



# MANAKULA VINAYAGAR INSTITUTE OF TECHNOLOGY

Approved by AICTE, New Delhi and Affiliated to Pondicherry University

Accredited by NBA & NAAC 'A' Grade

Kalitheerthalkuppam, Puducherry - 605107



## DEPARTMENT OF ROBOTICS AND AUTOMATION

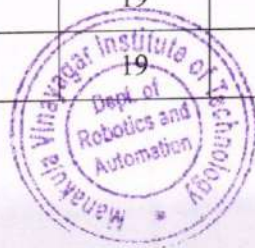
(2020-24) BATCH

### CO-PO ATTAINMENT

S. No	Code	Name of The Subject	No. of Students Appeared	No. of Students Passed	Pass Percentage	CO-Attainment	Target level	Target Attainment
1.	C101	Mathematics – I	16	16	100%	2.65	2.5	YES
2.	C102	Physics	16	16	100%	2.7	2.5	YES
3.	C103	Chemistry	16	16	100%	2.7	2.5	YES
4.	C104	Basic Civil and Mechanical Engineering	16	16	100%	2.65	2.5	YES
5.	C105	Engineering Mechanics	16	16	100%	2.75	2.5	YES
6.	C106	Communicative English	16	16	100%	2.88	2.5	YES
7.	C107(P)	Physics Laboratory	16	16	100%	2.75	2.5	YES
8.	C108(P)	Chemistry Laboratory	16	16	100%	2.75	2.5	YES
9.	C109(P)	Workshop Practice	16	16	100%	2.75	2.5	YES
10.	C110	Mathematics – II	16	16	100%	2.64	2.5	YES
11.	C111	Material Science	16	16	100%	2.58	2.5	YES
12.	C112	Environmental Science	16	16	100%	2.86	2.5	YES
13.	C113	Basic Electrical and Electronics Engineering	16	16	100%	2.74	2.5	YES
14.	C114	Engineering Thermodynamics	16	16	100%	2.65	2.5	YES
15.	C115	Computer Programming	16	16	100%	2.78	2.5	YES
16.	C116(P)	Computer Programming Laboratory	16	16	100%	2.75	2.5	YES
17.	C117	Engineering Graphics	16	16	100%	2.75	2.5	YES
18.	C118(P)	Basic Electrical and Electronics Laboratory	16	16	100%	2.75	2.5	YES
19.	C119(P)	NSS / NCC *	16	16	100%	2.75	2.5	YES
20.	C201	Linear Algebra	18	16	88.88%	2.78	2.5	YES
21.	C202	Electronic Devices and Circuits	18	18	100%	2.88	2.5	YES
22.	C203	Programming in Python	19	19	100%	2.8	2.5	YES
23.	C204	Sensors and Instrumentation	19	19	100%	2.86	2.5	YES
24.	C205	Electrical Machines and Drives	19	19	100%	2.65	2.5	YES
25.	C206	Strength of Materials	19	8	42.10%	2.35	2.5	NO
26.	C207(P)	Electronic Devices and Circuits Laboratory	19	19	100%	2.75	2.5	YES
27.	C208(P)	Programming in Python Laboratory	19	19	100%	2.75	2.5	YES
28.	C209(P)	Electrical Machines and Drives Laboratory	19	19	100%	2.75	2.5	YES
29.	C210	Fourier Series and Partial	19	16	84.21%	2.66	2.5	YES



		Differential Equations						
30.	C211	Principles Of Robotics	19	19	100%	2.74	2.5	YES
31.	C212	Analog and Digital Electronics	19	19	100%	2.88	2.5	YES
32.	C213	Automatic Control Systems	19	17	89.47%	2.82	2.5	YES
33.	C214	Kinematics and Dynamics of Machines	19	17	89.47%	2.7	2.5	YES
34.	C215	Hydraulics and Pneumatics	19	18	94.73%	2.82	2.5	YES
35.	C216(P)	Analog and Digital Electronics Laboratory	19	19	100%	2.88	2.5	YES
36.	C217(P)	Kinematics and Dynamics Laboratory	19	19	100%	2.75	2.5	YES
37.	C218(P)	Hydraulics and Pneumatics Laboratory	19	19	100%	2.75	2.5	YES
38.	C219(P)	Physical Education	19	19	100%	2.75	2.5	YES
39.	C301	Statistics and Numerical Methods	19	14	73.68%	2.56	2.5	YES
40.	C302	Microcontroller and Embedded System Design	19	19	100%	2.75	2.5	YES
41.	C303	Programmable Controllers Logic	19	18	94.73%	2.72	2.5	YES
42.	C304	Robotic Control Systems	19	17	89.47%	2.74	2.5	YES
43.	C305	CNC Machine and Metrology	19	17	89.47%	2.68	2.5	YES
44.	C306	Field and Service Robotics	19	18	94.73%	2.75	2.5	YES
45.	C307(P)	Microcontroller and Embedded System Design Laboratory	19	19	100%	2.75	2.5	YES
46.	C308(P)	PLC and Robotics Laboratory	19	19	100%	2.75	2.5	YES
47.	C309(P)	CNC and Metrology Laboratory	19	19	100%	2.75	2.5	YES
48.	C310(P)	General Proficiency – I	19	19	100%	2.75	2.5	YES
49.	C311	Modeling and Simulation	19	18	94.73%	2.68	2.5	YES
50.	C312	Robot Kinematics and Dynamics	19	17	89.47%	2.62	2.5	YES
51.	C313	Programming For Robotics	19	18	94.73%	2.75	2.52	YES
52.	C314	Automation System Design	19	18	94.73%	2.88	2.5	YES
53.	C315	Design of Mechanical Transmission Systems	19	16	84.21%	2.58	2.5	YES
54.	C316	Wireless Sensor Networks for Robotics	19	17	89.47%	2.80	2.5	YES
55.	C317(P)	Modeling and Simulation Laboratory	19	19	100%	2.75	2.5	YES
56.	C318(P)	Automation System Design Laboratory	19	19	100%	2.75	2.5	YES
57.	C319(P)	Virtual Instrumentation Laboratory	19	19	100%	2.75	2.5	YES
58.	C320	General Proficiency – II	19	19	100%	2.75	2.5	YES
59.	C401	Industrial Robotics and Material Handling	19	19	100%	2.77	2.5	YES
60.	C402	Artificial Intelligence for Robotics	19	19	100%	2.83	2.5	YES
61.	C403	Totally Integrated Automation	19	19	100%	2.53	2.5	YES



62.	C404	Medical Robotics	19	19	100%	2.78	2.5	YES
63.	C405	Reliability and Quality Control	19	19	100%	2.83	2.5	YES
64.	C406(P)	Totally Integrated Automation Laboratory	19	19	100%	2.77	2.5	YES
65.	C407(P)	Innovative Practices	19	19	100%	2.75	2.5	YES
66.	C408(P)	Industrial Visit/Training	19	19	100%	2.77	2.5	YES
67.	C409(P)	Project Work-I	19	19	100%	2.5	2.5	YES
68.	C410	Professional Ethics	19	19	100%	2.5	2.5	YES
69.	C411	Maintenance and Safety Engineering	19	19	100%	2.77	2.5	YES
70.	C412	Machine Learning for Robotics	19	19	100%	2.43	2.5	NO
71.	C413	Entrepreneurship Development	19	19	100%	2.92	2.5	YES
72.	C414(P)	Project Work-II	19	19	100%	2.78	2.5	YES

Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
<b>SEMESTER-I</b>													
C101	Mathematics – I	1	1	1	1	-	-	-	-	-	-	-	1
C102	Physics	3	3	2	3	-	3	-	-	-	-	-	3
C103	Chemistry	2	2	2	-	-	2	2	-	-	-	-	2
C104	Basic Civil and Mechanical Engineering	2	2	2	1	-	2	-	-	-	-	-	3
C105	Engineering Mechanics	2	2	2	2	-	2	-	-	-	-	-	2
C106	Communicative English	2	2	2	2	-	2	-	-	-	3	2	3
C107(P)	Physics Laboratory	3	3	2	-	-	-	-	-	-	-	2	3
C108(P)	Chemistry Laboratory	3	3	2	-	-	-	-	-	-	3	-	3
C109(P)	Workshop Practice	3	3	3	-	-	-	-	-	-	-	2	3

Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
<b>SEMESTER-II</b>													
C110	Mathematics – II	2	2	1	2	-	-	-	1	-	-	1	2
C111	Material Science	2	1	2	1	-	-	-	-	-	-	2	2
C112	Environmental Science	1	1	1			2	3	-	-	-	2	2



C113	Basic Electrical and Electronics Engineering	2	1	2	-	1	1	-	-	-	-	1	2
C114	Engineering Thermodynamics	2	2	2	-	2	-	-	-	-	-	1	1
C115	Computer Programming	1	2	2	1	1	-	-	-	-	-	2	2
C116(P)	Computer Programming Laboratory	1	3	3	2	3	-	-	-	-	-	2	3
C117	Engineering Graphics	1	2	1	1	1	-	-	-	-	-	2	2
C118(P)	Basic Electrical and Electronics Laboratory	1	2	3	2	3	-	-	-	-	-	2	2
C119(P)	NSS / NCC *	3	-	-	-	3	3	3	3	3	3	3	3

Course Code	Course Name	PO1	PO2	PO3	PO 4	PO 5	PO6	PO 7	PO8	PO 9	PO 10	PO11	PO12
<b>SEMESTER-III</b>													
C201	Linear Algebra	2	1	2	-	-	-	-	-	-	-	-	1
C202	Electronic Devices and Circuits	3	2	-	-	1	-	-	-	-	-	-	1
C203	Programming in Python	3	2	1	-	3	-	-	-	-	-	-	2
C204	Sensors and Instrumentation	3	2	1	-	-	-	-	-	-	-	-	-
C205	Electrical Machines and Drives	3	2	2	-	-	-	-	-	-	-	1	1
C206	Strength of Materials	3	3	3	2	-	-	-	-	-	-	-	-
C207(P)	Electronic Devices and Circuits Laboratory	3	3	-	3	3	-	-	-	-	-	-	3
C208(P)	Programming in Python Laboratory	3	3	-	2	2	-	-	-	-	-	-	2
C209(P)	Electrical Machines and Drives Laboratory	3	2	-	2	2	-	-	-	-	-	-	2



Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
<b>SEMESTER-IV</b>													
C210	Fourier Series and Partial Differential Equations	2	2	1	-	1	-	-	-	-	-	-	1
C211	Principles of Robotics	3	2	1	-	-	-	-	-	-	1	3	3
C212	Analog And Digital Electronics	3	3	-	-	2	-	-	-	-	-	-	1
C213	Automatic Control Systems	3	2	-	-	1	-	-	-	-	-	-	1
C214	Kinematics And Dynamics of Machines	3	3	3	-	3	-	-	-	-	-	-	1
C215	Hydraulics and Pneumatics	3	2	2	-	-	-	-	-	-	-	-	1
C216(P)	Analog and Digital Electronics Laboratory	2	2	2	-	-	-	-	-	-	-	-	3
C217(P)	Kinematics and Dynamics Laboratory	3	3	3	3	3	3	3	2	2	3	3	3
C218(P)	Hydraulics and Pneumatics Laboratory	1	2	2	-	-	1	-	-	-	-	-	2
C219(P)	Physical Education	-	2	-	-	-	2	-	3	-	2	-	2

Course Code	Course Name	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO7	PO 8	PO 9	PO1 0	PO1 1	PO12
<b>SEMESTER-V</b>													
C301	Statistics and Numerical Methods	2	2	2	-	1	-	-	-	-	-	-	2
C302	Microcontroller and Embedded System Design	3	2	-	-	1	-	-	-	-	-	-	1
C303	Programmable Controllers Logic	2	-	-	-	3	-	-	3	-	-	3	3
C304	Robotic Control Systems	3	2	-	-	2	-	-	-	-	-	-	1
C305	CNC Machine and Metrology	3	3	3	-	-	-	-	-	-	-	-	-



C306	Field and Service Robotics	3	2	1	-	-	-	-	-	-	-	-	-
C307(P)	Microcontroller and Embedded System Design Laboratory	3	2	-	-	1	-	-	-	-	1	3	3
C308(P)	PLC and Robotics Laboratory	1	2	1	2	-	-	-	-	-	-	-	3
C309(P)	CNC and Metrology Laboratory	2	2	2	-	-	-	-	-	-	-	-	1
C310(P)	General Proficiency – I	-	-	-	-	-	2	3	3	2	3	1	3

Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
<b>SEMESTER-VI</b>													
C311	Modeling and Simulation	3	3	3	-	-	-	-	-	-	-	-	1
C312	Robot Kinematics and Dynamics	3	3	-	-	2	-	-	-	-	-	-	1
C313	Programming For Robotics	3	3	3	-	3	-	-	-	-	-	-	1
C314	Automation System Design	3	2	-	-	1	-	-	-	-	-	-	1
C315	Design of Mechanical Transmission Systems	3	3	3	3	-	2	-	-	-	-	-	2
C316	Wireless Sensor Networks for Robotics	3	2	-	-	1	-	-	-	-	-	-	2
C317(P)	Modeling and Simulation Laboratory	2	2	3	-	2	-	-	-	-	-	-	2
C318(P)	Automation System Design Laboratory	2	2	1	-	2	-	-	-	-	-	-	2
C319(P)	Virtual Instrumentation Laboratory	2	2	2	-	2	-	-	-	-	-	-	1
C320	General Proficiency – II	-	-	-	-	-	2	3	3	2	3	1	3

Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
<b>SEMESTER-VII</b>													
C401	Industrial Robotics and Material Handling	2	2	3	-	-	-	-	-	-	1	3	3
C402	Artificial Intelligence for Robotics	3	2	2	-	-	-	-	-	-	-	-	1



C403	Totally Integrated Automation	3	2	2	1	1	-	-	-	-	-	3	-
C404	Medical Robotics	2	1	1	1	-	-	-	-	-	-	-	1
C405	Reliability and Quality Control	3	2	2	1	-	-	-	-	-	-	-	1
C406(P)	Totally Integrated Automation Laboratory	2	2	2	-	1	-	-	-	-	-	-	2
C407(P)	Innovative Practices	2	3	2	-	1	-	-	-	-	-	-	1
C408(P)	Industrial Visit/Training	2	1	1	-	-	-	2	-	-	2	1	-
C409(P)	Project Work-I	3	3	3	2	2	2	1	1	3	2	2	2

Course Code	Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
<b>SEMESTER-VIII</b>													
C410	Professional Ethics	2	2	1	-	3	6	-	-	-	-	-	-
C411	Maintenance and Safety Engineering	2	2	2	1	-	2	2	-	-	-	-	2
C412	Machine Learning for Robotics	3	2	2	1	2	-	-	-	-	-	-	-
C413	Entrepreneurship Development	3	-	3	3	3	-	-	2	2	1	-	-
C414(P)	Project Work-II	3	3	3	2	2	2	1	1	3	2	2	2

#### PO Attainment Level-Direct Assessment

PO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Average of Direct Assessment	2.42	2.18	2.02	1.81	1.92	2.28	2.30	2.20	2.43	2.23	1.96	1.92
Weightage of 80% of PO's	1.94	1.74	1.61	1.45	1.54	1.82	1.84	1.76	1.94	1.78	1.57	1.54

#### PO Attainment Level-Indirect Assessment

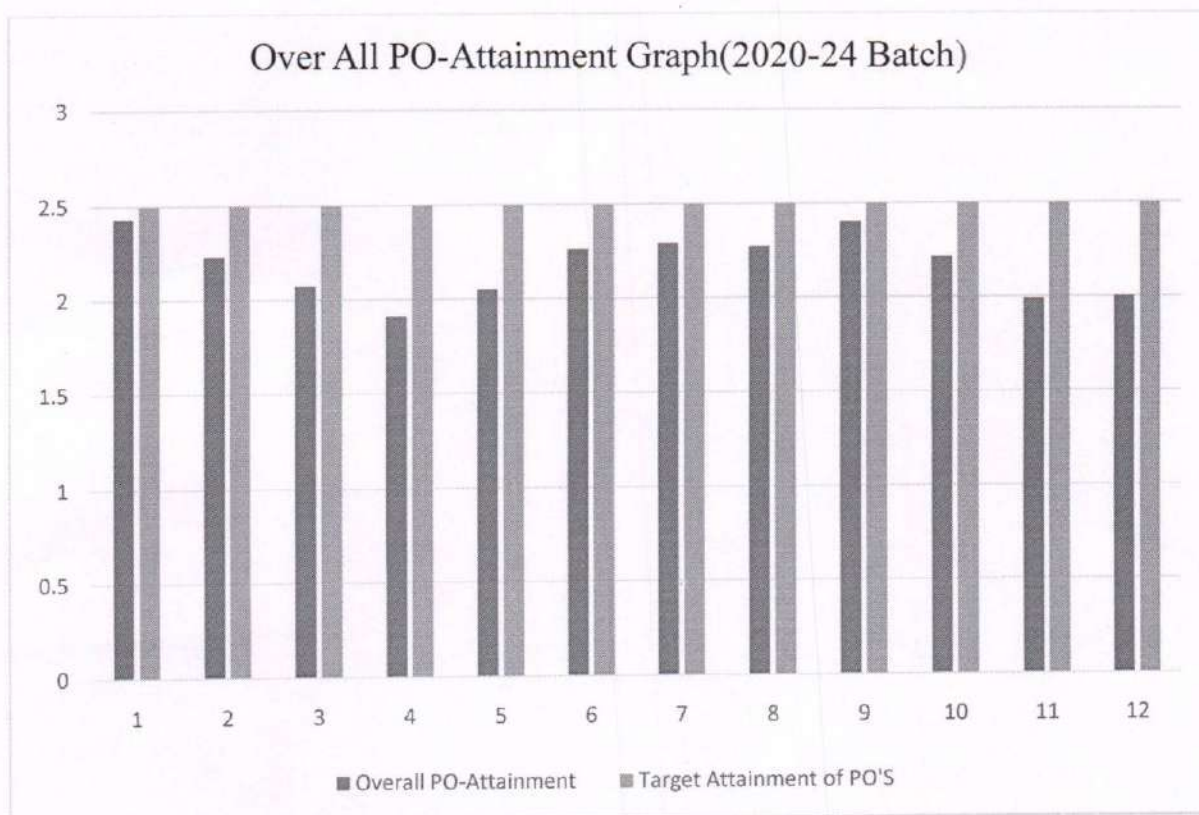
Survey's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Programme Exit Survey	2.58	2.50	2.39	2.42	2.90	2.44	2.80	2.63	2.77	2.19	2.40	2.42



<b>Alumni Survey</b>	2.37	2.39	2.06	2.17	2.56	2.07	1.90	2.53	2.11	2.11	2.05	2.11
<b>Employer Survey</b>	2.37	2.42	2.47	2.32	2.21	2.05	2.11	2.53	2.00	2.16	1.89	2.42
<b>Average of 3-Surveys</b>	2.44	2.44	2.31	2.30	2.56	2.19	2.27	2.56	2.29	2.15	2.11	2.32
<b>Weightage of 20% of IndirectPO's</b>	0.49	0.49	0.46	0.46	0.51	0.44	0.45	0.51	0.46	0.43	0.42	0.46

### Overall PO-Attainment Level

PO's	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
<b>Direct 80%</b>	1.94	1.74	1.61	1.45	1.54	1.82	1.84	1.76	1.94	1.78	1.57	1.54
<b>Indirect 20%</b>	0.49	0.49	0.46	0.46	0.51	0.44	0.45	0.51	0.46	0.43	0.42	0.46
<b>Direct+ Indirect</b>	2.43	2.23	2.07	1.91	2.05	2.26	2.29	2.27	2.4	2.21	1.99	2
<b>Target</b>	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5



**PSO Attainment-(Batch:2020-2024)**

S. No	Course Code	Course Name	PSO1	PSO2
<b>I SEMESTER</b>				
1.	C101	Mathematics – I	-	1
2.	C102	Physics	3	3
3.	C103	Chemistry	2	-
4.	C104	Basic Civil and Mechanical Engineering	2	-
5.	C105	Engineering Mechanics	2	1
6.	C106	Communicative English	2	2
7.	C107(P)	Physics Laboratory	-	3
8.	C108(P)	Chemistry Laboratory	-	2
9.	C109(P)	Workshop Practice	-	1
<b>II SEMESTER</b>				
10.	C110	Mathematics – II	-	2
11.	C111	Material Science	-	1
12.	C112	Environmental Science	-	1
13.	C113	Basic Electrical and Electronics Engineering	1	2
14.	C114	Engineering Thermodynamics	-	2
15.	C115	Computer Programming	-	2
16.	C116(P)	Computer Programming Laboratory	-	2
17.	C117	Engineering Graphics	-	1
18.	C118(P)	Basic Electrical and Electronics Laboratory	-	3
19.	C119(P)	NSS / NCC *	-	-
<b>III SEMESTER</b>				
20.	C201	Linear Algebra	2	2
21.	C202	Electronic Devices and Circuits	2	3
22.	C203	Programming in Python	3	3
23.	C204	Sensors and Instrumentation	3	3
24.	C205	Electrical Machines and Drives	3	3
25.	C206	Strength of Materials	3	3
26.	C207(P)	Electronic Devices and Circuits Laboratory	3	3
27.	C208(P)	Programming in Python Laboratory	2	1
28.	C209(P)	Electrical Machines and Drives Laboratory	3	3
<b>IV SEMESTER</b>				
29.	C210	Fourier Series and Partial Differential Equations	2	-
30.	C211	Principles of Robotics	3	3
31.	C212	Analog and Digital Electronics	3	3
32.	C213	Automatic Control Systems	3	3
33.	C214	Kinematics and Dynamics of Machines	3	3
34.	C215	Hydraulics and Pneumatics	3	3
35.	C216(P)	Analog and Digital Electronics Laboratory	3	3
36.	C217(P)	Kinematics and Dynamics Laboratory	3	3
37.	C218(P)	Hydraulics and Pneumatics Laboratory	3	3
38.	C219(P)	Physical Education	-	-
<b>V SEMESTER</b>				
39.	C301	Statistics and Numerical Methods	-	2
40.	C302	Microcontroller and Embedded System Design	3	3
41.	C303	Programmable Controllers Logic	3	3



42.	C304	Robotic Control Systems	3	3
43.	C305	CNC Machine and Metrology	3	3
44.	C306	Field and Service Robotics	3	3
45.	C307(P)	Microcontroller and Embedded System Design Laboratory	3	3
46.	C308(P)	PLC and Robotics Laboratory	3	3
47.	C309(P)	CNC and Metrology Laboratory	3	3
48.	C310(P)	General Proficiency – I	3	3
<b>VI SEMESTER</b>				
49.	C311	Modeling and Simulation	3	3
50.	C312	Robot Kinematics and Dynamics	3	3
51.	C313	Programming For Robotics	3	3
52.	C314	Automation System Design	3	3
53.	C315	Design of Mechanical Transmission Systems	3	3
54.	C316	Wireless Sensor Networks for Robotics	3	3
55.	C317(P)	Modeling and Simulation Laboratory	3	3
56.	C318(P)	Automation System Design Laboratory	3	3
57.	C319(P)	Virtual Instrumentation Laboratory	3	3
58.	C320	General Proficiency – II	-	3
<b>VII SEMESTER</b>				
59.	C401	Industrial Robotics and Material Handling	3	3
60.	C402	Artificial Intelligence for Robotics	3	3
61.	C403	Totally Integrated Automation	3	3
62.	C404	Medical Robotics	3	3
63.	C405	Reliability and Quality Control	3	3
64.	C406(P)	Totally Integrated Automation Laboratory	3	3
65.	C407(P)	Innovative Practices	3	3
66.	C408(P)	Industrial Visit/Training	3	3
67.	C409(P)	Project Work-I	3	3
<b>VIII SEMESTER</b>				
68.	C410	Professional Ethics	3	3
69.	C411	Maintenance and Safety Engineering	3	3
70.	C412	Machine Learning for Robotics	3	3
71.	C413	Entrepreneurship Development	3	3
72.	C414(P)	Project Work-II	3	3

**PSO target is fixed at 2.5**

**PSO Attainment Level-Direct Assessment**

PSO's	PSO1	PSO2
<b>Average of Direct Assessment</b>	2.82	2.66
<b>Weightage of 80% of PO's</b>	2.26	2.13



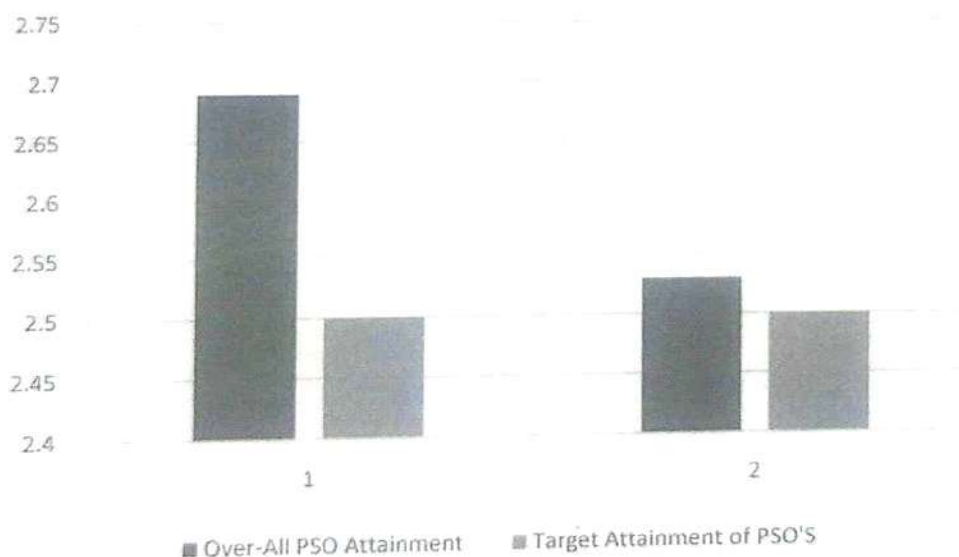
### PO Attainment Level-Indirect Assessment

Survey's	PSO1	PSO2
Course Exit Survey	2.17	2.11
Alumni Survey	2.22	1.72
Employer Survey	2.00	2.11
Average of 3-Surveys	2.13	1.98
Weightage of 20% of IndirectPO's	0.43	0.40

### Overall PO-Attainment Level

PSO's	PSO1	PSO2
Direct 80%	2.26	2.13
Indirect 20%	0.43	0.40
Direct+ Indirect	2.69	2.53
Target	2.5	2.5

Over All PSO-Attainment Graph(2020-24 Batch)



*V. Suresh*  
11/10/24  
HoD

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