

Goa University

Electronics Discipline, School Of Physical & Applied Sciences

Report on Five Day Workshop titled "Hands-On Robotics Programming"

Title of the event	Hands-On Robotics Programming
Date and time	24 – 28 th June 2024; 9.30am to 5.30pm
Mode	Offline
Department/School/Directorate/ Section	Electronics Programme, School Of Physical And Applied Sciences (SPAS), Goa University, in association with Goa State Research Foundation
Participants (Total)	20
Participants (Goa University)	Nil
Participants (External)	Students: 20
Resource Person/s	<ol style="list-style-type: none">1. Prof. Gourish M. Naik, Retired Professor (HAG) Electronics2. Prof. Rajendra S. Gad, Professor of Electronics, SPAS3. Prof. Jivan S. Parab, Professor of Electronics, SPAS4. Dr. Narayan T. Veterekar, Assistant Professor of Electronics, SPAS5. Dr. Marlon D. Sequeira, Assistant Professor of Electronics, SPAS6. Dr. Aniketh A. Gaonkar, Assistant Professor of Electronics, SPAS
Faculty attended	Nil
Students attended	20
The objectives / description of the activity (50 words)	<ul style="list-style-type: none">• To develop a solid understanding of fundamental robotics concepts, including kinematics and applications.• Participants should gain proficiency in C programming languages commonly used in robotics.• Acquire the skills to write code for controlling robot movements, sensors, and actuators.• To implement algorithms for tasks like obstacle avoidance, path planning, and navigation.• Hands-On Experience to control Robotic Arm.• Developing an Home surveillance robotic

system using IoT.

Copy of Flyer of the event uploaded on the Goa University Website

GOA UNIVERSITY
SCHOOL OF PHYSICAL AND APPLIED SCIENCES
ELECTRONICS PROGRAMME
In Association with
GOA STATE RESEARCH FOUNDATION
Organizes
Summer School On
"Hands on Robotics Programming"
From
24 – 28th June 2024

About the Goa University
Goa University was established under the Goa University Act of 1984 (Act No. 7 of 1984) and commenced operations on 1 June 1985. The University took over the enhanced role of Centre of Post-Graduate Instruction and Research (CPGIR) which was set after the liberation of Goa by India in December 1961, by the University of Bombay (now Mumbai), in June 1962. Since 1962 Goa University offers graduate and postgraduate studies and research programmes.

About the SPAS
The School of Physical and Applied Sciences is a result of the amalgamation of three correlated departments which belonged to the erstwhile Faculty of Natural Sciences. Individually, the departments have a long and glorious past. Department of Physics and the Department of Mathematics have served local students by providing them with quality higher education in two of the oldest fundamental sciences for more than four decades. Department of Electronics, on the other hand, was established in 2010. This School focuses on developing strong teaching and research programmes in Physical and Applied Sciences.

Important Information
Time: 9:30 am to 5:30 pm
Target Audience: UG Students
Registration Fee: Free
Number of Participants: 25 (First Come First Serve)
Venue: Seminar Hall, Electronics Building, SPAS
Mode of Conduct: Offline
Registration Link: <https://forms.gle/5cQK4Vj9mTsooSF4B>

ORGANISING COMMITTEE
Prof. Ramesh. V. Pai
Dean, SPAS

COORDINATOR
Prof. Jivan S. Parab,
Professor of Electronics, SPAS

DEPUTY COORDINATOR
Dr. Aniketh A. Gaonkar
Assistant Professor, SPAS

RESOURCE PERSON
Prof. Gourish M. Naik
Retired Professor (HAG) Electronics

Prof. Rajendra S. Gad
Professor of Electronics, SPAS

Prof. Jivan S. Parab
Professor of Electronics, SPAS

Dr. Narayan T. Vetrekar
Assistant Professor of Electronics, SPAS

Dr. Marlon D. Sequeira
Assistant Professor of Electronics, SPAS

Dr. Aniketh A. Gaonkar
Assistant Professor of Electronics, SPAS

URL of the event

-

Social Media posts and links: Nil

Photos (5)

Enclosed

Feedback

The overall feedback from the participants was good.

Benefit/Key outcome of the event in terms of learning/skills/knowledge

Day 1:

- Participants were introduced to the world of Robotics, its history, structures, Kinematics and ROS
- They were thrilled by knowing the detailed robotic applications in the area of Manufacturing industry, defense, rehabilitation, medical, UAV, Drone, Humanoid Robots, Underwater robot etc.
- They were also introduced to Embedded C programming where they could learn basic C programming, serial, timer, interrupts and peripherals along with hands-on.
- Further they had hands-on on Arduino Programming, Interfacing peripherals etc.

Day 2:

- Participants had a detailed lecture on Instrumentation, sensors and actuators, where they were explained from the basics of instrumentation standards up to the working of various sensors and actuators, such as commonly used strain gauge, proximity, distance sensors, vision sensors, flame sensors, gas sensors, smoke sensors, stepper, DC servo, brushless motors etc.
- The learnt theory about the various sensors was demonstrated and implemented by the participants in the hands-on session.
- Participants had an opportunity to study the output by interfacing the various types of sensors mentioned above with the controller. Further they could implement some modifications as per their understanding.

- As a hands-on robotics application, the participants were provided with a Arduino based robot-car kit. This exercise involved the manual assembly of the robot-car including motors, tyers, sensor modules and all other peripherals.

Day 3:

- The interfacing procedure / codes for different sensor modules, motors and other peripherals of the assembled robot-car was explained to the participants and the same was implemented by them.
- Further different applications like Line follower Robot, obstacle detection, counting and avoidance, etc. were programmed and implemented by the participants using the assembled robot-car.

Day 4:

- Image processing being one of the important components for robotic vision, the basics of image processing, the filtering techniques and CNN was covered for the participants.
- Further ESP32 based camera interfacing application was explained and implemented by the participants.
- The hands-on sessions for assembling and Programming the 6DOF robotic arm were held for the participants. Where they were provided with the parts of robotic arm and different motors to be used for assembly.
- Post assembly they could program the robotic arm for various moments and gripper application.

Day 5:

- on the last day of the workshop participants learnt about basics of IoT and IoT platforms.
- IoT configuration steps and implementation using ThingSpeak.
- Home surveillance application was developed using sensors they have studied earlier.



Dr. Aniketh Gaonkar
Coordinator
Asst. Professor, SPAS



Prof. Jivan S. Parab
Coordinator
Vice-Dean (Academic), SPAS




Prof. Ramesh V. Pai
Dean, SPAS

Date: 01/07/2024

Seal



1. Flyer



GOA UNIVERSITY
SCHOOL OF PHYSICAL AND
APPLIED SCIENCES
ELECTRONICS PROGRAMME

In Association with

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Mode of Conduct: Offline

Registration Link <https://forms.gle/5cQK4Vj9mTtoo5F48>

ORGANISING COMMITTEE

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Dean, SPAS

COORDINATOR

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Assistant Professor of Electronics, SPAS

Dr. Marlon D. Sequeira
Assistant Professor of Electronics, SPAS

Dr. Aniketh A. Gaonkar
Assistant Professor of Electronics, SPAS


2. Copy of Registration & Attendance sheet





GOA UNIVERSITY
Electronics Programme, School of Physical And Applied Sciences

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"Hands on Robotics Programming"
From 24 – 28th June 2024



Registration

Sr. No	College	Name	Class & Specialisation	Sign
1	Government College of Arts, Science & Commerce, Quepem	—	—	—
2	Government College of Arts, Science & Commerce, Quepem	—	—	—
3	Government College of Arts, Science & Commerce, Quepem	—	—	—
4	Government College of Arts, Science & Commerce, Quepem	—	—	—
5	Government College of Arts, Science & Commerce, Quepem	—	—	—
6	Parvatibai Chowgule College Of Arts & Science, Margao	Vina Dessai	TY Physics	
7	Parvatibai Chowgule College Of	MANASVI DESAI	TY Physics	

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	Arts & Science, Margao			
8	Parvatibai Chowgule College Of Arts & Science, Margao	ANNALISE VAZ	TY PHYSICS	<i>dy</i>
9	Parvatibai Chowgule College Of Arts & Science, Margao	MEVISHKA MARTINS	TY PHYSICS	<i>Mevishka</i>
10	Parvatibai Chowgule College Of Arts & Science, Margao	--	--	--
11	Carmel College Of Arts, Science And Commerce For Women, Nuvem	LARISSA FERNANDES	SY PHYSICS	<i>Larissa</i>
12	Carmel College Of Arts, Science And Commerce For Women, Nuvem	PRATIKSHA GAUNS	SY PHYSICS	<i>Pratiksha</i>
13	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Kumkum Meheca	SY Physci's	<i>Kumkum</i>
14	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Nadia Coelho	TY Physics	<i>Nadia</i>
15	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Aishwarya Kelgencimeth	T.Y. Physics	<i>Aishwarya</i>
16	Government College of Arts, Science & Commerce, Sanquelim	Pundalik S. Shiralkar	FY COM SCI	<i>Pundalik</i>
17	Government College of Arts, Science & Commerce, Sanquelim	Saish Gawade	FY BSC (Com. Sci)	<i>Saish</i>
18	Government College of Arts, Science & Commerce, Sanquelim	Nitjanand Parab	FYBSc (CS)	<i>Nitjanand</i>

19	Government College of Arts, Science & Commerce, Sanquelim	Bhakti S. Angali	FYBSC (CS)	<i>Bhakti</i>
20	Government College of Arts, Science & Commerce, Sanquelim	Sanya S. Gaonkar	FYBSC (CS)	<i>Sanya</i>
21	Dhempe College of Arts & Science, Miramar	--	--	--
22	Dhempe College of Arts & Science, Miramar	--	--	--
23	Dhempe College of Arts & Science, Miramar	--	--	--
24	Dhempe College of Arts & Science, Miramar	--	--	--
25	Dhempe College of Arts & Science, Miramar	--	--	--
26	Government College of Arts, Science & Commerce, Khandola	Divya P. Umare	FYBSC (Ele)	<i>Divya</i>
27	Goa College of Engineering	Amy Nait	ME CSE	<i>Amy</i>
28	PES RSN college of Arts and sci	Sauraj Desai	TYBSc Physics	<i>Sauraj</i>
29	St. Xavier's College	Ethan Fernandes	TYBSc (elec)	<i>Ethan</i>
30	PES RSN college of Arts	Shankar Gaonkar	TYBSc physics	<i>Shankar</i>
31	PES RSN College of Arts and science	Rahul Sharma	TYBSc Physics	<i>Rahul</i>



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Attendance (Day 1 – 24/06/2024)

Sr. No	College	Name	Morning	Afternoon
1	Government College of Arts, Science & Commerce, Quepem			
2	Government College of Arts, Science & Commerce, Quepem			
3	Government College of Arts, Science & Commerce, Quepem			
4	Government College of Arts, Science & Commerce, Quepem			
5	Government College of Arts, Science & Commerce, Quepem			
6	Parvatibai Chowgule College Of Arts & Science, Margao	Vira Dessai	<i>Vira</i>	<i>Vira</i>

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7	Parvatibai Chowgule College Of Arts & Science, Margao	Manasvi Desai	<i>Manasvi</i>	<i>Manasvi</i>
8	Parvatibai Chowgule College Of Arts & Science, Margao	Annalise Vaz	<i>Annalise</i>	<i>Annalise</i>
9	Parvatibai Chowgule College Of Arts & Science, Margao	Mevishka Martins	<i>Mevishka</i>	<i>Mevishka</i>
10	Parvatibai Chowgule College Of Arts & Science, Margao			
11	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Larissa Fernandes	<i>Larissa</i>	<i>Larissa</i>
12	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Pratiksha Gauns	<i>Pratiksha</i>	<i>Pratiksha</i>
13	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Kumkum Mehra	<i>Kumkum</i>	<i>Kumkum</i>
14	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Nadia Coelho	<i>Nadia</i>	<i>Nadia</i>
15	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Aishwarya Kelagerimath	<i>Aishwarya</i>	<i>Aishwarya</i>
16	Government College of Arts, Science & Commerce, Sanquelim	Pundalik S. Shirodkar	<i>Pundalik</i>	<i>Pundalik</i>
17	Government College of Arts, Science & Commerce, Sanquelim	Saish Gawade	<i>Saish</i>	<i>Saish</i>

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18	Government College of Arts, Science & Commerce, Sanquelim	Nityanand Parab	<i>Parab</i>	<i>Parab</i>
19	Government College of Arts, Science & Commerce, Sanquelim	Bhakti S. Angadi	<i>Bhakti</i>	<i>Bhakti</i>
20	Government College of Arts, Science & Commerce, Sanquelim	Saniya S. Gaonkar	<i>Saniya</i>	<i>Saniya</i>
21	Dhempe College of Arts & Science, Miramar			
22	Dhempe College of Arts & Science, Miramar			
23	Dhempe College of Arts & Science, Miramar			
24	Dhempe College of Arts & Science, Miramar			
25	Dhempe College of Arts & Science, Miramar			
26	Government College of Arts, Science & Commerce, Khandola	Divya P. Umarye	<i>Umarye</i>	<i>Umarye</i>
27	Goa College of Engineering	Amey Naik	<i>Amey</i>	<i>Amey</i>
28	St. Xaviers College	Ethan Fernandes	<i>Ethan</i>	<i>Ethan</i>
29	PES REN college of Arts and Sci.	Jairaj Desai	<i>Jairaj</i>	<i>Jairaj</i>
30	PES REN college of Arts and Science	Shamkar Gaonkar	<i>Shamkar</i>	<i>Shamkar</i>
31	PES REN College of Arts and Science	Rahul Sharma	<i>Rahul</i>	<i>Rahul</i>



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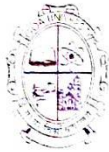
Attendance (Day 2 – 25/06/2024)

Sr. No	College	Name	Morning	Afternoon
1	Government College of Arts, Science & Commerce, Quepem			
2	Government College of Arts, Science & Commerce, Quepem			
3	Government College of Arts, Science & Commerce, Quepem			
4	Government College of Arts, Science & Commerce, Quepem			
5	Government College of Arts, Science & Commerce, Quepem			
6	Parvatibai Chowgule College Of Arts & Science, Margao	Vira Dessai	<i>Vira</i>	<i>Vira</i>

7	Parvatibai Chowgule College Of Arts & Science, Margao	Manasvi Desai	<i>Manasvi</i>	<i>Manasvi</i>
8	Parvatibai Chowgule College Of Arts & Science, Margao	Annalise Vaz	<i>Annalise</i>	<i>Annalise</i>
9	Parvatibai Chowgule College Of Arts & Science, Margao	Mevishka Martins	<i>Mevishka</i>	<i>Mevishka</i>
10	Parvatibai Chowgule College Of Arts & Science, Margao			
11	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Larissa Fernandes	<i>Larissa</i>	<i>Larissa</i>
12	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Pratiksha Gauns	<i>Pratiksha</i>	<i>Pratiksha</i>
13	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Kumkum Mehra	<i>Kumkum</i>	<i>Kumkum</i>
14	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Nadia Coelho	<i>Nadia</i>	<i>Nadia</i>
15	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Aishwarya Kelagerimath	<i>Aishwarya</i>	<i>Aishwarya</i>
16	Government College of Arts, Science & Commerce, Sanquelim	Pundalik S. Shirodkar	<i>ABS</i>	<i>ABS</i>
17	Government College of Arts, Science & Commerce, Sanquelim	Saish Gawade	<i>Saish</i>	<i>Saish</i>

18	Government College of Arts, Science & Commerce, Sanquelim	Nityanand Parab	<i>Nityanand</i>	<i>Nityanand</i>
19	Government College of Arts, Science & Commerce, Sanquelim	Bhakti S. Angadi	<i>Bhakti</i>	<i>Bhakti</i>
20	Government College of Arts, Science & Commerce, Sanquelim	Saniya S. Gaonkar	<i>Saniya</i>	<i>Saniya</i>
21	Dhempe College of Arts & Science, Miramar			
22	Dhempe College of Arts & Science, Miramar			
23	Dhempe College of Arts & Science, Miramar			
24	Dhempe College of Arts & Science, Miramar			
25	Dhempe College of Arts & Science, Miramar			
26	Government College of Arts, Science & Commerce, Khandola	Divya P. Umarye	<i>Divya</i>	<i>Divya</i>
27	Goa College of Engineering	Amey Naik	<i>Amey</i>	<i>Amey</i>
28	St. Xaviers College	Ethan Fernandes	<i>Ethan</i>	<i>Ethan</i>
29	PES RSN College of Arts & Science	Sairaj Desai	<i>Sairaj</i>	<i>Sairaj</i>
30	PES RSN College of Arts & Science	Shankar Gaded	<i>Shankar</i>	<i>Shankar</i>

31	PES RSN College of Arts & Science	Rahul Sharma		
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 From 24 – 28th June 2024





Attendance (Day 3 – 26/06/2024)

Sr. No	College	Name	Morning	Afternoon
1	Government College of Arts. Science & Commerce. Quepem	—	—	—
2	Government College of Arts. Science & Commerce. Quepem	—	—	—
3	Government College of Arts. Science & Commerce. Quepem	—	—	—
4	Government College of Arts. Science & Commerce. Quepem	—	—	—
5	Government College of Arts. Science & Commerce. Quepem	—	—	—
6	Parvatibai Chowgule College Of Arts & Science. Margao	Vira Dessai		

7	Parvatibai Chowgule College Of Arts & Science, Margao	Manasvi Desai	M Desai	M Desai
8	Parvatibai Chowgule College Of Arts & Science, Margao	Annalise Vaz	Vaz	Vaz
9	Parvatibai Chowgule College Of Arts & Science, Margao	Mevishka Martins	M Martins	M Martins
10	Parvatibai Chowgule College Of Arts & Science, Margao			
11	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Larissa Fernandes	L Fernandes	L Fernandes
12	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Pratiksha Gauns	P Gauns	P Gauns
13	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Kumkum Mehra	K Kumkum	K Kumkum
14	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Nadia Coelho	N Coelho	N Coelho
15	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Aishwarya Kelagerimath	A Kelagerimath	A Kelagerimath
16	Government College of Arts, Science & Commerce, Sanquelim	Pundalik S. Shirodkar	P Shirodkar	P Shirodkar
17	Government College of Arts, Science & Commerce, Sanquelim	Saish Gawade	S Gawade	S Gawade

18	Government College of Arts, Science & Commerce, Sanquelim	Nityanand Parab	N Parab	N Parab
19	Government College of Arts, Science & Commerce, Sanquelim	Bhakti S. Angadi	B Angadi	B Angadi
20	Government College of Arts, Science & Commerce, Sanquelim	Saniya S. Gaonkar	S Gaonkar	S Gaonkar
21	Dhempe College of Arts & Science, Miramar			
22	Dhempe College of Arts & Science, Miramar			
23	Dhempe College of Arts & Science, Miramar			
24	Dhempe College of Arts & Science, Miramar			
25	Dhempe College of Arts & Science, Miramar			
26	Government College of Arts, Science & Commerce, Khandola	Divya P. Umarye	D Umarye	D Umarye
27	Goa College of Engineering	Amey Naik	A Naik	A Naik
28	St. Xaviers College	Ethan Fernandes	E Fernandes	E Fernandes
29	PES RSN College of Arts & Science	Sairaj Desai	S Desai	S Desai
30	PES RSN College of Arts & Science	Shankar Gaded	S Gaded	S Gaded

31	PES RSN College of Arts & Science	Rahul Sharma		
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Attendance (Day 4 – 27/06/2024)

Sr. No	College	Name	Morning	Afternoon
1	Government College of Arts, Science & Commerce, Quepem	—	—	—
2	Government College of Arts, Science & Commerce, Quepem	—	—	—
3	Government College of Arts, Science & Commerce, Quepem	—	—	—
4	Government College of Arts, Science & Commerce, Quepem	—	—	—
5	Government College of Arts, Science & Commerce, Quepem	—	—	—
6	Parvatibai Chowgule College Of Arts & Science, Margao	Vira Dessai		

7	Parvatibai Chowgule College Of Arts & Science, Margao	Manasvi Desai	<i>MDes</i>	<i>MDes</i>
8	Parvatibai Chowgule College Of Arts & Science, Margao	Annalise Vaz	<i>AVaz</i>	<i>AVaz</i>
9	Parvatibai Chowgule College Of Arts & Science, Margao	Mevishka Martins	<i>MMartins</i>	<i>MMartins</i>
10	Parvatibai Chowgule College Of Arts & Science, Margao			
11	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Larissa Fernandes	<i>LFernandes</i>	<i>LFernandes</i>
12	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Pratiksha Gauns	<i>PGauns</i>	<i>PGauns</i>
13	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Kumkum Mehra	<i>KMehra</i>	<i>KMehra</i>
14	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Nadia Coelho	<i>NCoelho</i>	<i>NCoelho</i>
15	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Aishwarya Kelagerimath	<i>AKelagerimath</i>	<i>AKelagerimath</i>
16	Government College of Arts, Science & Commerce, Sanquelim	Pundalik S. Shirodkar	<i>PShirodkar</i>	<i>PShirodkar</i>
17	Government College of Arts, Science & Commerce, Sanquelim	Saish Gawade	<i>SGawade</i>	<i>SGawade</i>

18	Government College of Arts, Science & Commerce, Sanquelim	Nityanand Parab	<i>NParab</i>	<i>NParab</i>
19	Government College of Arts, Science & Commerce, Sanquelim	Bhakti S. Angadi	<i>BAngadi</i>	<i>BAngadi</i>
20	Government College of Arts, Science & Commerce, Sanquelim	Saniya S. Gaonkar	<i>SGaonkar</i>	<i>SGaonkar</i>
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23	Dhempe College of Arts & Science, Miramar			
24	Dhempe College of Arts & Science, Miramar			
25	Dhempe College of Arts & Science, Miramar			
26	Government College of Arts, Science & Commerce, Khandola	Divya P. Umarye	<i>DUmarye</i>	<i>DUmarye</i>
27	Goa College of Engineering	Amey Naik	<i>ANaik</i>	<i>ANaik</i>
28	St. Xaviers College	Ethan Fernandes	<i>EFernandes</i>	<i>EFernandes</i>
29	PES RSN College of Arts & Science	Sairaj Desai	<i>SDesai</i>	<i>SDesai</i>
30	PES RSN College of Arts & Science	Shankar Gaded	<i>SGaded</i>	<i>SGaded</i>

31	PES RSN College of Arts & Science	Rahul Sharma		
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Attendance (Day 5 – 28/06/2024)

Sr. No	College	Name	Morning	Afternoon	Certificate
1	Government College of Arts, Science & Commerce, Quepem				
2	Government College of Arts, Science & Commerce, Quepem				
3	Government College of Arts, Science & Commerce, Quepem				
4	Government College of Arts, Science & Commerce, Quepem				
5	Government College of Arts, Science & Commerce, Quepem				
6	Parvatibai Chowgule College Of Arts & Science, Margao	Vira Dessai			

7	Parvatibai Chowgule College Of Arts & Science, Margao	Manasvi Desai	MDesai	MDesai	MDesai
8	Parvatibai Chowgule College Of Arts & Science, Margao	Annalise Vaz	AVaz	AVaz	AVaz
9	Parvatibai Chowgule College Of Arts & Science, Margao	Mevishka Martins	MMartins	MMartins	MMartins
10	Parvatibai Chowgule College Of Arts & Science, Margao				
11	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Larissa Fernandes	LFernandes	LFernandes	LFernandes
12	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Pratiksha Gauns	PGauns	PGauns	PGauns
13	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Kumkum Mehra	KMehra	KMehra	KMehra
14	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Nadia Coelho	NCoelho	NCoelho	NCoelho
15	Carmel College Of Arts, Science And Commerce For Women, Nuvem	Aishwarya Kelagerimath	AKelagerimath	AKelagerimath	AKelagerimath
16	Government College of Arts, Science & Commerce, Sanquelim	Pundalik S. Shirodkar	PSShirodkar	PSShirodkar	PSShirodkar
17	Government College of Arts, Science & Commerce, Sanquelim	Saish Gawade	SGawade	SGawade	SGawade

18	Government College of Arts, Science & Commerce, Sanquelim	Nityanand Parab	NParab	NParab	NParab
19	Government College of Arts, Science & Commerce, Sanquelim	Bhakti S. Angadi	BAngadi	BAngadi	BAngadi
20	Government College of Arts, Science & Commerce, Sanquelim	Saniya S. Gaonkar	SGaonkar	SGaonkar	SGaonkar
21	Dhempe College of Arts & Science, Miramar				
22	Dhempe College of Arts & Science, Miramar				
23	Dhempe College of Arts & Science, Miramar				
24	Dhempe College of Arts & Science, Miramar				
25	Dhempe College of Arts & Science, Miramar				
26	Government College of Arts, Science & Commerce, Khandola	Divya P. Umarye	DUmarye	DUmarye	DUmarye
27	Goa College of Engineering	Ameey Naik	ANaik	ANaik	ANaik
28	St. Xaviers College	Ethan Fernandes	EFernandes	EFernandes	EFernandes
29	PES RSN College of Arts & Science	Sairaj Desai	SDesai	SDesai	SDesai
30	PES RSN College of Arts & Science	Shankar Gaded	SGaded	SGaded	SGaded

3. Photographs







