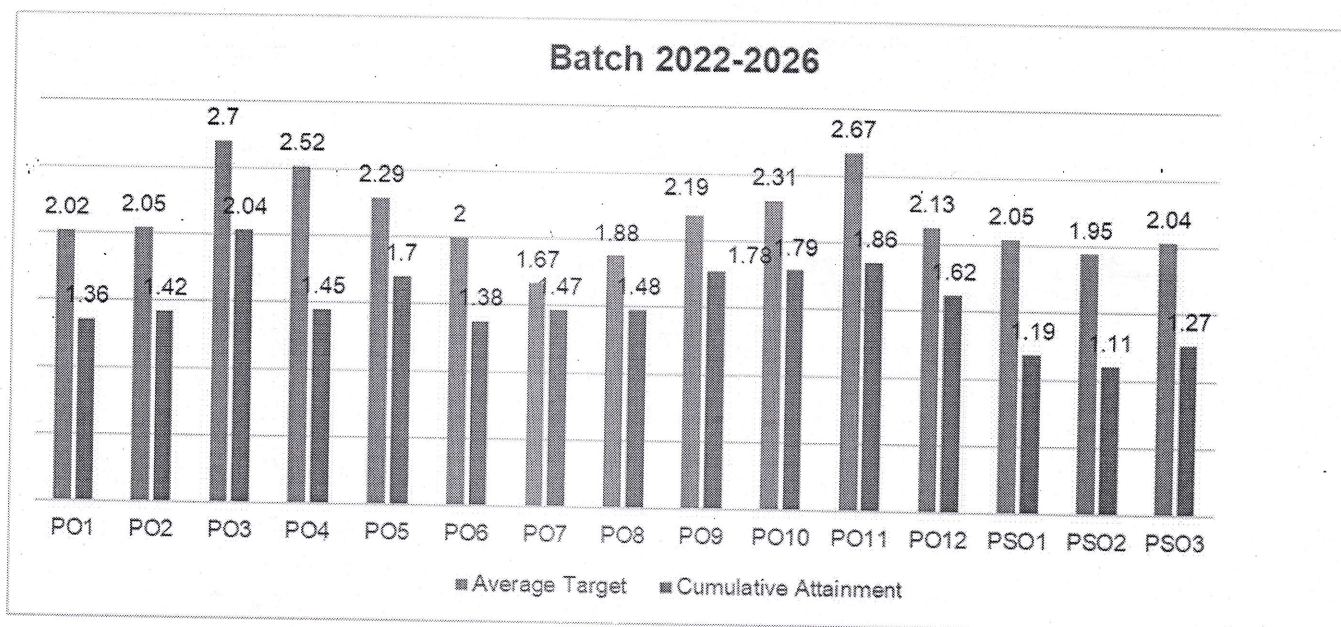


Figure 2: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2022-26



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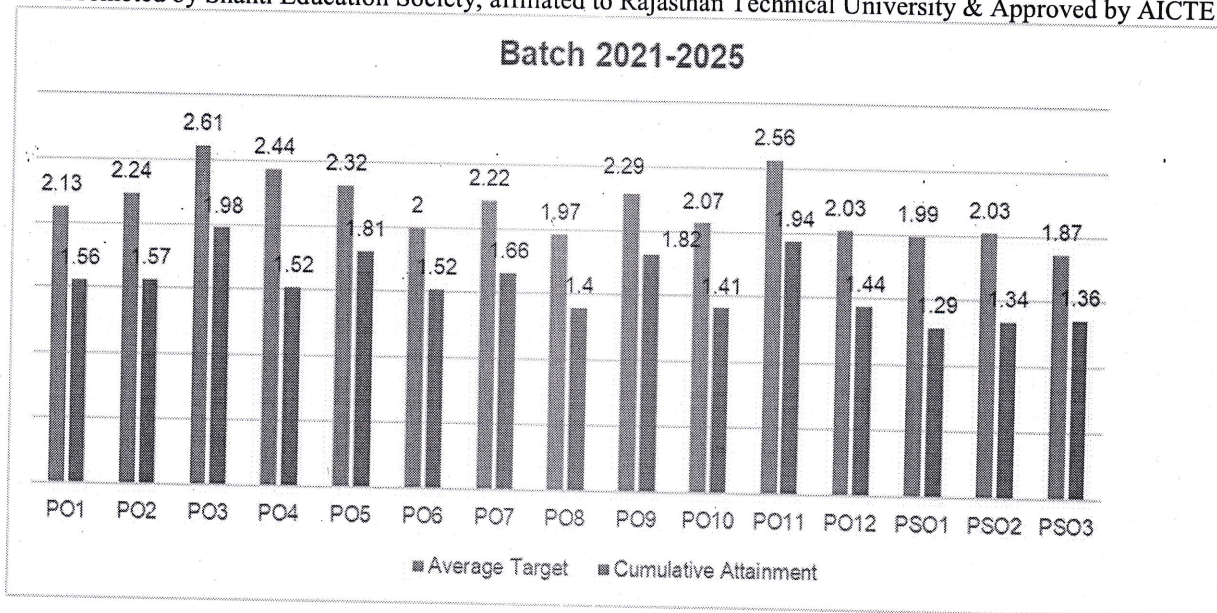


Figure 3: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2021-25

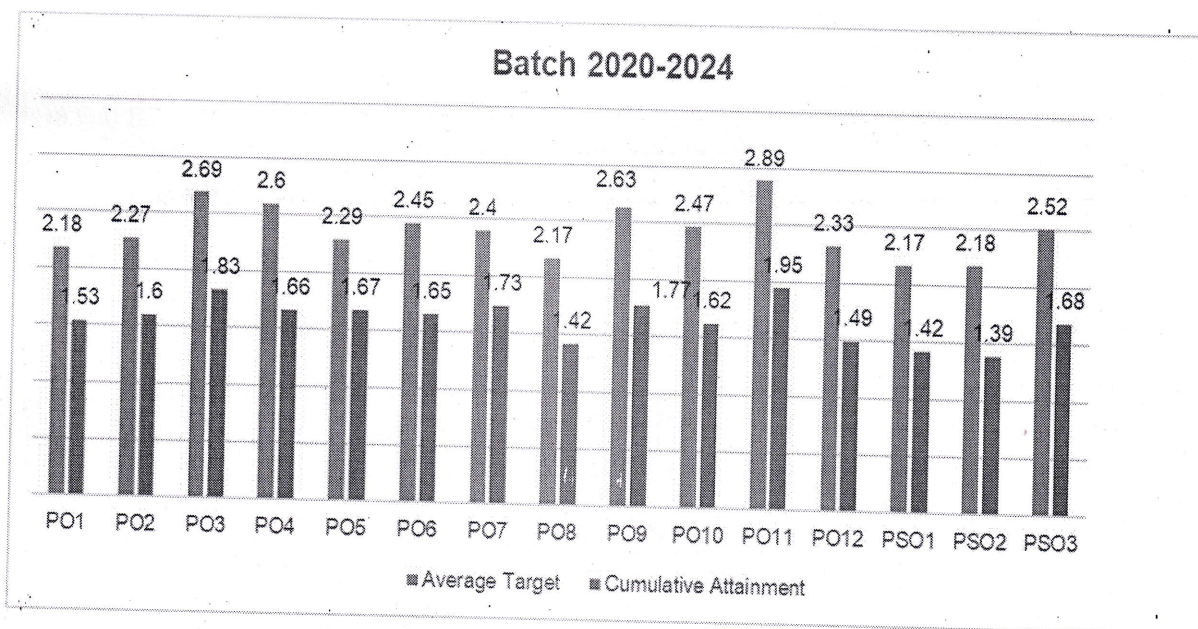


Figure 4: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2020-24

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1.3 Analysis of PO and PSO Attainment

Table 1.1: PO Attainment, Target and Gaps

Batch: 2023-27

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.56	1.52	1.95	0.94	2.03	1.53	1.31	1.42	2.01	1.51	2.21	1.39	0.84	-	-
Target	2.03	1.97	2.50	2.00	2.38	1.80	1.75	1.94	2.34	2.17	2.50	2.00	1.00	-	-
Gap	0.47	0.45	0.55	1.06	0.35	0.27	0.44	0.52	0.33	0.66	0.29	0.61	0.16	-	-

Table 1.2: PO Attainment, Target and Gaps

Batch: 2022-26

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.36	1.42	2.04	1.45	1.70	1.38	1.47	1.48	1.78	1.79	1.86	1.62	1.19	1.11	1.27
Target	2.02	2.05	2.70	2.52	2.29	2.00	1.67	1.88	2.19	2.31	2.67	2.13	2.05	1.95	2.04
Gap	0.66	0.63	0.66	1.07	0.59	0.62	0.20	0.40	0.41	0.52	0.81	0.51	0.86	0.84	0.77

Table 1.3: 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	1.56	1.57	1.98	1.52	1.81	1.52	1.66	1.40	1.82	1.41	1.94	1.44	1.29	1.34	1.36
Target	2.13	2.24	2.61	2.44	2.32	2.00	2.22	1.97	2.29	2.07	2.56	2.03	1.99	2.03	1.87
Gap	0.57	0.67	0.63	0.92	0.51	0.48	0.56	0.57	0.47	0.66	0.62	0.59	0.70	0.69	0.51

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Table 1.4: 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	1.53	1.60	1.83	1.66	1.67	1.65	1.73	1.42	1.77	1.62	1.95	1.49	1.42	1.39	1.68
Target	2.18	2.27	2.69	2.60	2.29	2.45	2.40	2.17	2.63	2.47	2.89	2.33	2.17	2.18	2.52
Gap	0.65	0.67	0.86	0.94	0.62	0.80	0.67	0.75	0.86	0.85	0.94	0.84	0.75	0.79	0.84

1.4 Observations

Table 1.5: Achieved Level of PO / PSO (Batch 2023-27)

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

Batch (2023-27): After analysis of the table 1.5 of PO / PSO achieved level for batch 2023-27, it has been observed that the PO4 attainment level are falling below average. PO10 and PO12 are attainment on average level. The attainment level of PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO9, PO11 and PSO1 are above average.

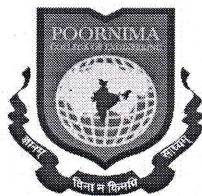
Table 1.6: Achieved Level of PO / PSO (Batch 2022-26)

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

Batch (2022-26): After analysis of the table 1.6 of PO / PSO achieved level for batch 2022-26, it has been observed that the none of the attainment level are falling below average. Attainment PO1, PO2, PO4, PO6, PO11, PSO1, PSO2 and PSO3 on average level. The attainment level of PO3, PO5, PO7, PO8, PO9, PO10 and PO12 are above average.

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Table 1.7: Achieved Level of PO / PSO (Batch 2021-25)

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

Batch (2021-25): After analysis of the table 1.7 of PO / PSO achieved level for batch 2021-25, it has been observed that none of the attainment level are falling below average. Attainment PO4, PO10, PSO1 and PSO2 are on average level. The attainment level PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO9, PO11, PO12 and PSO3 are above average.

Table 1.8: Achieved Level of PO / PSO (Batch 2020-24)

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

Batch (2020-24): After analysis of the table 1.8 of PO / PSO achieved level for batch 2020-24, it has been observed that the none of the attainment level are falling below average. Attainment PO3, PO4, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2 and PSO3 is on average level. The attainment level PO1, PO2, PO5, and PO7 are above average.

1.5 Actions Taken

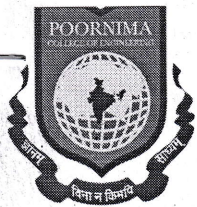
- To give platforms to be an entrepreneur an industrial visit is organized for students so they learn the ability to employ modern computing tools to overcome the limitation in PSO1.
- For overcoming the effect of PO3 the concept best design and solution of difficult topics of various subject has been developed for improving the attainment the gap.
- Facilitated project-based learning sessions to utilize research methods and data analysis techniques in solving intricate engineering problems within subjects such as Data Structures, Machine Learning, Advanced Engineering Mathematics etc for PO4
- More interactive sessions are planned with professionals from industry in order to expose the industrial societal problems (PO8, PSO2).
- Conducted workshops on ethical principles and professional responsibilities, emphasizing their importance in engineering practice for PO11, PO12.
- Apply appropriate techniques and modern tools in laboratory work for improvement in PO2, PO6.

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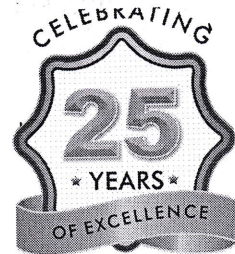
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Department of Civil Engineering
Session 2023-24

CO, PO and PSO Target and Attainment and Observations and Action Taken Report

1.1 CO-Target and Attainment

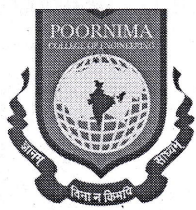
S. No.	Course Code	Course Name	Batch	Year	Average Target	Average Attainment
1	1FY2-01	Engineering Mathematics-I	2023-27	I Year	3	1.86
2	1FY2-02	Engineering Physics			3	1.96
3	1FY1-05	Human Values			3	2.75
4	1FY3-06	Programming for Problem Solving			3	2.43
5	1FY3-09	Basic Civil Engineering			3	2.18
6	1FY2-20	Engineering Physics Lab			3	2.82
7	1FY1-23	Human Values Activities and Sports			3	2.82
8	1FY3-24	Computer Programming Lab			3	2.82
9	1FY3-27	Basic Civil Engineering Lab			3	2.82
10	1FY3-28	Computer Aided Engineering Graphics			3	2.82
11	2FY2-01	Engineering Mathematics-II			3	1.63
12	2FY2-03	Engineering Chemistry			3	1.84
13	2FY1-04	Communication Skills			3	2.08
14	1FY3-07	Basic Mechanical Engineering			3	2.08
15	2FY3-08	Basic Electrical Engineering			3	1.67
16	2FY2-21	Engineering Chemistry Lab			3	2.73
17	2FY1-22	Language Lab			3	2.78
18	2FY3-26	Basic Electrical Engineering Lab			3	2.8
19	1FY3-25	Manufacturing Practices Workshop			3	2.82
20	2FY3-29	Computer Aided Machine Drawing			3	2.8
21	3CE2-01	Advance Engineering Mathematics-I	2022-26	II Year	2.2	1.37
22	3CE1-02	Technical Communication			2.5	2.41
23	3CE3-04	Engineering Mechanics			2.5	1.98
24	3CE4-05	Surveying			2.5	2.21
25	3CE4-06	Fluid Mechanics			2.5	1.98
26	3CE4-07	Building Materials and Construction			2.5	2.31
27	3CE4-08	Engineering Geology			2.25	1.91
28	3CE4-21	Surveying Lab			2.75	2.75
29	3CE4-22	Fluid Mechanics Lab			2.75	2.75
30	3CE4-23	Computer Aided Building Design Lab			2.5	2.48
31	3CE4-24	Civil Engineering Materials Lab			2.5	2.50

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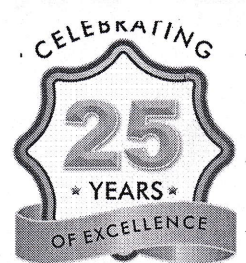
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32	3CE4-25	Geology Lab			2.25	2.25
33	4CE2-01	Advance Engineering Mathematics-II			2.2	2.04
34	4CE1-03	Managerial Economics & Financial			2.75	2.41
35	4CE3-04	Basic Electronics for Civil Engineering Applications			3	2.33
36	4CE4-05	Strength of Materials			2.25	1.40
37	4CE4-06	Hydraulics Engineering			2.75	2.31
38	4CE4-07	Building Planning			2.5	2.23
39	4CE4-08	Concrete Technology			2.5	2.11
40	4CE4-21	Material Testing Lab			2.25	2.25
41	4CE4-22	Hydraulics Engineering Lab			2.75	2.75
42	4CE4-23	Building Drawing			2.5	2.50
43	4CE4-24	Advanced Surveying Lab			2.75	2.75
44	4CE4-25	Concrete Lab			2.75	2.75
45	5CE3-01	Construction Technology and equipment			2.75	2.57
46	5CE4-02	Structure Analysis- I			2.25	1.88
47	5CE4-03	Design of Concrete Structures			2.6	2.28
48	5CE4-04	Geotechnical Engineering			2.25	1.92
49	5CE4-05	Water Resources Engineering			2	1.85
50	5CE5-12	Disaster Management			2.25	2.14
51	5CE5-13	Town Planning			2.5	2.40
52	5CE5-14	Repair and Rehabilitation of Structures			2.75	2.46
53	5CE5-15	Ground Improvement Technique			3	2.68
54	5CE4-21	Concrete Structures Design			2.8	2.42
55	5CE4-22	Geotechnical Engineering Lab			2.4	2.40
56	5CE4-23	Water Resource Engineering Design Lab			2.25	2.12
57	6CE03-01	Wind & Seismic Analysis	2021-	III	2.75	2.38
58	6CE4-02	Structural Analysis-II	25	Year	2.25	1.68
59	6CE4-03	Environmental Engineering			2.5	2.09
60	6CE4-04	Design of Steel Structures			2.25	1.78
61	6CE4-05	Estimating and Costing			2.5	2.18
62	6CE5-12	Solid and Hazardous Waste Management			2.5	1.93
63	6CE5-13	Traffic Engineering & Management			2.5	1.91
64	6CE5-14	Bridge Engineering			2.5	2.42
65	6CE5-16	GIS & Remote Sensing			2.5	2.13
66	6CE4-21	Environmental Engineering Design and Lab			3	2.84
67	6CE4-22	Steel Structures Design Lab			2.25	2.21
68	6CE4-23	Quantity Surveying and Costing			2.75	2.75
69	6CE4-24	Water and Earth Retaining Structure design lab			2.5	2.47
70	6CE4- 25	Foundation Design			2.5	2.45

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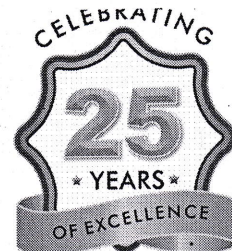
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71	7CE4-01	Transportation Engineering	2020-24	IV Year	2	1.90
72	7EC6-60.1	Principle of Electronic communication			3	3.00
73	7EC6.60.2	Micro System Smart Technology			3	2.50
74	7ME6-60.1	Finite Element Analysis			-	-
75	7ME6-60.2	Quality Management			2.00	1.93
76	7EE6-60.1	Electrical Machines and Drives			2.25	2.25
77	7EE6-60.2	Power Generation Sources			2.63	2.63
78	7CS6-60.1	Quality Management / ISO 9000			2.50	2.12
79	7CS6-60.2	Cyber Security			2.00	1.44
80	7CE4-21	Road Material Testing Lab			2.5	2.50
81	7CE4-22	Professional Practices & Field Engineering Lab			2.75	2.64
82	7CE4-23	Soft Skills Lab			2.6	2.58
83	7CE4-24	Environmental Monitoring and Design Lab			2.5	2.50
84	7CE7-30	Practical Training			3	2.30
85	7CE7-40	Seminar			3	2.44
86	8CE4-01	Project Planning and Construction Management			2.5	2.23
87	8CS6-60.1	Big Data Analytics (Open Elective-II)			-	-
88	8CS6-60.2	IPR, Copyright and Cyber Law of India (Open Elective-II)			2.50	2.10
89	8EE6-60.1	Energy Audit and Demand side Management			2.25	2.25
90	8EE6-60.2	Soft Computing			-	-
91	8ME6-60.2	Simulation Modeling and Analysis			-	-
92	8ME6-60.1	Operations Research			3.00	2.00
93	8EC6.60.1	Industrial and Medical applications of RF Energy			3.00	3.00
94	8EC6-60.2	Robotics and Control			3.00	3.00
95	8CE7-50	Project			3	2.88
96	8CE4-21	PPCM Lab			2.5	2.47
97	8CE4-22	Pavement Design Lab			2	1.99

1.2 PO and PSO-Target and Attainment

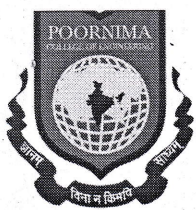
S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge	2023-27	I Year	1.96	1.07
2	PO2: Problem analysis			1.80	0.92
3	PO3: Design/development of solutions			2.00	2.47

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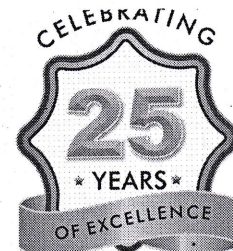
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72	7EC6-60.1	Principle of Electronic communication			3	3.00
73	7EC6.60.2	Micro System Smart Technology			3	2.50
74	7ME6-60.1	Finite Element Analysis			-	-
75	7ME6-60.2	Quality Management			2.00	1.93
76	7EE6-60.1	Electrical Machines and Drives			2.25	2.25
77	7EE6-60.2	Power Generation Sources			2.63	2.63
78	7CS6-60.1	Quality Management / ISO 9000			2.50	2.12
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90	8EE6-60.2	Soft Computing			-	-
91	8ME6-60.2	Simulation Modeling and Analysis			-	-
92	8ME6-60.1	Operations Research			3.00	2.00
93	8EC6.60.1	Industrial and Medical applications of RF Energy			3.00	3.00
94	8EC6-60.2	Robotics and Control			3.00	3.00
95	8CE7-50	Project			3	2.88
96	8CE4-21	PPCM Lab			2.5	2.47
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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	2023-27	I Year	1.96	1.07
2	PO2: Problem analysis			1.80	0.92
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4	PO4: Conduct investigations of complex problems.			2.00	1.14
5	PO5: Modern tool usage			2.17	1.71
6	PO6: The engineer and society			1.50	1.14
7	PO7: Environment and sustainability			1.50	1.16
8	PO8: Ethics			2.00	1.25
9	PO9: Individual and team work.			2.48	1.92
10	PO10: Communication			1.88	1.33
11	PO11: Project management and finance			3.00	2.39
12	PO12: Life-long learning			2.00	1.40
13	PSO1 to plan, design and quality execution of construction			-	-
14	PSO2 to solve problems related to the all disciplines of Civil engineering			-	-
15	PSO3 social awareness, interdisciplinary aspects and environmental necessity			-	-
16	PO1: Engineering knowledge	2022-26	II Year	2.21	1.78
17	PO2: Problem analysis			2.26	1.87
18	PO3: Design/development of solutions			2.84	2.69
19	PO4: Conduct investigations of complex problems.			2.75	2.11
20	PO5: Modern tool usage			2.75	2.15
21	PO6: The engineer and society			2.33	1.94
22	PO7: Environment and sustainability			2	1.62
23	PO8: Ethics			2	1.52
24	PO9: Individual and team work.			2.59	2.47
25	PO10: Communication			2.25	1.92
26	PO11: Project management and finance			3	2.68
27	PO12: Life-long learning			2	1.54
28	PSO1 to plan, design and quality execution of construction			2.26	1.27
29	PSO2 to solve problems related to the all disciplines of Civil engineering			2.25	1.39
30	PSO3 social awareness, interdisciplinary aspects and environmental necessity			2.31	1.39
31	PO1: Engineering knowledge	2021-25	III Year	2.25	1.85
32	PO2: Problem analysis			2.44	2.04
33	PO3: Design/development of solutions			2.06	1.69
34	PO4: Conduct investigations of complex problems.			2.58	1.73
35	PO5: Modern tool usage			2.75	2.22
36	PO6: The engineer and society			1.83	1.35
37	PO7: Environment and sustainability			2.22	1.55
38	PO8: Ethics			2.22	1.55

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39	PO9: Individual and team work.			2.28	2.00
40	PO10: Communication			2	1.42
41	PO11: Project management and finance			3	2.63
42	PO12: Life-long learning			2	1.50
43	PSO1 to plan, design and quality execution of construction			1.78	0.90
44	PSO2 to solve problems related to the all disciplines of Civil engineering			1.78	0.96
45	PSO3 social awareness, interdisciplinary aspects and environmental necessity	2020-24	IV Year	1.6	0.80
46	PO1: Engineering knowledge			2.27	2.24
47	PO2: Problem analysis			2.42	2.39
48	PO3: Design/development of solutions			2.05	2.05
49	PO4: Conduct investigations of complex problems.			2.35	2.37
50	PO5: Modern tool usage			2.4	2.42
51	PO6: The engineer and society			2.05	2.07
52	PO7: Environment and sustainability			1.89	1.88
53	PO8: Ethics			2	2.01
54	PO9: Individual and team work.			2.45	2.35
55	PO10: Communication			2.3	2.26
56	PO11: Project management and finance			2.67	2.66
57	PO12: Life-long learning			2.54	2.56
58	PSO1 to plan, design and quality execution of construction			1.83	1.83
59	PSO2 to solve problems related to the all disciplines of Civil engineering			1.97	1.72
60	PSO3 social awareness, interdisciplinary aspects and environmental necessity			1.75	1.42

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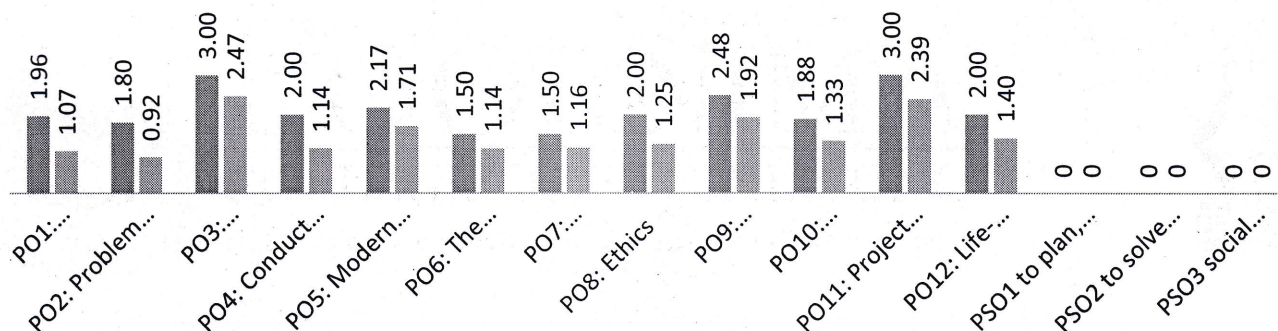
2023-27

■ Average Target

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

■ Average Attainment

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



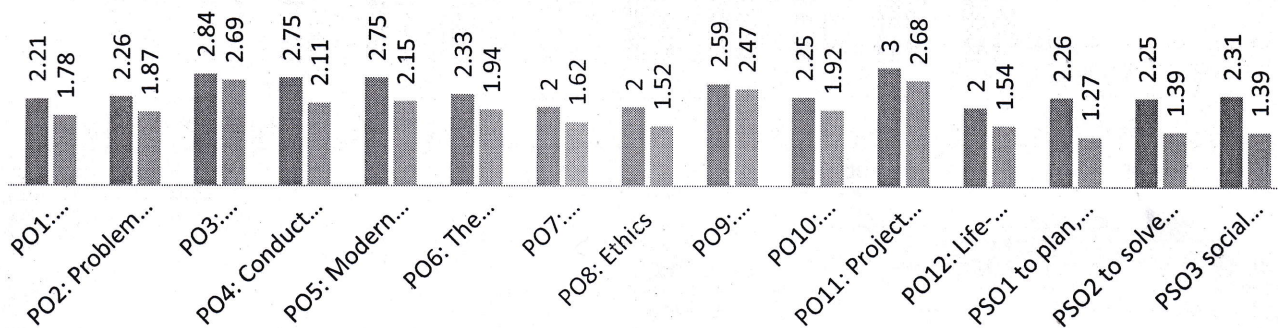
2022-26

■ Average Target

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

■ Average Attainment

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



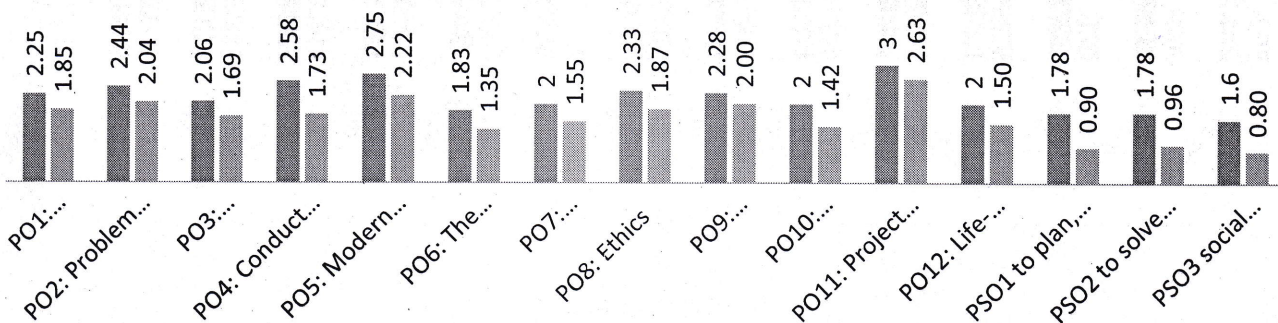
2021-25

■ 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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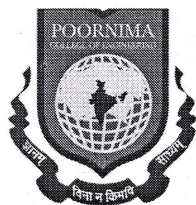
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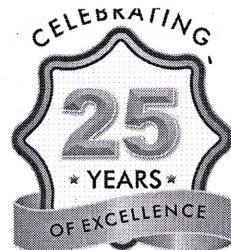
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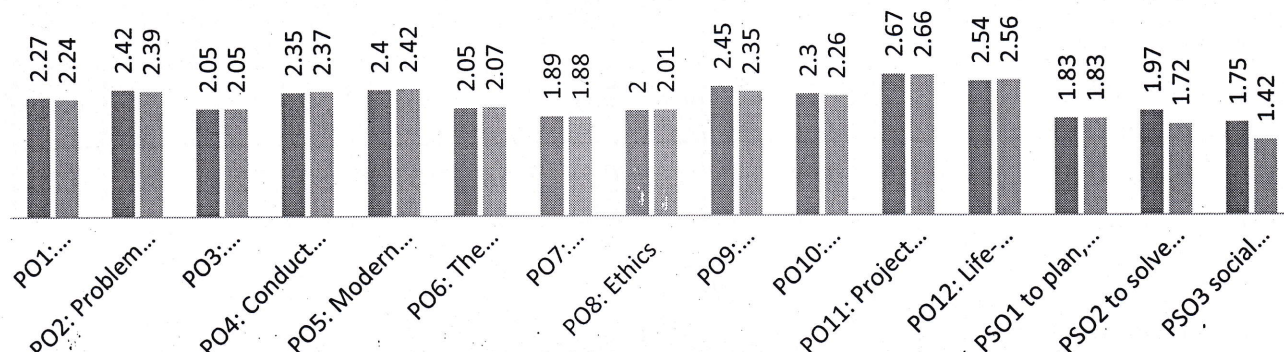
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2020-24

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



1.3 Analysis of PO and PSO Attainment

2023-27

Table 1.4: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Target	1.96	1.80	3.00	2.00	2.17	1.50	1.50	2.00	2.48	1.88	3.00	2.00	-	-	-
Attainment	1.07	0.92	2.47	1.14	1.71	1.14	1.16	1.25	1.92	1.33	2.39	1.40	-	-	-
Gap	0.90	0.89	0.53	0.86	0.47	0.37	0.34	0.75	0.56	0.56	0.61	0.61	-	-	-

2022-26

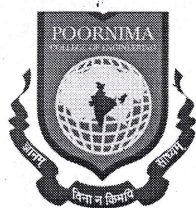
Table 1.1: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Target	2.21	2.26	2.84	2.75	2.75	2.33	2.00	2.00	2.59	2.25	3.00	2.00	2.26	2.25	2.31
Attainment	1.78	1.87	2.69	2.11	2.15	1.94	1.62	1.52	2.47	1.92	2.68	1.54	1.27	1.39	1.39
Gap	0.43	0.39	0.15	0.64	0.60	0.39	0.38	0.48	0.12	0.33	0.32	0.46	0.99	0.86	0.92

2021-25

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Table 1.2: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Target	2.25	2.44	2.06	2.58	2.75	1.83	2.00	2.33	2.28	2.00	3.00	2.00	1.78	1.78	1.60
Attainment	1.85	2.04	1.69	1.73	2.22	1.35	1.55	1.87	2.00	1.42	2.63	1.50	0.90	0.96	0.80
Gap	0.40	0.40	0.37	0.85	0.53	0.48	0.45	0.46	0.28	0.58	0.37	0.50	0.88	0.82	0.80

2020-24

Table 1.3: PO Attainment, Target and Gaps

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
Target	2.27	2.42	2.05	2.35	2.40	2.05	1.89	2.00	2.45	2.30	2.67	2.54	1.83	1.97	1.75
Attainment	2.24	2.39	2.05	2.35	2.40	2.05	1.88	2.00	2.35	2.26	2.66	2.54	1.83	1.72	1.42
Gap	0.03	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.10	0.04	0.01	0.00	0.00	0.25	0.33

1.4 Observations

a. Batch 2023-27

Table 1: Achieved Level of PO / PSO (Batch 2023-27)

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

After analyzing table 1 for 2023-27, it has been observed that achieved level for PSO1, PSO2, PSO3 is below average (less than 50%).

After analyzing table 1 for 2023-27, it has been observed that achieved level for PO3, PO5, PO6, PO7, PO9, PO10, and PO11 is good (less than 70%).

After analyzing table 1 for 2023-27, it has been observed that achieved level for PO1, PO2, PO4, PO8, and PO12 is above average (greater than 70%).

b. Batch 2022-26

Table 2: Achieved Level of PO / PSO (Batch 2022-26)

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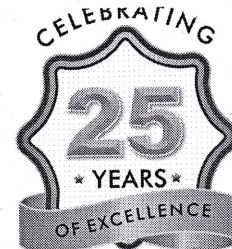
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PO / PSO	Achieved Level
Nil	Below Average (<50%)
PSO1, PSO2, PSO3	Average ($\geq 50\%$ but $< 70\%$)
PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12	Above Average ($\geq 70\%$)

After analyzing table 2 for 2022-26, it has been observed that no PO/PSO is below average achieved level (less than 50%).

After analyzing table 2 for 2022-26, it has been observed that achieved level for PSO1, PSO2, and PSO3 is good (less than 70%).

After analyzing table 2 for 2022-26, it has been observed that achieved level for PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, and PO12 is above average (greater than 70%).

c. Batch 2021-25

Table 3: Achieved Level of PO / PSO (Batch 2021-25)

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

After analyzing table 3 for 2021-25, it has been observed that no PO/PSO is below average achieved level (less than 50%).

After analyzing table 3 for 2021-25, it has been observed that achieved level for PO4, PSO1, PSO2, and PSO3 is good (less than 70%).

After analyzing table 3 for 2021-25, it has been observed that achieved level for PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO9, PO10, PO11, and PO12 is above average (greater than 70%).

d. Batch 2020-24

Table 4: Achieved Level of PO / PSO (Batch 2020-24)

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

After analyzing table 4 for 2020-24, it has been observed that no PO/PSO is below average achieved level (less than 50%).

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After analyzing table 4 for 2020-24, it has been observed that no PO/PSO is good achieved level (less than 70%).

After analyzing table 4 for 2020-24, it has been observed that achieved level for PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2, and PSO3 is above average (greater than 70%).

After analysis of the tables 1 - 4 of POs Attainment, it has been observed that the attainment level of,

POs

In 2023-27 Batch

No PO below average.

PO3, PO5, PO6, PO7, PO9, PO10, PO11 found of average category

PO1, PO2, PO4, PO8, PO12 found of above average category

In 2022-26 Batch

No PO below average.

No PO below average.

PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 found of above average category

In 2021-25 Batch

No PO/PSO below average.

PO4 – under average category

PO1, PO2, PO3, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 found of above average category

In 2020 – 24 Batch

No PO below average.

No PO below average.

PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12 found of above average category.

PSOs

In (2023-27) Batch – PSO1, PSO2, PSO3 found of below average category.

In (2022-26) Batch - PSO1, PSO2, PSO3 found of average category.

In (2021-25) Batch - PSO1, PSO2, PSO3 found of average category

In (2020-24) Batch - PSO1, PSO2 & PSO3 found of above average category.

1.5 Actions Taken

In order to fulfill the gaps of program outcomes i.e., design/development of solutions, conduct investigations of complex problems, Modern tool usage, The engineer and society, Environment and sustainability,

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Individual and team work, Communication, & Project management and finance, some recommendations & action taken are:

1. **For Design/development of solutions (PO3)** - Conduct preliminary design & software-based activities and evaluate their feasibility. Use Computer-Aided Design (CAD) and Structural Analysis software like AutoCAD, Ravit, SketchUp, STAAD Pro and ETABS to create 3D models of the design and analyses the loads & stresses.
2. **Conduct investigations of complex problems (PO4)** - The concerned faculty members have been instructed to confirm and simplify the methods they use to teach complex problem solving. To strengthen students' fundamental concepts in numerical courses, increase the quantity of tutorial practice classes offered. Colleges have implemented group work by having small student groups develop for each semester's unit.
3. **Modern tool usage (PO5)** - Department uses ICT tools to teach classes and creates tools like Sketch-Up, STAAD Pro, and E-Tabs software, among other things, to improve understanding.
4. **Engineer & Society (PO6)** - Department encourages students to present social dramas, Plantation and other awareness events about cultural and societal issues. Conduct Site visit of under construction Rambagh, STP, UltraTech RMC Plant etc. Understand the potential social impacts of engineering projects on local communities.
5. **Environment and sustainability (PO7)** - Department organized Earth Day Celebration & Celebrated World Environment Day for incorporate sustainable engineering practices to minimize environmental impact. Also organized one FDP and sessions on sustainable building construction practices.
6. **Individual and team work (PO9)** - Projects are assigned to individual and in groups for the holistic development of students learning and application in the filed/industries.
7. **Communication (PO10)** - Seminars and soft skill trainings are organized by the department. To help the students in placements, mock drives are organized to test and boost the communication skills.
8. **Project management and finance (PO11)** - Department organized Survey camp for 3 days. In these activities students learned about the Time Management, Cost management, Resource & Risk Management.

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Department of Advance Computing

Session 2023-24

B. Tech in Computer Science and Engineering (Cyber Security)

CO, PO and PSO Target and Attainment and Observations and Action Taken Report

1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I	2023-27	I Year	2.00	1.53
2	1FY2-03	Engineering Chemistry			1.75	1.60
3	1FY1-04	Communication Skills			2.00	1.96
4	1FY3-07	Basic Mechanical Engineering			1.75	1.70
5	1FY3-08	Basic Electrical Engineering			3.00	2.49
6	1FY2-21	Engineering Chemistry Lab			1.88	1.86
7	1FY1-22	Language Lab			2.00	2.00
8	1FY3-26	Basic Electrical Engineering Lab			3.00	3.00
9	1FY3-25	Manufacturing Practices Workshop			1.88	1.88
10	1FY3-28	Computer Aided Engineering Graphics			1.38	1.38
11	2FY2-01	Engineering Mathematics-II			2.50	1.97
12	2FY2-03	Engineering Chemistry			2.00	1.72
13	2FY1-05	Human Values			2.20	2.20
14	2FY3-06	Programming for Problem Solving			2.00	1.93
15	2FY3-09	Basic Civil Engineering			2.00	1.89
16	2FY2-20	Engineering Physics Lab			1.75	1.75
17	2FY1-23	Human Values Activities and Sports			1.80	1.80
18	2FY3-24	Computer Programming Lab			2.00	2.00
19	2FY3-27	Basic Civil Engineering Lab			1.75	1.75
20	2FY3-29	Computer Aided Machine Drawing			1.88	1.88
21	3CCY2-01	Advanced Engineering Mathematics			2.25	1.94
22	3CCY2-01	Managerial Economics and Financial Accounting			2.42	1.19
23	3CCY1-03	Digital Electronics			2.25	1.94
24	3CCY3-04	Data Structures and Algorithms			2.75	1.94
25	3CCY4-05	Object Oriented Programming			2.50	2.45
26	3CCY4-06	Software Engineering			2.50	1.85
27	3CCY4-07	Data Structures and Algorithms Lab			2.00	2.98
28	3CCY4-21	Object Oriented Programming Lab			2.00	2.98

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29	3CCY4-22	Software Engineering Lab	2022-26	II Year	2.00	2.89
30	3CCY4-23	Digital Electronics Lab			2.25	1.88
31	3CCY4-24	Industrial Training			2.00	2.82
32	3CCY7-30	Discrete Mathematics Structure			2.25	1.85
33	4CCY2-01	Technical Communication			2.75	2.03
34	4CCY1-02	Microprocessor & Interfaces			2.20	1.96
35	4CCY3-04	Database Management System			1.88	2.30
36	4CCY4-05	Theory of Computation			2.00	2.36
37	4CCY4-06	Data Communication and Computer Networks			2.00	2.00
38	4CCY4-07	Microprocessor & Interfaces Lab			1.80	2.93
39	4CCY4-21	Database Management System Lab			2.23	2.93
40	4CCY4-22	Network Programming Lab			2.00	2.92
41	4CCY4-24	Linux Shell Programming Lab			2.00	3.00
42	4CCY4-25	Java Lab			2.00	2.91
43	5CCY3-01	Information Theory & Coding	2021-25	III Year	2.25	2.30
44	5CCY4-02	Compiler Design			2.75	2.46
45	5CCY4-03	Operating System			2.75	2.17
46	5CCY4-04	Computer Graphics & Multimedia			2.50	2.46
47	5CCY4-05	Analysis of Algorithms			2.75	2.47
48	5CCY5-11	Cyber Space Operations and Design			2.67	2.15
49	5CCY5-12	Digital Forensics and Incident Response			2.75	1.93
50	5CCY4-21	Computer Graphics & Multimedia Lab			2.25	2.93
51	5CCY4-22	Compiler Design Lab			3.00	2.98
52	5CCY4-23	Analysis of Algorithms Lab			2.50	3.00
53	5CCY4-24	Advance Java Lab			3.00	2.92
54	5CCY7-30	Industrial Training			2.00	1.50
55	6CCY3-01	Digital Image Processing			2.00	2.45
56	6CCY4-02	Machine Learning			2.50	2.45
57	6CCY4-03	Information Security System			2.33	2.46
58	6CCY4-04	Computer Architecture and Organization			2.60	2.45
59	6CCY4-05	Artificial Intelligence			2.50	2.16
60	6CCY4-06	Block Chain & Cyber Security			2.00	2.45
61	6CCY5-11	Cyber Forensic			2.00	1.46
62	6CCY5-13	Ethical Hacking and Digital Forensics			3.00	2.97
63	6CCY4-21	Digital Image Processing Lab			2.00	2.92
64	6CCY4-22	Machine Learning Lab			2.31	2.90

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65	6CCY4-23	Python Lab			2.50	3.00
66	6CCYD5-12	NLP			2.42	1.91
67	6CCY4-24	Mobile Application Development Lab			2.00	2.98

1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge	2023-27	I Year	1.94	1.40
2	PO2: Problem analysis			1.89	1.38
3	PO3: Design/development of solutions			3	2.41
4	PO4: Conduct investigations of complex problems.			3.00	1.13
5	PO5: Modern tool usage			2.50	2.04
6	PO6: The engineer and society			2.00	1.43
7	PO7: Environment and sustainability			2.00	1.38
8	PO8: Ethics			2.00	1.34
9	PO9: Individual and team work.			2.17	1.84
10	PO10: Communication			1.84	1.33
11	PO11: Project management and finance			3.00	2.75
12	PO12: Life-long learning			2.00	1.31
13	PSO1: Computing Knowledge			1.00	0.65
14	PSO2 :Evolutionary changes in computing				
15	PSO3: Modern computing tools				
16	PO1: Engineering knowledge	2022-26	II Year	2.02	1.24
17	PO2: Problem analysis			2.05	1.27
18	PO3: Design/development of solutions			2.7	1.84
19	PO4: Conduct investigations of complex problems.			2.52	1.26
20	PO5: Modern tool usage			2.29	1.42
21	PO6: The engineer and society			1.50	1.22
22	PO7: Environment and sustainability			1.67	1.18
23	PO8: Ethics			1.88	1.10
24	PO9: Individual and team work.			2.19	1.39
25	PO10: Communication			2.31	1.53
26	PO11: Project management and finance			2.67	1.74
27	PO12: Life-long learning			2.13	1.34

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28	PSO1:Computing Knowledge	2021-25	III Year	2.05	1.21
29	PSO2 :Evolutionary changes in computing			1.95	1.20
30	PSO3: Modern computing tools			2.04	1.39
31	PO1: Engineering knowledge			2.21	1.45
32	PO2: Problem analysis			2.23	1.52
33	PO3: Design/development of solutions			2.15	1.44
34	PO4: Conduct investigations of complex problems.			2.39	1.31
35	PO5: Modern tool usage			2.28	1.42
36	PO6: The engineer and society			2.10	1.09
37	PO7: Environment and sustainability			2.17	1.05
38	PO8: Ethics			2.00	1.13
39	PO9: Individual and team work.			2.47	1.46
40	PO10: Communication			2.31	1.04
41	PO11: Project management and finance			2.56	1.33
42	PO12: Life-long learning			2.01	0.99
43	PSO1:Computing Knowledge			1.95	1.24
44	PSO2 :Evolutionary changes in computing			2.05	1.19
45	PSO3: Modern computing tools			1.84	1.12

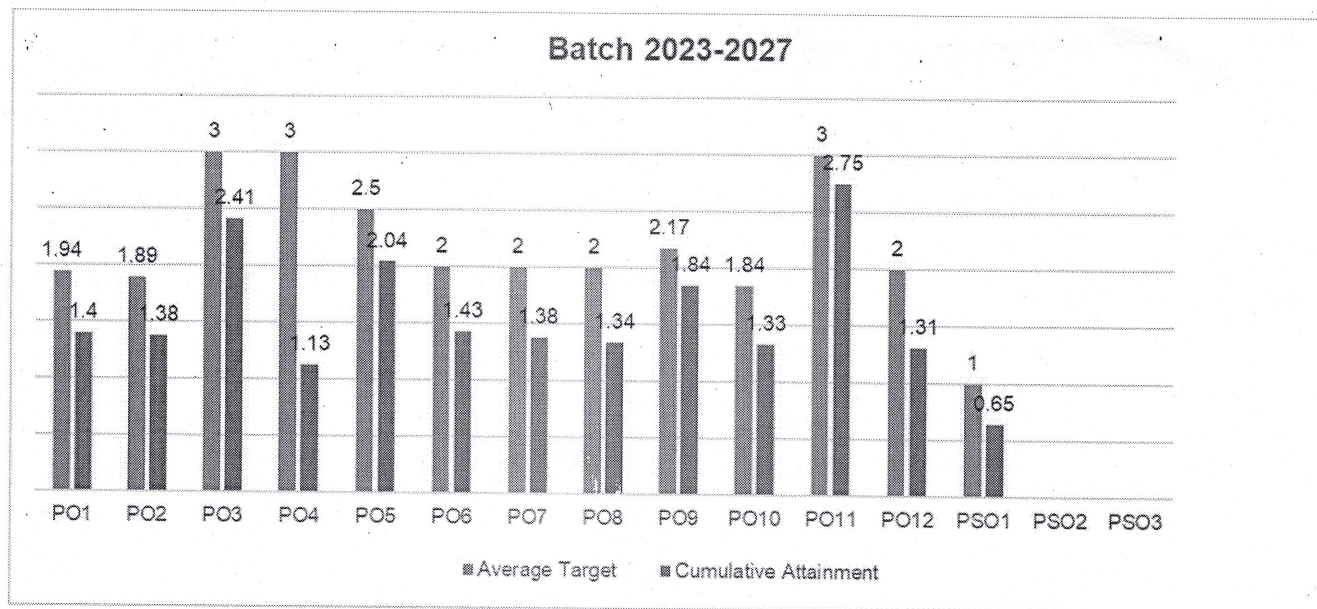


Figure 1: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2023-27

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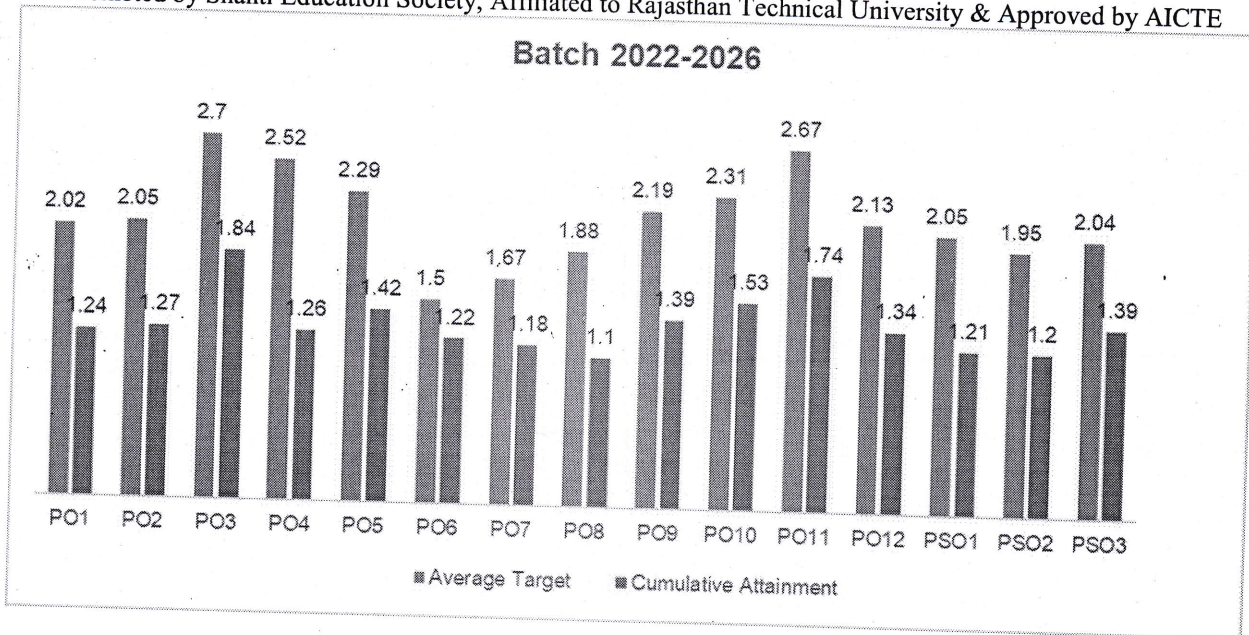


Figure 2: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2022-26

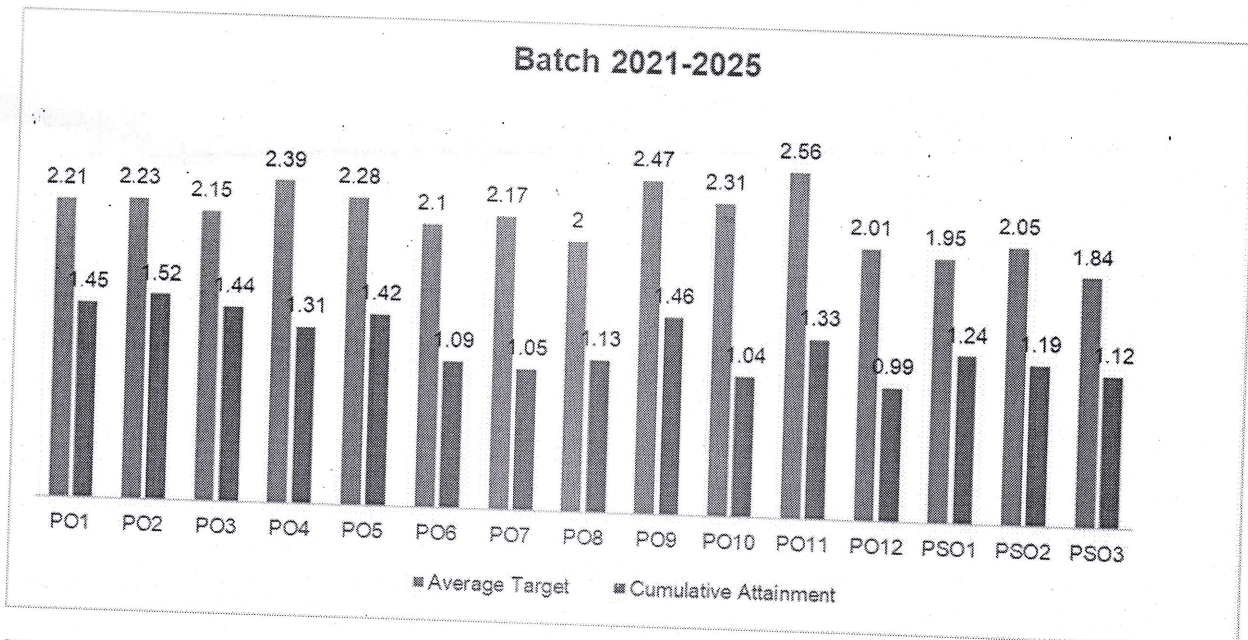


Figure 3: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2021-25

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1.3 Analysis of PO and PSO Attainment

Batch: 2023-27

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	1.40	1.38	2.41	1.13	2.04	1.43	1.38	1.34	1.84	1.33	2.75	1.31	0.65	-	-
Target	1.94	1.89	3.00	3.00	2.50	2.00	2.00	2.00	2.17	1.84	3.00	2.00	1.00	-	-
Gap	0.54	0.51	0.59	1.87	0.46	0.57	0.62	0.66	0.33	0.51	0.25	0.69	0.35	-	-

Batch: 2022-26

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	1.24	1.27	1.84	1.26	1.42	1.22	1.18	1.10	1.39	1.53	1.74	1.34	1.21	1.20	1.39
Target	2.02	2.05	2.70	2.52	2.29	1.50	1.67	1.88	2.19	2.31	2.67	2.13	2.05	1.95	2.04
Gap	0.78	0.78	0.86	1.26	0.87	0.28	0.49	0.78	0.80	0.78	0.93	0.79	0.84	0.75	0.65

Batch: 2021-25

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	1.45	1.52	1.44	1.31	1.42	1.09	1.05	1.13	1.46	1.04	1.33	0.99	1.24	1.19	1.12
Target	2.21	2.23	2.15	2.39	2.28	2.10	2.17	2.00	2.47	2.31	2.56	2.01	1.95	2.05	1.84
Gap	0.76	0.71	0.71	1.08	0.86	1.01	1.12	0.87	1.01	1.27	1.23	1.02	0.71	0.86	0.72

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1.4 Observations

Table 1.4: Achieved Level of PO / PSO (Batch 2023-27)

PO / PSO	Achieved Level
PO4	Below Average (<50%)
PO7, PO8	Average ($\geq 50\%$ but <70%)
PO1, PO2, PO3, PO5, PO6, PO9, PO11	Above Average ($\geq 70\%$)

Batch (2023-27): After analysis of the table 1.4 of PO / PSO achieved level for batch 2023-27, it has been observed that PO4 attainment level are falling below average. PO7, PO8 are attainment on average level. PO1, PO2, PO3, PO5, PO6, PO9, PO11 are attainment on above average level.

Table 1.5: Achieved Level of PO / PSO (Batch 2022-26)

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

Batch (2022-26): After analysis of the table 1.5 of PO / PSO achieved level for batch 2022-26, it has been observed that PO4 attainment level are falling below average. PO1, PO2, PO3, PO5, PO8, PO9, PO11, PO12, PSO1, PSO2 and PSO3 are attainment on average level. PO6, PO7 are attainment on above average level.

Table 1.6: Achieved Level of PO / PSO (Batch 2021-25)

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

Batch (2021-25): After analysis of the table 1.6 of PO / PSO achieved level for batch 2022-26, it has been observed that PO7, PO10, PO12 attainment level are falling below average. PO1, PO2, PO3, PO5, PO6, PO8, PO9, PO11, PSO1, PSO2, PSO3 are attainment on average level.

1.5 Actions Taken

- Arranged hands-on coding and mathematical application sessions for diverse Computer Science subjects, fostering algorithmic efficiency in PO4.
- Held research seminars across various subjects, applying mathematical and scientific principles to analyze complex engineering issues in PO2.

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- Guided project-based learning sessions incorporating research methodologies and data analysis techniques for intricate engineering problem-solving involving NSP Projects in PO3.
- Implemented comprehensive project management strategies to effectively lead multidisciplinary teams and manage projects within diverse engineering domains for PO11.
- Conducted workshops integrating AI tools for software development; provided cybersecurity training for emerging threats, fostering teamwork for ethical solutions in industry and society for PSO1, PSO2, PSO3



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Department of Advance Computing

Session 2023-24

B. Tech (Computer Science and Engineering) (Artificial Intelligence)

CO, PO and PSO Target and Attainment and Observations and Action Taken Report

1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I	2023-27	I Year	2.00	1.51
2	1FY2-03	Engineering Chemistry			1.75	1.60
3	1FY1-04	Communication Skills			2.00	1.99
4	1FY3-07	Basic Mechanical Engineering			1.75	1.61
5	1FY3-08	Basic Electrical Engineering			3.00	2.79
6	1FY2-21	Engineering Chemistry Lab			1.88	1.88
7	1FY1-22	Language Lab			2.00	1.99
8	1FY3-26	Basic Electrical Engineering Lab			3.00	3.00
9	1FY3-25	Manufacturing Practices Workshop			1.88	1.88
10	1FY3-28	Computer Aided Engineering Graphics			1.88	1.88
11	2FY2-01	Engineering Mathematics-II			2.00	1.51
12	2FY2-02	Engineering Physics			1.50	1.18
13	2FY1-05	Human Values			2.20	2.20
14	2FY3-06	Programming for Problem Solving			2.00	1.91
15	2FY3-09	Basic Civil Engineering			2.00	1.93
16	2FY2-20	Engineering Physics Lab			1.75	1.75
17	2FY1-23	Human Values Activities and Sports			1.80	1.80
18	2FY3-24	Computer Programming Lab			2.00	2.00
19	2FY3-27	Basic Civil Engineering Lab			1.87	1.87
20	2FY3-29	Computer Aided Machine Drawing			1.88	1.88
21	3CAI2-01	Advanced Engineering Mathematics	2022-26	II Year	2.25	1.46
22	3CAI1-03	Managerial Economics and Financial Accounting			2.42	0.96
23	3CAI3-04	Digital Electronics			2.25	1.46
24	3CAI4-05	Data Structures and Algorithms			2.75	1.78
25	3CAI4-06	Object Oriented Programming			2.50	2.08
26	3CAI4-07	Software Engineering			2.25	1.46
27	3CAI4-21	Data Structures and Algorithms Lab			2.00	1.95
28	3CAI4-22	Object Oriented Programming Lab			2.13	1.40

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29	3CAI4-23	Software Engineering Lab			2.50	2.43
30	3CAI4-24	Digital Electronics Lab			2.00	1.96
31	3CAI7-30	Industrial Training			2.95	2.89
32	4CAI2-01	Discrete Mathematics Structure			2.25	1.49
33	4CAI1-02	Technical Communication			2.75	1.82
34	4CAI3-04	Microprocessor & Interfaces			2.20	1.44
35	4CAI4-05	Database Management System			1.88	1.44
36	4CAI4-06	Theory of Computation			2.00	1.57
37	4CAI4-07	Data Communication and Computer Networks			2.00	1.31
38	4CAI4-21	Microprocessor & Interfaces Lab			1.80	1.76
39	4CAI4-22	Database Management System Lab			2.23	2.12
40	4CAI4-23	Network Programming Lab			2.00	1.95
41	4CAI4-24	Linux Shell Programming Lab			2.00	1.96
42	4CAI4-25	Java Lab			2.46	2.38
43	5CAI3-01	Data Mining Concepts and Techniques	2021-25	III Year	2.75	2.16
44	5CAI4-02	Compiler Design			2.75	2.26
45	5CAI4-03	Operating System			2.75	2.00
46	5CAI4-04	Computer Graphics & Multimedia			2.25	1.85
47	5CAI4-05	Analysis of Algorithms			2.50	1.92
48	5CAI5-11	Fundamentals of Blockchain			2.00	1.61
49	5CAI5-12	Programming for Data Sciences S			2.75	2.16
50	5CAI4-21	Computer Graphics & Multimedia Lab			2.00	1.95
51	5CAI4-22	Compiler Design Lab			3.00	2.93
52	5CAI4-23	Analysis of Algorithms Lab			3.00	2.93
53	5CAI4-24	Advance Java Lab			3.00	2.92
54	5CAI7-30	Industrial Training			2.93	2.88
55	6CAI3-01	Digital Image Processing			2.00	1.63
56	6CAI4-02	Machine Learning			2.75	2.25
57	6CAI4-03	Information Security System			2.33	1.91
58	6CAI4-04	Computer Architecture and Organization			2.00	1.63
59	6CAI4-05	Principles of Artificial Intelligence			2.50	2.04
60	6CAI4-06	Cloud Computing			2.00	1.63
61	6CAI5-11	Artificial Neural Network			3.00	2.46
62	6CAI5-13	Natural Language Processing (NLP)			2.41	1.53
63	6CAI4-21	Digital Image Processing Lab			2.00	1.94
64	6CAI4-22	Machine Learning Lab			2.31	2.24

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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	2023-27	I Year	1.94	1.45
2	PO2: Problem analysis			1.82	1.32
3	PO3: Design/development of solutions			3	2.46
4	PO4: Conduct investigations of complex problems.			3.00	1.12
5	PO5: Modern tool usage			2.50	2.01
6	PO6: The engineer and society			1.00	0.90
7	PO7: Environment and sustainability			2.00	1.33
8	PO8: Ethics			2.00	1.48
9	PO9: Individual and team work.			2.44	2.12
10	PO10: Communication			2.00	1.42
11	PO11: Project management and finance			3.00	2.73
12	PO12: Life-long learning			2.00	1.37
13	PSO1: Computing Knowledge			1.00	0.66
14	PSO2: Evolutionary changes in computing				
15	PSO3: Modern computing tools				
16	PO1: Engineering knowledge	2022-26	II Year	2.02	1.27
17	PO2: Problem analysis			2.05	1.30
18	PO3: Design/development of solutions			2.7	1.88
19	PO4: Conduct investigations of complex problems.			2.52	1.30
20	PO5: Modern tool usage			2.29	1.63
21	PO6: The engineer and society			1.50	1.36
22	PO7: Environment and sustainability			1.67	1.45
23	PO8: Ethics			1.88	1.43
24	PO9: Individual and team work.			2.19	1.69
25	PO10: Communication			2.31	1.73
26	PO11: Project management and finance			2.67	2.00
27	PO12: Life-long learning			2.13	1.63
28	PSO1: Computing Knowledge			2.05	1.18
29	PSO2 : Evolutionary changes in computing			1.95	1.06
30	PSO3: Modern computing tools			2.04	1.14
31	PO1: Engineering knowledge	2021-25	III Year	2.21	1.48
32	PO2: Problem analysis			2.23	1.46

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33	PO3: Design/development of solutions			2.15	1.62
34	PO4: Conduct investigations of complex problems.			2.39	1.23
35	PO5: Modern tool usage			2.28	1.53
36	PO6: The engineer and society			2.10	1.32
37	PO7: Environment and sustainability			2.17	1.30
38	PO8: Ethics			2.00	1.17
39	PO9: Individual and team work.			2.47	1.63
40	PO10: Communication			2.31	1.37
41	PO11: Project management and finance			2.56	1.60
42	PO12: Life-long learning			2.01	1.25
43	PSO1: Computing Knowledge			1.95	1.28
44	PSO2 :Evolutionary changes in computing			2.05	1.35
45	PSO3: Modern computing tools			1.84	1.20

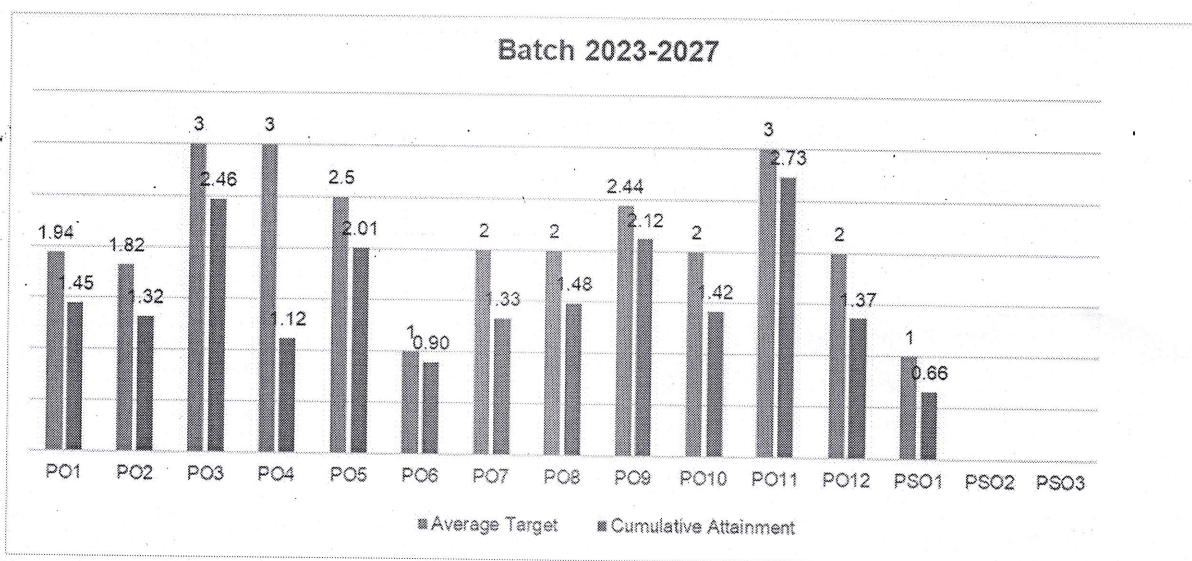


Figure 1: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2023-27



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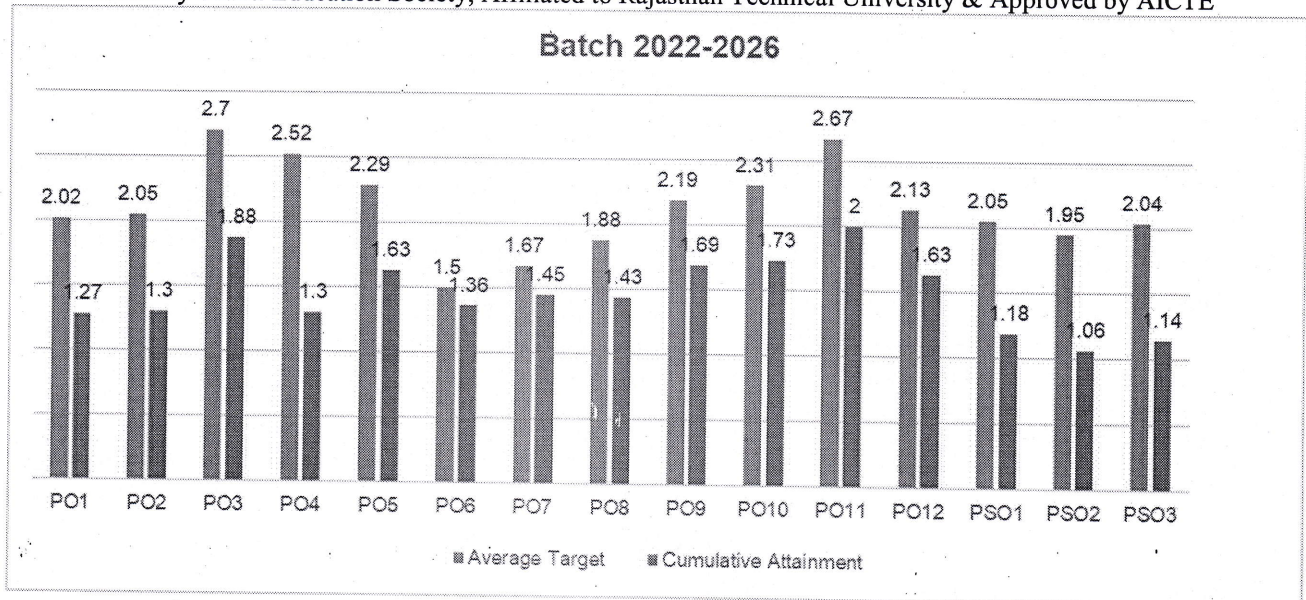


Figure 2: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2022-26

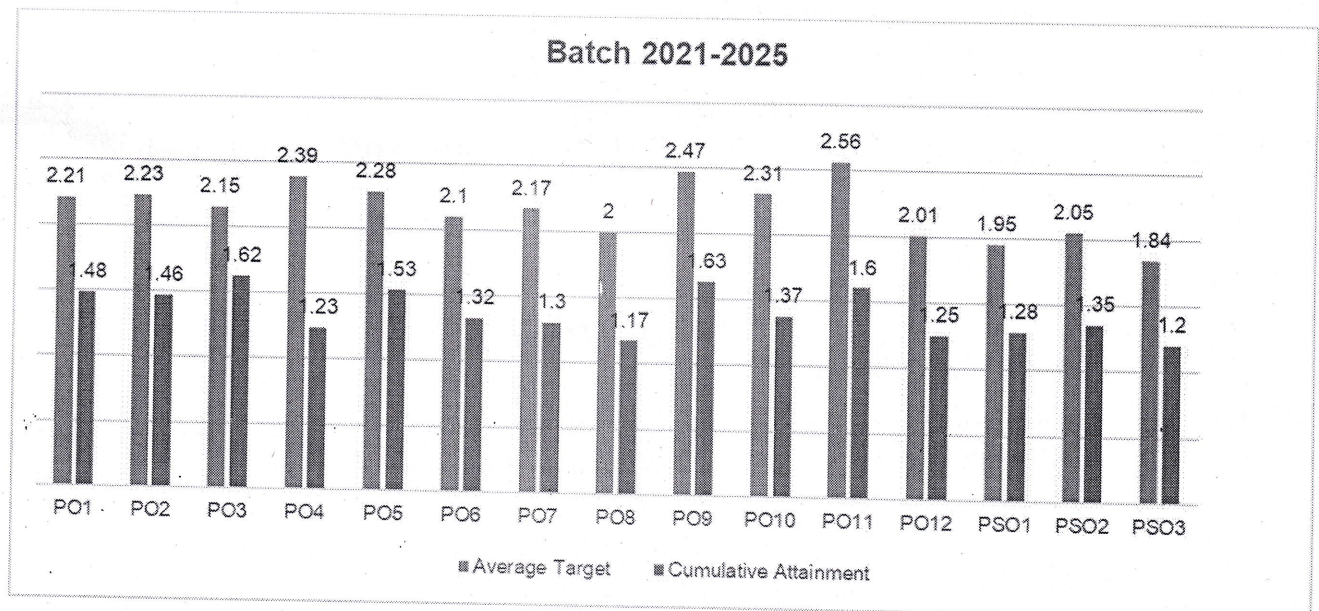


Figure 3: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2021-25

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1.3 Analysis of PO and PSO Attainment

Batch: 2023-27

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	1.45	1.32	2.46	1.12	2.01	0.90	1.33	1.48	2.12	1.42	2.73	1.37	0.66	1.45	1.32
Target	1.94	1.82	3.00	3.00	2.50	1.00	2.00	2.00	2.44	2.00	3.00	2.00	1.00	1.94	1.82
Gap	0.49	0.50	0.54	1.88	0.49	0.10	0.67	0.52	0.32	0.58	0.27	0.63	0.34	0.49	0.50

Batch: 2022-26

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	1.27	1.30	1.88	1.30	1.63	1.36	1.45	1.43	1.69	1.73	2.00	1.63	1.18	1.06	1.14
Target	2.02	2.05	2.70	2.52	2.29	1.50	1.67	1.88	2.19	2.31	2.67	2.13	2.05	1.95	2.04
Gap	0.75	0.75	0.82	1.22	0.66	0.14	0.22	0.45	0.50	0.58	0.67	0.50	0.87	0.89	0.90

Batch: 2021-25

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	1.48	1.46	1.62	1.23	1.53	1.32	1.30	1.17	1.63	1.37	1.60	1.25	1.28	1.35	1.20
Target	2.21	2.23	2.15	2.39	2.28	2.10	2.17	2.00	2.47	2.31	2.56	2.01	1.95	2.05	1.84
Gap	0.73	0.77	0.53	1.16	0.75	0.78	0.87	0.83	0.84	0.94	0.96	0.76	0.67	0.70	0.64

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1.4 Observations

Table 1.4: Achieved Level of PO / PSO (Batch 2023-27)

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

Batch (2023-27): After analysis of the table 1.4 of PO / PSO achieved level for batch 2023-27, it has been observed that PO4 attainment is below average level. PO7, PO12 and PSO1 are on average level. PO1, PO2, PO3, PO5, PO6, PO8, PO9, PO10, PO11, PSO2, and PSO3 are attainment on above average level.

Table 1.5: Achieved Level of PO / PSO (Batch 2022-26)

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

Batch (2022-26): After analysis of the table 1.5 of PO / PSO achieved level for batch 2022-26, it has been observed that PO1, PO2, PO3, PO4, PSO1, PSO2 and PSO3 are attainment on average level. PO5, PO6, PO7, PO8, PO9, PO10, PO11 and PO12 are attainment on above average level.

Table 1.6: Achieved Level of PO / PSO (Batch 2021-25)

PO / PSO	Achieved Level
Nil	Below Average (<50%)
PO3	Average ($\geq 50\%$ but <70%)
PO1, PO2, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO 12, PSO1, PSO2 and PSO3	Above Average ($\geq 70\%$)

Batch (2021-25): After analysis of the table 1.6 of PO / PSO achieved level for batch 2021-25, it has been observed that nil attainment is below average. PO3 is on average level. PO1, PO2, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO 12, PSO1, PSO2 and PSO3 attainment are on above average level.



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1.5 Actions Taken

- Organized different industrial visit for exploring the uses of modern tools.
- Organized practical coding and aptitude sessions to apply mathematical principles in designing efficient algorithms across diverse subjects for PO1
- Conducted special lecture for giving the knowledge of new subject and overcome the effect of attainment gap of that subject such as ANN, Block chain and principal of artificial intelligence.
- Encourage Student to participate in Tech Event and Hackathon for more exposure and experience for selecting and applying appropriate tools and technologies to prototype and implement their solutions efficiently for PO5.
- Conducted workshops on ethical principles and professional responsibilities, emphasizing their importance in engineering practice for PO8.
- Organized presentations and report writing sessions to enhance communication skills for effectively conveying complex engineering concepts for P10.

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Department of Computer Engineering

Session 2023-24

B. Tech in Computer Engineering (Regional Course)

CO, PO and PSO Target and Attainment and Observations and Action Taken Report

1.1 CO-Target and Attainment

S. No.	Course Code	Course Name	Batch	Year	Average Target	Cumulative Attainment
1	1FY2-01	Engineering Mathematics-I	2023-27	I Year	2.00	1.71
2	1FY2-03	Engineering Chemistry			2.00	1.51
3	1FY1-04	Communication Skills			1.80	1.76
4	1FY3-07	Basic Mechanical Engineering			1.75	1.63
5	1FY3-08	Basic Electrical Engineering			3.00	2.73
6	1FY2-21	Engineering Chemistry Lab			1.88	1.86
7	1FY1-22	Language Lab			2.00	2.00
8	1FY3-26	Basic Electrical Engineering Lab			1.88	1.88
9	1FY3-25	Manufacturing Practices Workshop			3.00	3.00
10	1FY3-28	Computer Aided Engineering Graphics			1.88	1.88
11	2FY2-01	Engineering Mathematics-II			2.50	1.97
12	2FY2-02	Engineering Physics			1.50	1.07
13	2FY1-05	Human Values			2.33	2.21
14	2FY3-06	Programming for Problem Solving			2.00	1.79
15	2FY3-09	Basic Civil Engineering			1.75	1.56
16	2FY2-20	Engineering Physics Lab			1.75	1.16
17	2FY1-23	Human Values Activities and Sports			1.75	1.75
18	2FY3-24	Computer Programming Lab			2.00	2.00
19	2FY3-27	Basic Civil Engineering Lab			1.64	1.64
20	2FY3-29	Computer Aided Machine Drawing			1.62	1.62
21	3CSR2-01	Advanced Engineering Mathematics	2022-26	II Year	2.25	1.19
22	3CSR1-03	Managerial Economics and Financial Accounting			2.41	0.96
23	3CSR3-04	Digital Electronics			2.25	1.61
24	3CSR4-05	Data Structures and Algorithms			2.75	1.97
25	3CSR4-06	Object Oriented Programming			2.13	1.84
26	3CSR4-07	Software Engineering			2.50	1.63

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27	3CSR4-21	Data Structures and Algorithms Lab			2.00	1.83
28	3CSR4-22	Object Oriented Programming Lab			2.00	1.95
29	3CSR4-23	Software Engineering Lab			2.50	2.30
30	3CSR4-24	Digital Electronics Lab			2.20	2.14
31	3CSR7-30	Industrial Training			3.00	1.50
32	4CSR2-01	Discrete Mathematics Structure			2.25	1.48
33	4CSR1-02	Technical Communication			2.75	1.81
34	4CSR3-04	Microprocessor & Interfaces			2.20	1.45
35	4CSR4-05	Database Management System			1.88	1.22
36	4CSR4-06	Theory of Computation			2.00	1.31
37	4CSR4-07	Data Communication and Computer Networks			2.25	1.46
38	4CSR4-21	Microprocessor & Interfaces Lab			2.00	1.94
39	4CSR4-22	Database Management System Lab			2.23	2.16
40	4CSR4-23	Network Programming Lab			2.00	1.93
41	4CSR4-24	Linux Shell Programming Lab			3.00	2.90
42	4CSR4-25	Java Lab	2021-25	III Year	2.25	2.18
43	5CSR3-01	Information Theory & Coding			2.25	1.83
44	5CSR4-02	Compiler Design			2.75	2.24
45	5CSR4-03	Operating System			2.75	2.24
46	5CSR4-04	Computer Graphics & Multimedia			2.25	1.79
47	5CSR4-05	Analysis of Algorithms			2.75	2.24
48	5CSR5-11	Wireless Communication			2.50	2.23
49	5CSR5-12	Human Computer Interaction			2.50	1.94
50	5CSR4-21	Computer Graphics & Multimedia Lab			2.60	2.60
51	5CSR4-22	Compiler Design Lab			2.00	0.99
52	5CSR4-23	Analysis of Algorithms Lab			2.00	2.00
53	5CSR4-24	Advance Java Lab			3.00	3.00
54	5CSR7-30	Industrial Training			2.00	1.67
55	6CSR3-01	Digital Image Processing			2.00	1.77
56	6CSR4-02	Machine Learning			2.75	2.13
57	6CSR4-03	Information Security System			2.33	2.06
58	6CSR4-04	Computer Architecture and Organization			2.60	2.30
59	6CSR4-05	Artificial Intelligence			2.50	2.21
60	6CSR4-06	Cloud Computing			2.00	1.55
61	6CSR5-11	Distributed System			2.40	1.89
62	6CSR5-13	Ecommerce and ERP			2.25	1.99

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63	6CSR4-21	Digital Image Processing Lab			2.00	2.00
64	6CSR4-22	Machine Learning Lab			3.00	3.00
65	6CSR4-23	Python Lab			2.50	2.50
66	6CSR4-24	Mobile Application Development Lab			2.00	2.00

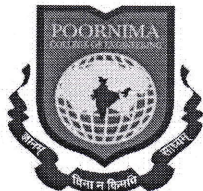
1.2 PO and PSO-Target and Attainment

S. No.	PO and PSO	Batch	Year	Average Target	Average Attainment
1	PO1: Engineering knowledge	2023-27	I Year	1.88	1.37
2	PO2: Problem analysis			1.89	1.39
3	PO3: Design/development of solutions			2.5	1.84
4	PO4: Conduct investigations of complex problems.			2.0	0.87
5	PO5: Modern tool usage			2.38	2.01
6	PO6: The engineer and society			1.50	1.20
7	PO7: Environment and sustainability			1.84	1.15
8	PO8: Ethics			1.94	1.29
9	PO9: Individual and team work.			2.34	2.05
10	PO10: Communication			2.00	1.43
11	PO11: Project management and finance			2.5	2.09
12	PO12: Life-long learning			2.00	1.36
13	PSO1: Computing Knowledge			1.00	0.61
14	PSO2: Evolutionary changes in computing			-	-
15	PSO3: Modern computing tools			-	-
16	PO1: Engineering knowledge	2022-26	II Year	2.02	1.24
17	PO2: Problem analysis			2.05	1.29
18	PO3: Design/development of solutions			2.7	1.92
19	PO4: Conduct investigations of complex problems.			2.52	1.11
20	PO5: Modern tool usage			2.29	1.45
21	PO6: The engineer and society			1.50	1.25
22	PO7: Environment and sustainability			1.67	1.41
23	PO8: Ethics			1.88	1.23
24	PO9: Individual and team work.			2.19	1.75
25	PO10: Communication			2.31	1.50
26	PO11: Project management and finance			2.67	1.88
27	PO12: Life-long learning			2.13	1.34
28	PSO1: Computing Knowledge			2.05	1.02
29	PSO2: Evolutionary changes in computing			1.95	0.85

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30	PSO3: Modern computing tools			2.04	1.15
31	PO1: Engineering knowledge	2021-25	III Year	2.13	1.09
32	PO2: Problem analysis			2.24	1.13
33	PO3: Design/development of solutions			2.61	1.28
34	PO4: Conduct investigations of complex problems.			2.44	1.23
35	PO5: Modern tool usage			2.32	1.29
36	PO6: The engineer and society			2.00	1.41
37	PO7: Environment and sustainability			2.22	1.44
38	PO8: Ethics			1.97	1.05
39	PO9: Individual and team work.			2.29	1.43
40	PO10: Communication			2.07	1.12
41	PO11: Project management and finance			2.56	1.17
42	PO12: Life-long learning			2.03	0.98
43	PSO1: Computing Knowledge			1.99	1.01
44	PSO2: Evolutionary changes in computing			2.03	1.01
45	PSO3: Modern computing tools			1.87	1.06

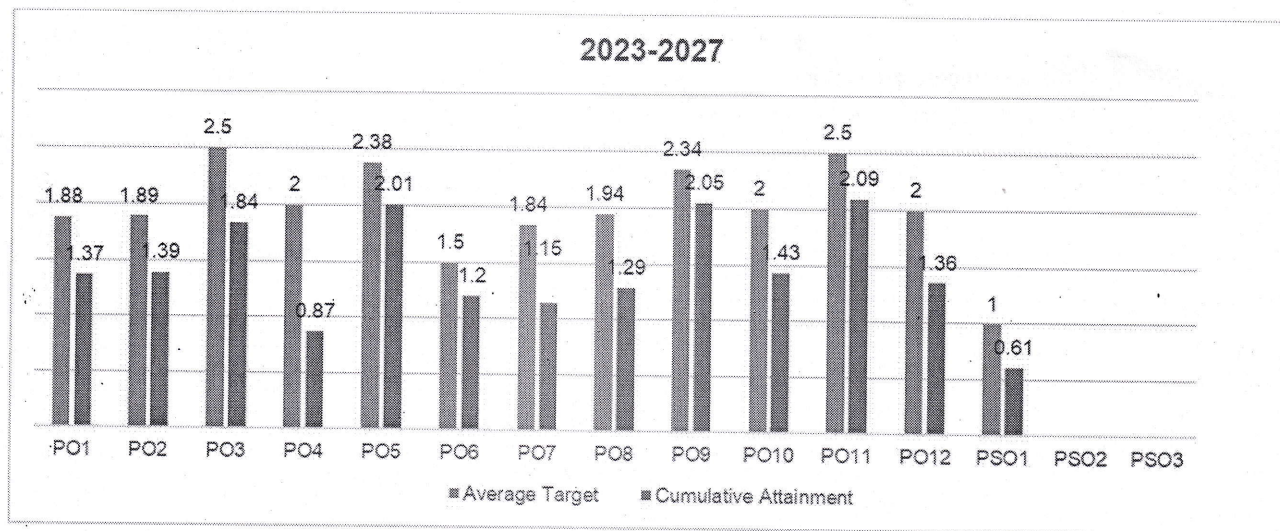


Figure 1: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2023-27

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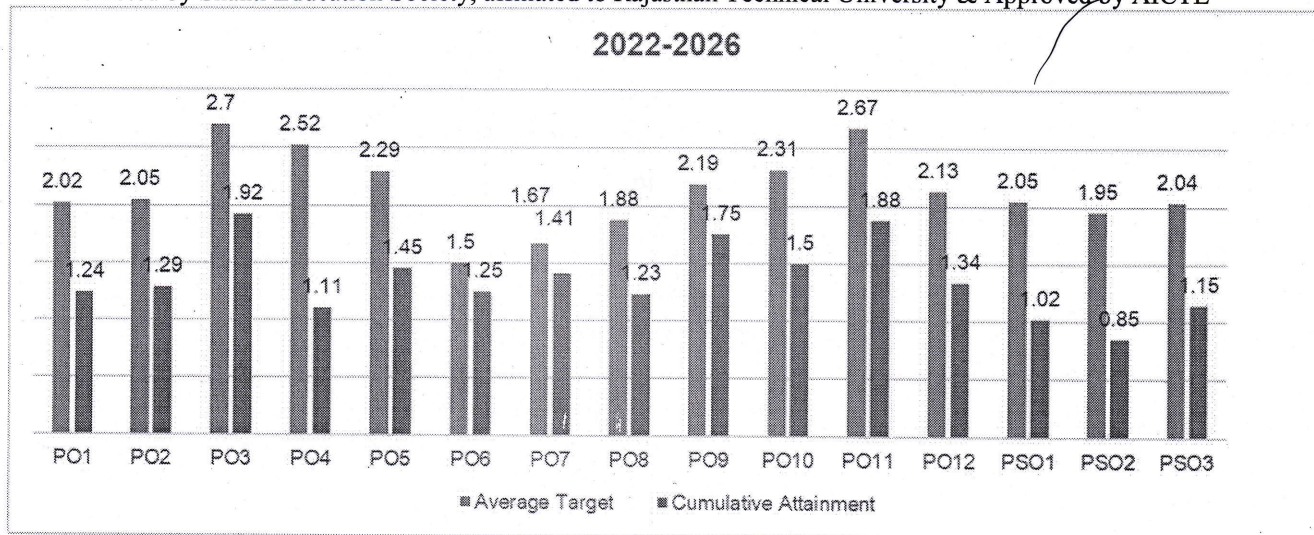


Figure 2: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2022-26

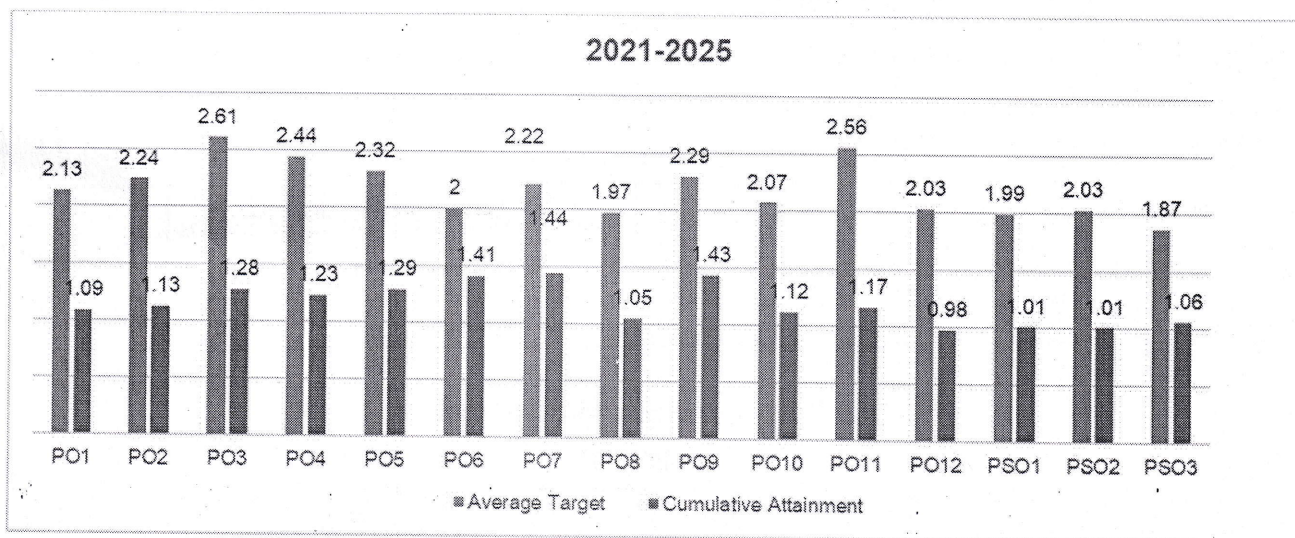


Figure 3: Graph Between Average Target and Average Attainment of PO & PSO for Batch 2021-25

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1.3 Analysis of PO and PSO Attainment

Table 1.1: PO Attainment, Target and Gaps

Batch: 2023-27

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.37	1.39	1.84	0.87	2.01	1.20	1.15	1.29	2.05	1.43	2.09	1.36	0.61	-	-
Target	1.88	1.89	2.50	2.00	2.38	1.50	1.84	1.94	2.34	2.00	2.50	2.00	1.00	-	-
Gap	0.51	0.50	0.66	1.13	0.37	0.30	0.69	0.65	0.29	0.57	0.41	0.64	0.39	-	-

Table 1.2: PO Attainment, Target and Gaps

Batch: 2022-26

POs / PSOs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2	PSO3
Attainment	1.24	1.29	1.92	1.11	1.45	1.25	1.41	1.23	1.75	1.50	1.88	1.34	1.02	0.85	1.15
Target	2.02	2.05	2.70	2.52	2.29	1.50	1.67	1.88	2.19	2.31	2.67	2.13	2.05	1.95	2.04
Gap	0.78	0.76	0.78	1.41	0.84	0.25	0.26	0.65	0.44	0.81	0.79	0.79	1.03	1.10	0.89

Table 1.3: 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	1.09	1.13	1.28	1.23	1.29	1.41	1.44	1.05	1.43	1.12	1.17	0.98	1.01	1.01	1.06
Target	2.13	2.24	2.61	2.44	2.32	2.00	2.22	1.97	2.29	2.07	2.56	2.03	1.99	2.03	1.87
Gap	1.04	1.11	1.33	1.21	1.03	0.59	0.78	0.92	0.86	0.95	1.39	1.05	0.98	1.02	0.81

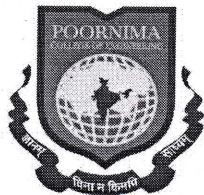
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1.4 Observations

Table 1.5: Achieved Level of PO / PSO (Batch 2023-27)

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

Batch (2023-27): After analysis of the table 1.5 of PO / PSO achieved level for batch 2023-27, it has been observed that the PO4 attainment level are falling below average. PO7, PO8, PO12 and PSO1 are attainment on average level. The attainment level of PO1, PO2, PO3, PO5, PO6, PO9, PO10 and PO11 are above average.

Table 1.6: Achieved Level of PO / PSO (Batch 2022-26)

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

Batch (2022-26): After analysis of the table 1.6 of PO / PSO achieved level for batch 2022-26, it has been observed that the none of the attainment level PO4, PSO1 and PSO2 are falling below average. Attainment PO1, PO2, PO5, PO8, PO10, PO12 and PSO3 are on average level. The attainment level of PO3, PO6, PO7, PO9 and PO11 are above average.

Table 1.7: Achieved Level of PO / PSO (Batch 2021-25)

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

Batch (2021-25): After analysis of the table 1.7 of PO / PSO achieved level for batch 2021-25, it has been observed that PO3, PO11, PO12 and PSO2 are falling below average. Attainment PO1, PO2, PO4, PO5, PO7, PO8, PO9, PO10, PSO1 and PSO3 are on average level. The attainment level PO6 is above average.

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1.5 Actions Taken

- Organized practical coding and aptitude sessions to apply mathematical principles in designing efficient algorithms across diverse subjects in Computer Science for PO1
- Conducted research seminars to review literature and analyze complex engineering problems using mathematical and scientific principles across various subjects for PO2
- Facilitated project-based learning sessions to utilize research methods and data analysis techniques in solving intricate engineering problems within subjects such as Data Structures, Machine Learning, etc including NSP Projects for PO4
- Encourage Student to participate in Tech Event and Hackathon for more exposure and experience for selecting and applying appropriate tools and technologies to prototype and implement their solutions efficiently for PO5
- Conducted workshops on ethical principles and professional responsibilities, emphasizing their importance in engineering practice for PO8
- Organized presentations and report writing sessions to enhance communication skills for effectively conveying complex engineering concepts for P10.

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