A Seminar on

Role of AI Applications in the Automotive Industry

Dr. P G Damale

Activity Report

Academic Year	2024-25
Program Driven by	A Seminar on Role of AI Applications in the Automotive Industry
Quarter	III
Program / Activity Name	Capacity Building Program
Program Type	
Program Theme	Innovation and startups
Start Date	29-03-2025
End Date	29-03-2025
Duration of the Activity (in Mins)	60
Number of Student Participant	0
Number of Faculty Participant	70
Number of external Participant	--
Expenditure Amount in Rs.	
Any Remark	--
Mode of Session Delivery	Offline
Objective	
Benefit in terms of Learning / Skills / Knowledge obtained	
Feedback	
Video url (mp4)	
Photograph 1 (jpg)	Attached
Photograph 2 (jpg)	Attached
Overall report of the Activity (pdf)	As given below

Dr. P. H. Zope
Convener IIC

Title:

Role of AI Applications in the Automotive Industry

Speaker: Dr. P. G. Damale

Date: [29-03-25]

Venue: [SSBT COET Bambhori]

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1. Introduction

The seminar on **"Role of AI Applications in the Automotive Industry"** was delivered by **Dr. P. G. Damale**, an esteemed expert in AI technologies and their applications in automotive engineering. The session provided an in-depth look at how Artificial Intelligence (AI) is transforming the automotive sector by enhancing manufacturing processes, improving vehicle performance, and creating new opportunities for innovation in autonomous driving, design, and customer experience.

The seminar attracted professionals, engineers, researchers, and students who are interested in understanding the pivotal role AI plays in the future of the automotive industry.

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2. Objectives of the Seminar

- To introduce AI concepts and their relevance to the automotive industry.

- To explore the key AI applications in automotive design, manufacturing, and operations.
- To discuss the advancements in autonomous vehicles powered by AI technologies.
- To understand how AI is improving customer experience and safety in the automotive industry.
- To identify challenges and future trends in AI integration within automotive systems.

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3. Key Highlights of the Seminar

a. Overview of AI in the Automotive Industry

Dr. Damale began the session by providing an overview of AI and its increasing importance in various industries, with a particular focus on the automotive sector. AI refers to the simulation of human intelligence in machines that are programmed to think, learn, and perform tasks traditionally requiring human cognitive functions. In the automotive industry, AI is being applied to **design**, **manufacturing**, **quality control**, and **vehicle operation**.

Dr. Damale highlighted that AI enables automation, efficiency, and innovation, allowing automotive companies to stay competitive in a rapidly evolving market.

b. Key AI Applications in the Automotive Industry

Dr. Damale discussed several key areas where AI is making a significant impact in the automotive industry:

- **Autonomous Vehicles (Self-Driving Cars):**
  One of the most transformative applications of AI in the automotive industry is the development of autonomous vehicles. AI algorithms, including **machine learning** and **computer vision**, allow vehicles to interpret their surroundings and make real-time decisions without human intervention. Dr. Damale emphasized the role of **deep learning** in improving the accuracy of object detection, navigation, and decision-making for self-driving cars.

  AI-powered autonomous vehicles use **sensor fusion** from cameras, LiDAR, radar, and ultrasonic sensors to create a detailed 3D map of the environment. This enables the vehicle to detect obstacles, pedestrians, and traffic signals, ensuring safe and efficient navigation.

- **AI in Manufacturing and Production:**
  AI applications are revolutionizing the way vehicles are manufactured. In production lines, **robotics** integrated with AI are used for tasks such as assembly, welding, and painting, increasing speed, precision, and reducing human error. Dr. Damale discussed how **predictive maintenance** powered by AI helps automotive manufacturers monitor machinery and equipment, reducing downtime and increasing productivity.

AI also optimizes **supply chain management** by analyzing data from suppliers, predicting demand, and ensuring a steady flow of materials to the production line. This results in cost savings and reduced inventory wastage.

- **AI in Vehicle Design and Development:**
  AI tools such as **generative design** and **simulation software** are helping engineers create innovative vehicle designs. AI algorithms can simulate thousands of design options based on specific parameters, such as strength, weight, and cost, to identify the most efficient solutions. This has led to the creation of lighter, stronger, and more fuel-efficient vehicle components.

  Additionally, AI is used in **virtual prototyping**, enabling automotive companies to test and modify designs digitally before producing physical prototypes, thereby saving time and resources in the development process.

- **AI for Vehicle Safety:**
  AI is enhancing vehicle safety by supporting systems such as **advanced driver-assistance systems (ADAS)**. AI algorithms power features like **automatic emergency braking**, **lane-keeping assist**, and **adaptive cruise control**, which help drivers avoid accidents and ensure safer driving experiences. Dr. Damale discussed how **computer vision** and **sensor data fusion** play a crucial role in detecting potential hazards on the road and alerting drivers in real-time.
- **AI in In-Car Experience and Customer Interaction:**
  AI is also improving the **in-car experience** by enhancing infotainment systems. **Voice recognition** and **natural language processing (NLP)** are integrated into vehicles to allow drivers to interact with their cars hands-free, from controlling music to setting navigation directions. AI also personalizes the driving experience by adjusting settings based on driver preferences and habits.

  Moreover, **chatbots** powered by AI are being used by automotive companies to enhance customer service, providing real-time assistance, answering questions, and guiding users through the purchase or service processes.

c. Benefits of AI in the Automotive Industry

Dr. Damale outlined several key benefits of implementing AI in the automotive sector:

- **Enhanced Safety:** AI-driven safety systems help reduce accidents by providing real-time hazard detection and driver assistance.
- **Increased Efficiency and Productivity:** AI-powered automation in manufacturing and predictive maintenance reduces downtime, lowers costs, and increases overall efficiency.
- **Innovation in Vehicle Design:** AI allows for the creation of optimized and innovative designs that lead to lighter, more fuel-efficient, and cost-effective vehicles.
- **Improved Customer Experience:** AI enhances in-car experiences, offering personalized, intuitive, and connected features for consumers.

- **Sustainability:** AI plays a role in reducing fuel consumption, lowering emissions, and creating more sustainable manufacturing processes.

d. Challenges in Implementing AI in Automotive Industry

Dr. Damale also discussed the challenges of integrating AI into the automotive industry:

- **Data Security and Privacy:** The vast amounts of data generated by autonomous vehicles and in-car systems raise concerns regarding data privacy and cybersecurity. AI systems must ensure secure communication to protect user data and prevent unauthorized access.
- **Regulatory Hurdles:** Governments and regulatory bodies are still in the process of establishing comprehensive regulations for autonomous vehicles. The slow pace of policy development may hinder the widespread adoption of AI-powered cars.
- **High Costs of AI Integration:** Developing and implementing AI systems for automotive applications can be expensive, especially for small and medium-sized companies. The initial investment in AI research, development, and infrastructure can be a significant barrier.
- **Ethical Concerns:** The deployment of autonomous vehicles raises ethical issues related to decision-making algorithms, such as how an AI system should react in emergency situations. These concerns must be addressed as part of the development process.

e. The Future of AI in the Automotive Industry

Looking toward the future, Dr. Damale highlighted several emerging trends in AI applications within the automotive sector:

- **Fully Autonomous Vehicles:** AI will continue to improve the capabilities of self-driving cars, making them safer, more efficient, and able to navigate complex environments.
- **AI-Driven Mobility as a Service (MaaS):** AI will play a crucial role in the development of mobility services, including **ride-sharing** and **vehicle-to-vehicle (V2V)** communication, helping to create more flexible, sustainable, and efficient transportation solutions.
- **Smart Manufacturing:** AI will be increasingly integrated into manufacturing processes, leading to **smart factories** where machines can autonomously detect and address production issues.
- **Electric and Connected Vehicles:** AI will support the development of electric vehicles (EVs) by optimizing energy management, battery life, and vehicle charging. It will also contribute to the integration of vehicles into a larger, connected ecosystem of smart cities and infrastructures.

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4. Interactive Session

During the Q&A session, attendees asked Dr. Damale about the following:

- The potential of AI in improving the energy efficiency of autonomous vehicles.
- How AI can enhance supply chain management in the automotive industry.
- The importance of AI in addressing climate change through the development of sustainable vehicles.

Dr. Damale responded by discussing the role of AI in optimizing energy consumption, predicting optimal routes, and enabling better fleet management to reduce environmental impacts.

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5. Conclusion

The seminar concluded with a summary of the transformative impact AI is having on the automotive industry. Dr. P. G. Damale emphasized that AI is not just enhancing vehicle design and manufacturing but is also driving innovations in safety, autonomy, and customer experience. He encouraged the attendees to stay abreast of AI advancements, as they are likely to redefine the future of the automotive industry.


Village
Bambhori
Google
Decimal
DMS
Latitude
21.014052
21°0'50" N
Longitude
75.502683
75°30'9" E
2025-03-29(Sat) 03:51(pm)

Roll no.	Name	Sign
54	Kalyani Bapu Patil	
17	Chaitali . K. Mali	
60	Megha Manoj Patil	
45	Devayani Samadhan patil	
74	Shruti Kiran patil.	
73	Shrishti Rakesh Patil	
80	Teena Hemraj Patil	
28	Nirjala Narendra Narkhede	
33	Vishakha Pramod Nikam	
46	Devyani Pravin Patil	
38	Ankita Sanjay Patil	
71	Rutuja Ravindra Patil	
32	Lavanya Santosh Nikam	
63	Pranjal Mukunda Patil	
02	Bhagyashri Anant Khewalkar	
79	Tanvi Vineshsing Patil	
70	Ranjana Dnyaneshwar Patil	
19	Prapti Shravan Mali	
53	Jayshree G. Patil	
08	Bhumika Dilip Mahajan	
10	Khushi Rajendra Mahajan	
06	Priyanka Bhagwan Magare	
39	Ankita Vilas Patil	
37	Keerti Kaduba Pardeshi	
36	Trupti Dyaneshwar Palve	
55	Khushi Vinayak Patil	
78	Tanushri Pandharinath Patil	
07	Aniket Balwant Mahajan	
05	Prajwal Vinod Machhar	
59	Mayur Singh Patil	

Sr No	Name of Student	Sign.	Roll No.
1)	Utkarsha. S. Patil		2
2)	Tanvi Vinod Kattar		62
3)	Utkarsha S Suryawanshi		38
4)	Gayatri Tushar Shingate		26
5)	Simran Shawaka Tadavi		41
6)	Mansi suresh shirode		27
7)	Sneha Rahilal Patil		71
8)	Sejal Dipak Sandhanshiv		21
9)	Pradnya Vijay Nikam		67
10)	Saniya Javed Shaikh		74
11)	Gauri Vijay Sonar		75
12)	Chhayashree Pralhal Patil		69
13)	Vaibhavi vinayak patil		3
14)	Triveni Ashok Solanki		29
15)	Abhijeet. Girish. Patil		68
16)	Shreyas. Vijay. Sangore		72
17)	Varad Anil Akirad		55
18)	Aryan Kamal Bajaj		53
19)	Rehan Akiloddin Shaikh		73
20)	Ganesh P. Sushir		40
21)	Yogeshwar Sopan Wagh		51
22)	OM Rajendra Talele		43
23)	chandrakant Devidas Ahire		54
24)	Faizan Lukman Tadvi		79
25)	Kalpesh Ananda Sonawane		31
26)	Chinmay Digambar Rajput		16

Roll No	Name	Sign
23	Aditya Arun more	
65	Pratik Rajesh Patil	
64	Prathamesh Avinash Pati	
26	Kunal Vasant Nannaware	
03	Amol Govinda Kumbhar	
04	Ramchandra Bhatu lohar	
50	Harshal Bharat Patil	
12	Pranav Bhaskar Mahajan	
13	Sumit Vinod Mahajan	

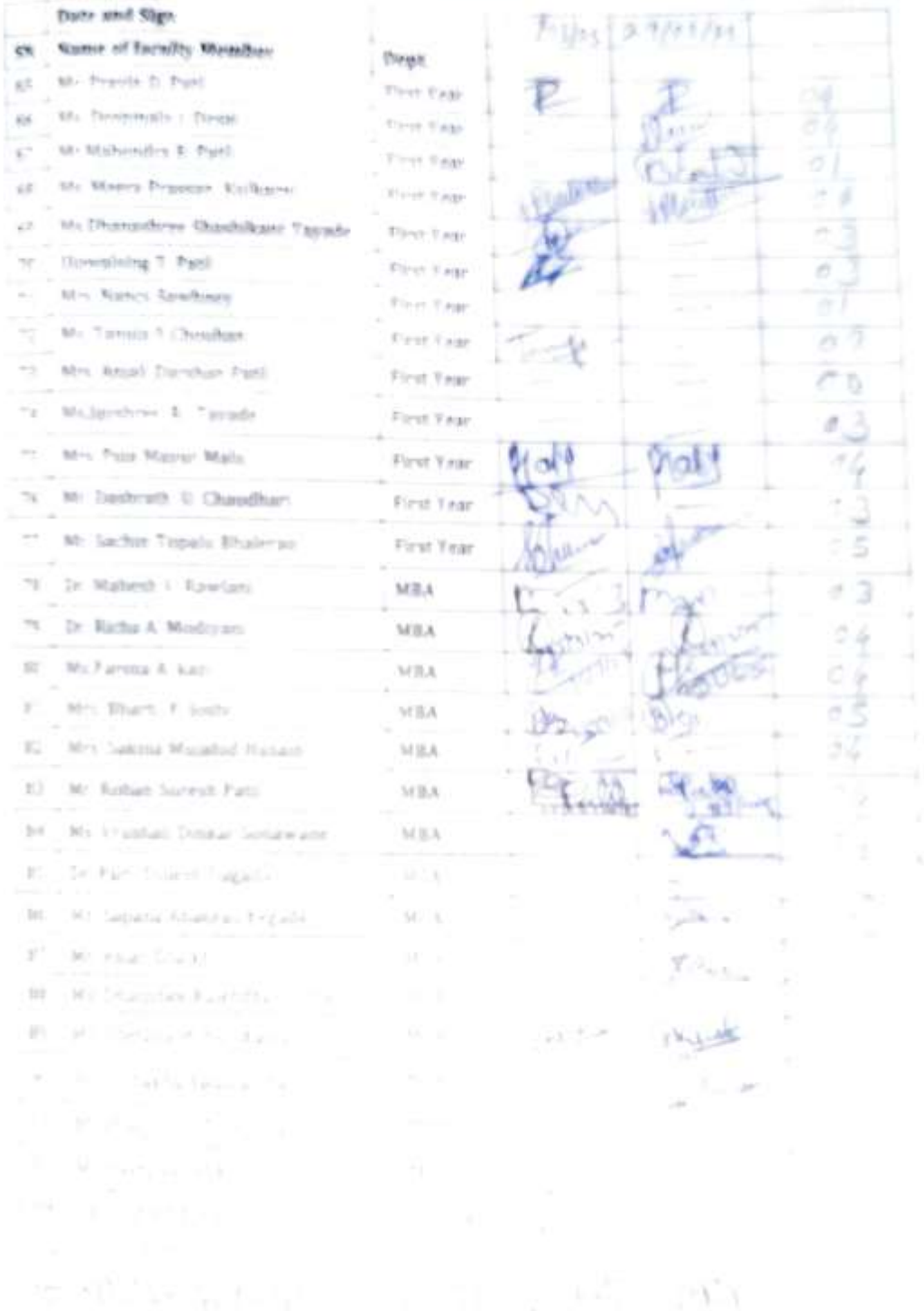
Attendance Sheet

	Date and Sign		1st 03/25	29/03/25	
SN	Name of faculty Member	Dept.			
1	Dr. P.A. Shirule	Civil			02
2	Dr. F.I. Chavan	Civil			04
3	Dr. Sonali B. Patil	Civil			03
4	Mr. J.N. Kale	Civil			03
5	Ms.Jyoti R.Mali	Civil			05
6	Pankaj Ramdas Punase	Civil		—	03
7	Ms. Dipika Purushottam Mali	Civil		—	01
8	Kalyani Ganesh Bendale	Civil	—	—	00
9	Dr .K.P. Adhiya	Computer			04
10	Dr. Manoj E Patil	Computer			04
11	Mr. Ashish T.Bhole	Computer	—		04
12	Dr. Akash D.Waghmare	Computer		—	04
13	Dr. Dnyaneshwar K. Kirange	Computer			04
14	Dr.Pankaj H. Zope	Computer	—	-	03
15	Dr, Surendra P. Ramteke	Computer	—		04
16	Ms. Shital A. Patil	Computer			03
17	Mr. Sarkarsinha Harshinha Rajput	Computer			05
18	Mr. Mohan Pramod Patil	Computer			05
19	Mr. Ramkrishna Hari Patil	Computer			05
20	Mr. Pramodgiri B. Gosavi	Computer			02
21	Msr. Priyanka Vinod Medhe	Computer	—		04
22	Mr. Krunal Chadrashekhar Pawar	Computer	—		03
23	Ms. Pooja Mukundrao Khandar	Computer	—	—	03
24	Ms. Ashwini Arun Kakde	Computer		—	03
25	Ms. Mayuri Rajesh Chandratre	Computer			04
26	Ms. Shama S Pawar	Computer	—		03
27	Mr. Mohammed Shafique Shaikh	Computer			05
28	Ms. Tejashri Anil Patil	Computer	—	—	—
29	Ms. Prachi Pushkaraj Chaudhari	Computer	—	—	—
30	Ms. Utkarsha Prmod Narkhede	Computer	—	—	—
31	Ms. Soniya Premraj Chaudhari	Computer	—	—	—
32	Ms. Dipali Daulatrao Phadat	Computer	—	—	—
33	Mr. V. S. Pawar	Electrical			

Attendance Sheet

	Date and Sign				
SN	Name of faculty Member	Dept.		29/03/25	
34	Mr. M.Mujtahid Ansari	Electrical			05
35	Dr. Suhas M. Shembekar	Electrical		—	04
36	Dr.Rajesh R Karhe	Electrical			04
37	Mr. Muqeem Khan	Electrical	—		04
38	Mr. Tanveer Khatik	Electrical		—	04
39	Mr. Vijay Abaji Shinde	Electrical			02
40	Dr. M.P. Deshmukh	E&TC	—		04
41	Dr. V.M. Deshmukh	E&TC			04
42	Dr. N.M. Kazi	E&TC			04
43	Dr. Atul H. Karode	E&TC		—	04
44	Mr. Sunil K.Khode	E&TC		—	03
45	Ms.Rajashri B Patil	E&TC			05
46	Dr. P.G. Damle	Mechanical		—	04
47	Mr. N. K. Patil	Mechanical	—		04
48	Dr. K.Shrivastav	Mechanical		—	02
49	Dr. Devendra B. Sadaphale	Mechanical			04
50	Dr. P. M. Solanki	Mechanical		—	04
51	Dr. Ajay R. Bhardwaj	Mechanical		25/03/25	03
52	Dr. Dipak C. Talele	Mechanical			05
53	Dr. Vijay R. Diware	Chemical	—		04
54	Dr. S. A. Thakur	Chemical	—	—	03
55	Mr. V. P. Sangore	Chemical	—		04
56	Mrs. Sarika S. Pawar	Chemical		—	03
57	Mrs. Ruchita S. Naik	Chemical		—	04
58	Dr. Sandip S. Patil	First Year			05
59	Dr. K. S. Patil	First Year	—	—	03
60	Dr. Sunita S. Patil	First Year	—		04
61	Dr. Prashant N. Ulhe	First Year			05
62	Mr. Amol Chandrakan Wani	First Year	—	—	03
63	Ms. Priti Ramesh Sharma	First Year		—	03
64	C.U. Nikam	First Year		—	01

Attendance Sheet



Attendance Sheet

	Date and Sign		08/02/25	15/2/25	08/03/25
SN	Name of faculty Member	Dept.			
1	Dr. P.A. Shirule	Civil			
2	Dr. F.I. Chavan	Civil			
3	Dr. Sonali B. Patil	Civil			
4	Mr. J.N. Kale	Civil.			
5	Ms.Jyoti R.Mali	Civil			
6	Pankaj Ramdas Punase	Civil			
7	Ms. Dipika Purushottam Mali	Civil			
8	Kalyani Ganesh Bendale	Civil			
9	Dr .K.P. Adhiya	Computer			
10	Dr. Manoj E Patil	Computer			
11	Mr. Ashish T.Bhole	Computer			
12	Dr. Akash D.Waghmare	Computer			
13	Dr. Dnyaneshwar K. Kirange	Computer			
14	Dr.Pankaj H. Zope	Computer			
15	Dr, Surendra P. Ramteke	Computer			
16	Ms. Shital A. Patil	Computer			
17	Mr. Sarkarsinha Harshinha Rajput	Computer			
18	Mr. Mohan Pramod Patil	Computer			
19	Mr. Ramkrishna Hari Patil	Computer			
20	Mr. Pramodgiri B. Gosavi	Computer			
21	Msr. Priyanka Vinod Medhe	Computer			
22	Mr. Krunal Chadrashekhar Pawar	Computer			
23	Ms. Pooja Mukundrao Khandar	Computer			
24	Ms. Ashwini Arun Kakde	Computer			
25	Ms. Mayuri Rajesh Chandratre	Computer			
26	Ms. Shama S Pawar	Computer			
27	Mr. Mohammed Shafique Shaikh	Computer			
28	Ms. Tejashri Anil Patil	Computer			
29	Ms. Prachi Pushkaraj Chaudhari	Computer			
30	Ms. Utkarsha Prmod Narkhede	Computer			
31	Ms. Soniya Premraj Chaudhari	Computer			
32	Ms. Dipali Daulatrao Phadat	Computer			
33	Mr. V. S. Pawar	Electrical			

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	Date and Sign		08/02/25	15/02/25	08/03/25	
SN	Name of faculty Member	Dept.				
34	Mr. M.Mujtahid Ansari	Electrical				
35	Dr. Suhas M. Shembekar	Electrical				
36	Dr.Rajesh R Karhe	Electrical				
37	Mr. Muqeem Khan	Electrical				
38	Mr. Tanveer Khatik	Electrical				
39	Mr. Vijay Abaji Shinde	Electrical	—	—	—	
40	Dr. M.P. Deshmukh	E&TC				
41	Dr. V.M. Deshmukh	E&TC			—	
42	Dr. N.M. Kazi	E&TC		—		
43	Dr. Atul H. Karode	E&TC				
44	Mr. Sunil K.Khode	E&TC		—		
45	Ms.Rajashri B Patil	E&TC				
46	Dr. P.G. Damle	Mechanical				
47	Mr. N. K. Patil	Mechanical				
48	Dr. K.Shrivastav	Mechanical	—	—		
49	Dr. Devendra B. Sadaphale	Mechanical			—	
50	Dr. P. M. Solanki	Mechanical				
51	Dr. Ajay R. Bhardwaj	Mechanical	—			
52	Dr. Dipak C. Talele	Mechanical				
53	Dr. Vijay R. Diware	Chemical				
54	Dr. S. A. Thakur	Chemical				
55	Mr. V. P. Sangore	Chemical				
56	Mrs. Sarika S. Pawar	Chemical		—		
57	Mrs. Ruchita S. Naik	Chemical	—	—		
58	Dr. Sandip S. Patil	First Year				
59	Dr. K. S. Patil	First Year			—	
60	Dr. Sunita S. Patil	First Year				
61	Dr. Prashant N. Ulhe	First Year				
62	Mr. Amol Chandrakan Wani	First Year				
63	Ms. Priti Ramesh Sharma	First Year	—	—		
64	C.U. Nikam	First Year	—	—	—	

Attendance Sheet

	Date and Sign		08/02/25	15/2/2025	08/03/25	
SN	Name of faculty Member	Dept.				
65	Mr. Pravin D. Patil	First Year	P	P	—	2
66	Ms. Deepmala I. Desai	First Year	Deep	Deep	Deep	3
67	Mr.Mahendra B. Patil	First Year	—	—	—	0
68	Ms. Meera Prassan Kulkarni	First Year	Meera	—	Meera	3
69	Ms.Dhanashree Shashikant Tayade	First Year	D.	—	D.	2
70	Ujawalsing T. Patil	First Year	Raj	Raj	—	2
71	Mrs. Nancy Sawhney	First Year	—	—	—	1
72	Ms. Tanuja Y.Chouhan	First Year	—	—	Tanuja	1
73	Mrs. Anjali Darshan Patil	First Year	—	—	—	0
74	Ms.Jayshree R. Tayade	First Year	RTayade	Tayade	RTayade	2
75	Mrs. Puja Mayur Malu	First Year	—	Paly	Paly	2
76	Mr. Dashrath U. Chaudhari	First Year	DCM	—	DCM	2
77	Mr. Sachin Topalu Bhalerao	First Year	Sach	Sach	Sach	3
78	Dr. Mahesh V. Rawlani	MBA	mr	—		1
79	Dr. Richa A. Modiyani	MBA	Rm	—	Rm	2
80	Ms.Faroza A. kazi	MBA	FK	—	FK	2
81	Mrs. Bharti P. Joshi	MBA	BBJ	BBJ	BBJ	3
82	Mrs. Sakina Mujahid Husain	MBA	Sakina	Sakina	Sakina	3
83	Mr. Rohan Suresh Patil	MBA	—	RSPatil	RSPatil	2
84	Ms. Vrushali Dinkar Sonawane	MBA	VDS	VDS	—	2
85	Dr. Puri Dinesh Dagadu	MCA	DDP	DDP	DDP	3
86	Ms. Sapana Ananrao Fegade	MCA	SAF	SAF	—	2
87	Mr. Aslan Shaikh	MCA	ASK	ASK	—	2
88	Ms. Dhanshee Rajendra Shinde	MCA	—	—	—	0
89	Ms. Chetana Mohan Kawale	MCA	Cmkawale	Cmkawale	Cmkawale	3
90	Ms. Vishakha Yadorao Pande	MCA	Vpande	Vpande	Vpande	3
91	Ms.Bhagyashri Suresh Patil	MCA	—	—	Bpatil	1
92	Ms. Reeta Vinod Patil	MCA	RVP	RVP	RVP	3
93	Dr. Sudhir.S.Patil	Library	SP	SP	—	2
94	Nikita Gokul Patil	civil	—	NGPatil	NGPatil	2
95	V. S. Pawar	Mechanical	Vpawar	Vpawar	Vpawar	3
96	Ganesh Sonawane	civil	GS	—	—	1