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COLLEGE OF ENGINEERING

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

Department of Computer Engineering

Session 2021-22

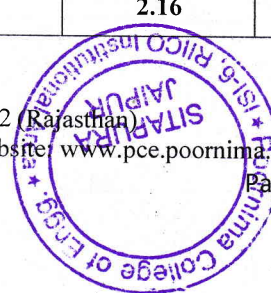
CO, PO and PSO Target and Attainment and Observations and Action Taken Report (CS)

1.1 CO-Target and Attainment

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

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

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

1.2 PO and PSO-Target and Attainment

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

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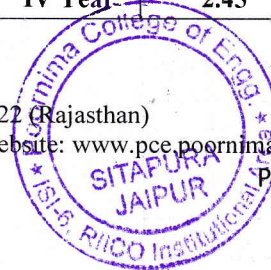
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7	PO7: Environment and sustainability			2.00	1.64
8	PO8: Ethics			2.00	1.82
9	PO9: Individual and team work.			2.70	1.78
10	PO10: Communication			2.00	1.67
11	PO11: Project management and finance			-	-
12	PO12: Life-long learning			2.00	1.68
13	PSO1: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

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

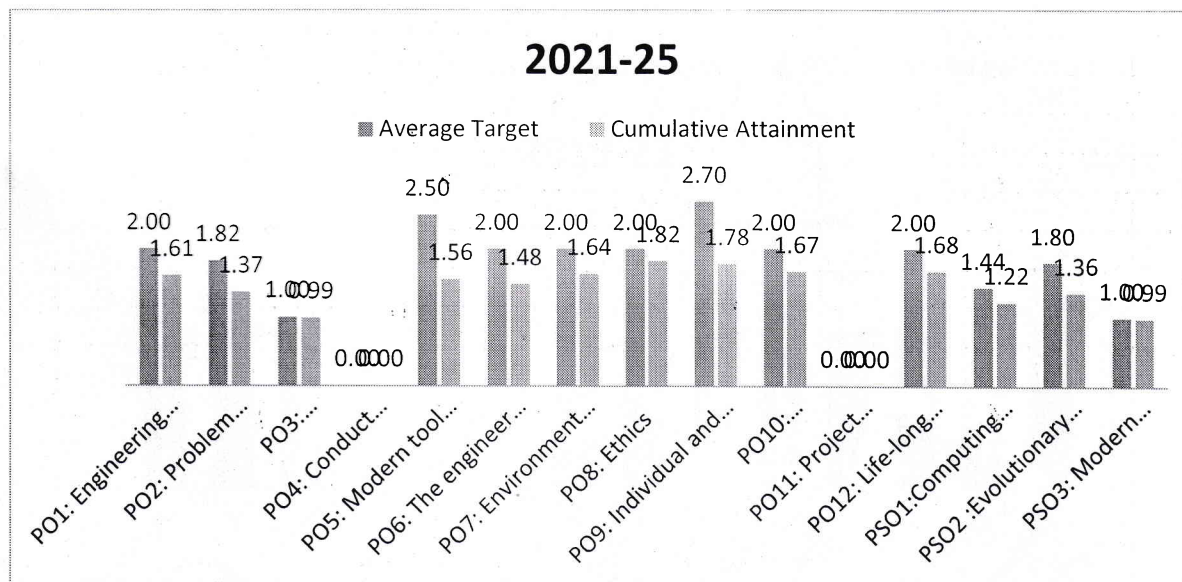


Figure 1: Graph between Average Target and Average Attainment of PO & PSO for Batch 2021-25





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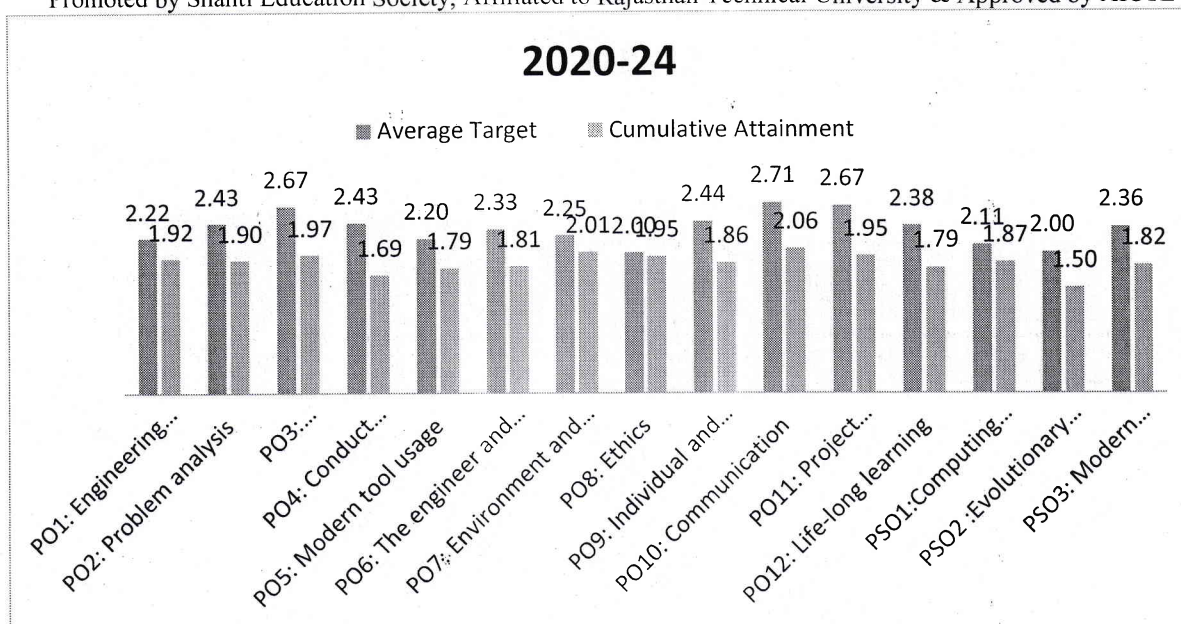


Figure 2: Graph between Average Target and Average Attainment of PO & PSO for Batch 2020-24

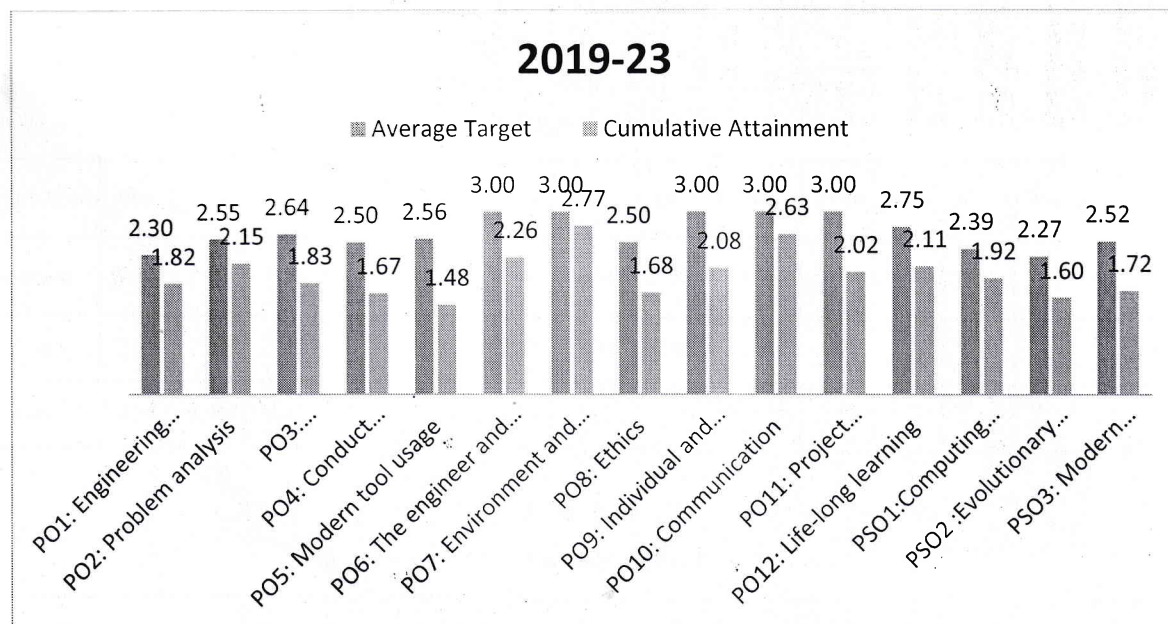


Figure 3: Graph between Average Target and Average Attainment of PO & PSO for Batch 2019-23



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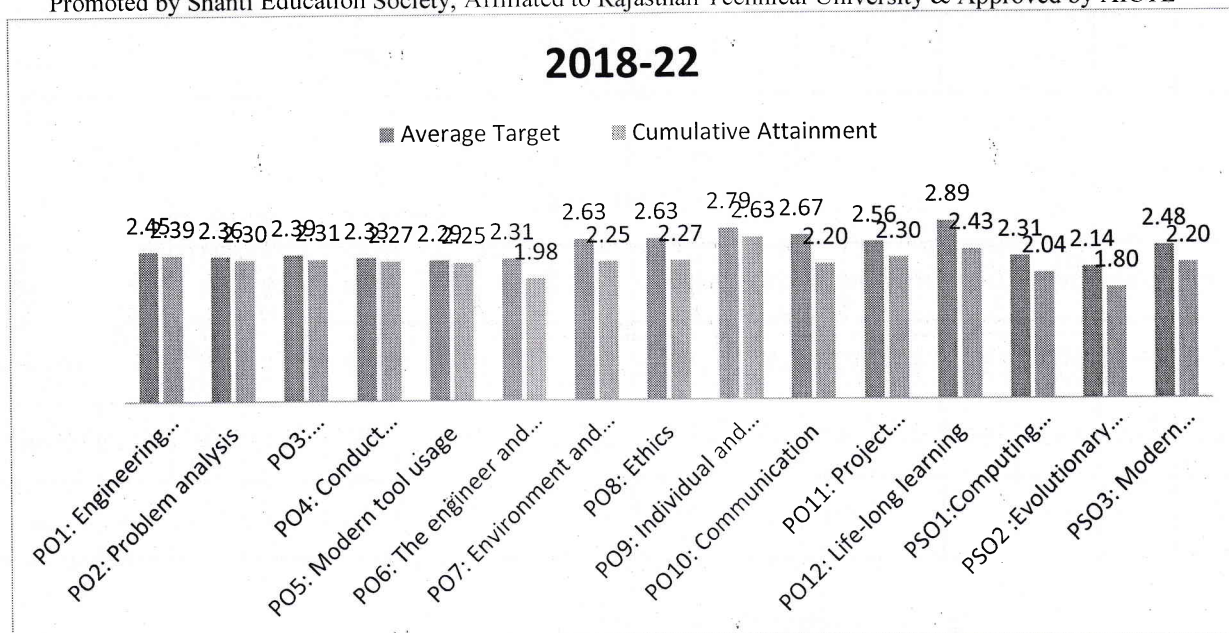


Figure 4: Graph between Average Target and Average Attainment of PO & PSO for Batch 2018-22

1.3 Analysis of PO and PSO Attainment

Table 1.1: PO Attainment, Target and Gaps

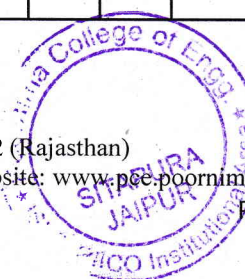
Batch: 2021-25

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

Table 1.2: PO Attainment, Target and Gaps

Batch: 2020-24

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





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Gap	0.29	0.53	0.69	0.74	0.41	0.52	0.24	0.05	0.58	0.66	0.71	0.60	0.24	0.50	0.55
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Table 1.3: PO Attainment, Target and Gaps

Batch: 2019-23

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

Table 1.4: PO Attainment, Target and Gaps

Batch: 2018-22

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

1.4 Observations

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

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

Batch (2021-25): After analysis of the table 1.5 of PO / PSO achieved level for batch 2021-25, it has been observed that none of the attainment level are falling below average. PO5 and PO9 are attainment on average level. The attainment level of PO1, PO2, PO3, PO6, PO7, PO8, PO10, PO12, PSO1, PSO2 and PSO3 are above average.



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

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

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

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

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

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

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

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

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

1.5 Actions Taken

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





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- A webinar titled “Technical, Communication and life skills” organized by department for students for PO9 and PO10.
- For understand the impact of the professional engineering solutions in societal and environmental contexts (PO8), students motivated to participant in smart India Hackathon.

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