

NATIONAL BOARD OF ACCREDITATION

**Data Capturing Points of the Program Applied for NBA Accreditation– Tier I/II UG
(Engineering) Institute Programs**

PART-A: Profile of the Institute

Name of the Program Applied for: Robotics and Automation

A1: Name of the Institute: - Toc H Institute of Science and Technology

Year of Establishment : 2002

Location of the Institute: Arakkunnam

A2: Institute Address: -

City : Ernakulam

State : Kerala

Pin Code : 682 313

Website :www.tistcochin.edu.in

E-mail :principal@tistcochin.edu.in

with STD Code):0484-2748388

A3: Name and Address of the Affiliating University (If any): -

Name of the University : APJ Abdul Kalam
Technological University

City : Thiruvananthapuram
Pin Code :695016

State : Kerala

A4: Type of the Institution: - (Tick the applicable choice)

Institute of National Importance

☐

Deemed University

☐

University

☐

Autonomous

☐

Non-Autonomous (Affiliated)

☒

Any other (Please specify) *

☐

***Provide Details:** ____

A5: Ownership Status: - (Tick the applicable choice)

Central Government

☐

State Government

☐

Government Aided

☐

Self-financing

☒

Any Other (Please specify) *

☐

***Provide Details:** ____

A6: Details of all Programs being Offered by the Institution: -

❖ No. of UG programs: 9

❖ No. of PG programs: 6

Table No. A6.1: List of all programs offered by the Institute.

S.N.	Level of program (UG/PG)	Name of the program	Year of Start	Year of close*	Name of the Department
1	UG	Civil Engineering	2006	--	Civil Engineering
2	UG	Computer Science and Engineering	2002	--	Computer Science and Engineering
3	PG	Construction Engineering & Management	2013	--	Civil Engineering
4	PG	Data Science	2020	--	Computer Science and Engineering
5	UG	Electrical and Computer Engineering	2020	--	Electrical and Computer Engineering
6	UG	Electrical and Electronics Engineering	2004	--	Electrical and Electronics Engineering
7	UG	Electronics & Communication Engineering	2002	--	Electronics and Communication Engineering
8	UG	Information Technology	2002	--	Information Technology
9	UG	Mechanical Engineering	2006	--	Mechanical Engineering
10	PG	Power Electronics	2012	2024	Electrical and Electronics Engineering
11	UG	Robotics and Automation	2019	--	Robotics and Automation
12	UG	Safety & Fire Engineering	2011	--	Safety and Fire Engineering
13	PG	Thermal Engineering	2013	2024	Mechanical Engineering
14	PG	Wireless Technology	2011	2024	Electronics and Communication Engineering

15	PG	Masters in Business Administration	2008	--	Management
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A7: Programs to be considered for Accreditation vide this Application:

Table No. A7.1: List of programs to be considered for accreditation.

Cluster ID.	Name of the Department	Name of the Program
1	Robotics and Automation	Robotics and Automation
2	Information Technology	Information Technology

Table No. A7.2: Allied Department(s) to the Department of the program considered for accreditation as above.

Cluster ID.	Name of the Department (in table no. A7.1)	Name of allied Departments/Cluster (for table no. A7.1)
1.	Robotics and Automation	Electronics and Communication Engineering

PART-B: Program information

(Data to be filled in for the program applied for Accreditation)

B1: Provide the Required Information for the Program Applied For: -

Table No. B1: Program details.

Sl. No	Program Name	Year of start	Sanctioned Intake	Increase / decrease in intake, if any	Year of increase/decrease	AICTE Approval Details	Accreditation Status*	No. of times program accredited
1	B.Tech(Robotics and Automation)	2019	60	NO	NA	Yes F.No. South-West/1-3514675170/2018 /EOADated 10-Apr-2018	Applying first time	0

* Write applicable one:

- ❖ Applying first time
- ❖ Granted accreditation for 2/3 years for the period (specify period)
- ❖ Granted accreditation for 5/6 years for the period (specify period)

- ❖ Not accredited (specify visit dates, year).
- ❖ Withdrawn (specify visit dates, year)
- ❖ Not eligible for accreditation.

B2: Detail of Head of the Department for the program under consideration:

A. Name of the HoD : Dr.Deepa Elizabeth George

B. Nature of appointment: (Tick the applicable choice)

- ❖ Regular ☒
- ❖ Contract ☐
- ❖ Ad hoc ☐

C. Qualification: (Tick the applicable choice)

- ❖ Ph.D. ☒
- ❖ ME/M.Tech ☐
- ❖ Any other* ☐

***Please provide details:** _____

B3: Program Details

Table No.B3.1: Admission details for the program excluding those admitted through multiple entry and exit points.

Item (Information is to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	CAY	CAYm1	CAYm2	CAYm3	CAYm4 (LYG)	CAYm5 (LYGm1)	CAYm6 (LYGm2)
N= Sanctioned intake of the program (as per AICTE /Competent authority) /Competent authority)	60	60	60	60	60	60	60
N1= Total no. of students admitted in the 1 st year minus the no. of students, who migrated to other programs/ institutions plus no. of students, who migrated to this program to this program	51	57	51	50	42	46	49

N2=Number of students admitted in 2nd year in the same batch via lateral entry including leftover seats	0	4	3	0	1	1	10
N3= Separate division if any	0	0	0	0	0	0	0
N4= Total no. of students admitted in the 1st year via all supernumerary quotas	0	0	0	0	0	0	0
Total number of students admitted in the program (N1 + N2 + N3+ N4) – excluding those admitted through multiple entry and exit points.	51	61	54	50	43	47	59

CAY= Current Academic Year.

CAYm1= Current Academic Year Minus 1

CAYm2= Current Academic Year Minus 2.

LYG= Last Year Graduate.

LYGm1= Last Year Graduate Minus 1.

LYGm2= Last Year Graduate Minus 2.

B4: Enrolment Ratio in the First Year

Table No. B4.1: Student enrolment ratio in the 1st year.

Item (Students enrolled in the First Year on average over 3 academic years (CAY, CAYm1, and CAYm2))	CAY	CAYm1	CAYm2
N= Sanctioned intake of the program in the 1 st year (as per AICTE/Competent authority)	60	60	60
N1= Total no. of students admitted in the 1 st year minus the no. of students, who migrated to other programs/ institutions plus no. of students, who migrated to this program	51	57	51
N4= Total no. of students admitted in the 1 st year via all supernumerary quotas	0	0	0
Enrolment Ratio (ER)= (N1+N4)/N	0.85	0.95	0.85
Average ER= (ER_1+ ER_2+ ER_3)/3	0.88		

B5: Success Rate of the Students in the Stipulated Period of the Program

Table No.B5.1: The success rate in the stipulated period of a program.

Item	LYG	LYGm1	LYGm2
A*= (No. of students admitted in the 1 st year of that batch and those actually admitted in the 2 nd year via lateral entry, plus the number of students admitted through multiple entry (if any) and separate division if applicable, minus the number of students who exited through multiple entry (if any).	61	61	70
B=No. of students who graduated from the program in the stipulated course duration	25	31	50
Success Rate (SR)= (B/A)*100	41	51	71

Average SR of three batches $((SR_1 + SR_2 + SR_3)/3)$	54.41
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Note *: If the value of A in Table No. B5.1 is less than the sum of the sanctioned intake (N) and the lateral entry including leftover seats (N2), then the value of A in Table No.B5.1 should be the sum of the sanctioned intake (N) and the lateral entry including leftover seats (N2) of Table No.B3.1.

B6: Academic Performance of the First-Year Students of the Program

Table No.B6.1: Academic Performance of the First-Year Students of the Program.

Academic Performance	CAYm1	CAYm2	CAYm3
X= (Mean of 1 st year grade point average of all successful students on a 10-point scale) or (Mean of the percentage of marks of all successful students in 1 st year/10)	5.43	4.59	5.98
Y= Total no. of successful students	57	51	49
Z = Total no. of students appeared in the examination	57	51	49
API = $X * (Y/Z)$	5.43	4.59	5.98
Average API = $(API_1 + API_2 + API_3)/3$	5.33		

B7: Academic Performance of the Second Year Students of the Program

Table No.B7.1: Academic Performance of the Second Year Students of the Program.

Academic Performance	CAYm1	CAYm2	CAYm3
X= (Mean of 2 nd year grade point average of all successful students on a 10-point scale) or (Mean of the percentage of marks of all successful students in 2 rd year/10)	4.79	5.79	6.17
Y= Total no. of successful students	53	49	42
Z =Total no. of students appeared in the examination	54	50	43
API = $X * (Y/Z)$	4.70	5.67	6.03
Average API = $(API_1 + API_2 + API_3)/3$	5.47		

B8: Academic Performance of the Third Year Students of the Program

Table No.B8.1: Academic Performance of the Third Year Students of the Program

Academic Performance	CAYm1	CAYm2	CAYm3
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X= (Mean of 3 rd year grade point average of all successful students on a 10-point scale) or (Mean of the percentage of marks of all successful students in 3 rd year/10)	6.07	6.13	6.52
Y= Total no. of successful students	48	42	46
Z= Total no. of students appeared in the examination	49	42	46
API = X* (Y/Z)	5.95	6.13	6.52
Average API = (API_1 + API_2 + API_3)/3	6.20		

B9:Placement, Higher Studies, and Entrepreneurship

Table No.B9.1: Placement, higher studies, and entrepreneurship details.

Item	LYG	LYGm1	LYGm2
FS*=Total no. of final year students	61	61	70
X= No. of students placed	22	19	31
Y= No. of students admitted to higher studies	0	4	10
Z= No. of students taking up entrepreneurship	2	6	1
X + Y + Z =	24	29	42
Placement Index (P) = (((X + Y + Z)/FS) * 100)	39.34	47.54	60.00
Average placement index = (P_1 + P_2 + P_3)/3	48.96		

Note *: If the value of FS in Table No. B9.1 is less than the sum of the sanctioned intake (N) and the lateral entry including leftover seats (N2), then the value of FS in Table No. B9.1 should be the sum of the sanctioned intake (N) and the lateral entry including leftover seats (N2) of Table No.B3.1.

PART C: Faculty Details in Department and Allied Departments (Data to be filled in for the **Department and Allied Departments**)

C1: Faculty details of Department and Allied Departments

Table No.C1: Faculty details in the Department for the past 3 years including CAY

S. N .	Name of the Faculty	High est degree	Univers ity	Are a of Speciali zati on	Date of Joining in this Instituti on	Expe rienc e in year s in curr ent insti tute	Desi gnati on at Time Joini ng in this Insti tutio n	Prese nt Desig natio n	The date on which Designate d as Professor / Associate Professor if any	Nat ure of Associati on (Regula r/ Contract / Ad hoc)	If con tractual menti on Full time or (Part time or hourl y base d)	C u r r e n t l y A s s o c i a t e d (Y / N)	Dat e of Lea ving if any (In cas e Curr entl y Ass ocia ted is "No ")
1	Dr. Deepa Elizabeth George	Ph.D	CUSAT	Signal Processi ng in Commu nication	23/09/2002	23.3	Lecturer	Professor	02/06/2025	Regular		Yes	
2	Dr. Georgina Binoy Joseph	Ph.D	Hindustan Institute of Technology and Science	High Perform ance Comput ing and Comput er Vision	20/06/2016	9.6	Associate Professor	Associate Professor	20/06/2016	Regular		Yes	
3	Mr. Girish P	M.Tech	Visvesvaraya Technological University	Industri al Electro nics	19/10/2009	16.2	Lecturer	Associate Professor	01/05/2025	Regular		Yes	
4	Mr. Mahesh C	M.Tech	Anna University Chennai	CAD/C AM	11/05/2009	16.8	Lecturer	Assistant Professor		Regular		Yes	
5	Ms. Anu Jose	M.Tech	Anna University	Applied Electro nics	11/06/2012	13.7	Lecturer	Assistant Professor		Regular		Yes	
6	Ms. Swathy Satheesh	M.Tech	CUSAT	Opto Electro nics and Commu nication Systems	10/07/2017	8.6	Assistant Professor	Assistant Professor		Regular		Yes	
7	Ms. Sheethal Ann Ajith	M.Tech	APJ Abdul Kalam Technological University	VLSI and Embedd ed Systems	23/08/2024	1.4	Assistant Professor	Assistant Professor		Regular		Yes	

8	Mr. Edu Krishnan V	M.Tech	University of Calicut	Machin e Design	01/01/2025	1	Assistant Professor	Assistant Professor		Contract ual	Fullti me	Yes	
9	Ms. Lekshmiyal P L	M.Tech	CUSAT	VLSI and Embedd ed Systems	01/01/2025	1	Assistant Professor	Assistant Professor		Contract ual	Fullti me	Yes	
10	Ms. Sanjana M Prabhu	M.Tech	APJ Abdul Kalam Technological University	Roboti cs and Automa tion	01/07/2025	0.6	Assistant Professor	Assistant Professor		Contract ual	Fullti me	Yes	
11	Ms. Smita Damodaran	M.Tech	CUSAT	VLSI and Embedd ed Systems	01/01/2025	0.11	Assistant Professor	Assistant Professor		Contract ual	Fullti me	No	11/12/2 025
12	Mr. Akhil Krishnan M	M.Tech	APJ Abdul Kalam Technological University	Industri al Drives and Control	17/07/2024	1.3	Assistant Professor	Assistant Professor		Contract ual	Fullti me	No	03/11/2 025
13	Ms. Dilsha T A	M.Tech	CUSAT	Electro nics & Commu nication	17/07/2024	1	Assistant Professor	Assistant Professor		Contract ual	Fullti me	No	17/07/2 025
14	Ms. Rekha George	M.Tech	Anna University Chennai	Informa tion and Commu nication Enginee ring	11/06/2007	17.10	Lecturer	Assistant Professor		Regular		No	30/04/2 025
15	Ms. Nezla N A	M.Tech	CUSAT	Electro nics & Commu nication	29/08/2022	2.1	Assistant Professor	Assistant Professor		Regular		No	09/10/2 024
16	Mr. Nandu Gopakumar G	M.Tech	APJ Abdul Kalam Technological University	Roboti cs and Automa tion	14/08/2023	0.11	Assistant Professor	Assistant Professor		Contract ual	Fullti me	No	31/07/2 024
17	Ms. Nisha R	M.Tech	M G University	Industri al Drives and Control	01/12/2010	13.7	Assistant Professor	Assistant Professor		Regular		No	12/07/2 024
18	Mr. Naveen Prakash	M.Tech	APJ Abdul Kalam Technological University	Machin e Design	03/11/2021	2.7	Assistant Professor	Assistant Professor		Regular		No	01/07/2 024

19	Ms. Hashfi Kalaiparambil Hareed	M.Tech	APJ Abdul Kalam Technological University	Wireles s Technol ogy	29/08/2022	1.8	Assistant Professor	Assistant Professor		Contract ual	Fullti me	No	30/04/2 024
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Table No.C2: Faculty details of Allied Departments for the past 3 years including CAY

S. N.	Name of the Faculty	High est degree	Univer sity	Area of Spe ciali zati on	Date of Joining in this Instituti on	Expe rience in year s in curr ent insti tute	Desi gnation at Time Joini ng in this Instituti on	Prese nt Desig nation	The date on which Designated as Professor / Associate Professor if any	Nat ure of Associati on (Regula r/ Contract / Ad hoc)	If contr actual menti on Full time or (Part time or hourly based)	C u r r e n t l y A s s o c i a t e d (Y / N)	Da te of Le avi ng if any (In cas e Curre ntly As soci ated is "No")
1	Dr. S. Perumal Sankar	Ph.D	Anna University	MEMS	27/10/2014	11.2	Professo r	Professor		Regular		Ye s	
2	Dr. Srelekshmi S	Ph.D	APJ Abdul Kalam Technological University	Antenna Design and Analysis	03/07/2012	13.6	Assistant Professo r	Associate Professor	01/05/2025	Regular		Ye s	
3	Mr. Nisanth Krishnan	M.E.	Anna University	Communi cation Systems	05/01/2009	17	Assistant Professo r	Associate Professor		Regular		Ye s	
4	Ms. Deepamay Varghese	M.Tech	Anna University	Applied Electroni cs	02/06/2008	17.7	Assistant Professo r	Assistant Professor		Regular		Ye s	
5	Mr. Renjith P K	M.Tech	Anna University	VLSI Design	07/03/2011	14.10	Assistant Professo r	Assistant Professor		Regular		Ye s	

6	Ms. Sajitha K S	M.E.	Anna University	Embedded System Technology	02/06/2008	17.7	Assistant Professor	Assistant Professor		Regular		Yes	
7	Ms. Annie Paul	M.Tech	CUSAT	Wireless Technology	02/06/2008	17.7	Assistant Professor	Assistant Professor		Regular		Yes	
8	Ms. Dhanya R	M.E.	Anna University	Communication Systems	10/07/2017	8.6	Assistant Professor	Assistant Professor		Regular		Yes	
9	Ms. Roshni Polly	M.Tech	Anna University	Information & Communication Engineering	23/06/2008	17	Assistant Professor	Assistant Professor		Regular		No	28/06/2025

C2: Student-Faculty Ratio (SFR)

❖ No. of UG(Engineering) programs in Department including allied departments/ clusters (UG_n):

- UG₁=1st UG program
- UG_n=nth UG program
 - **B**= No. of Students in UG 2nd year (**ST**)
 - **C**= No. of Students in UG 3rd year (**ST**)
 - **D**= No. of Students in UG 4th year (**ST**)

❖ No. of PG (Engineering) programs in Department including allied departments/ clusters (PG_m):

- PG₁=1st PG program.
- PG_m=mth PG program
 - **A**= No. of Students in PG 1st year
 - **B**= No. of Students in PG 2nd year

❖ Student Faculty Ratio (**SFR**) = S/F

- **S**= No. of students of all programs in the Department including all students of allied departments/clusters.
 - **No. of students (ST)**=Sanctioned Intake (SA)+ Actual admitted students via lateral entry including leftover seats (L) if any (limited to 10 % of SA)
 - Students who admitted under supernumerary quotas (SNQ, EWS, etc) will not be considered in calculating SFR value. Those students are **exempted**.
- **F**=Total no. of regular or contractual faculty members (Full Time) in the Department, including allied departments/clusters (excluding first year faculty (The faculty members who have a 100% teaching load in the first-year courses)).

Table No.C2.1: Student-faculty ratio.

Year	CAY(2025-26)	CAYm1(2024-25)	CAYm2 (2023-24)
UG ₁ . B// 2nd year students of UG1 program	60+4	60+3	60+0
UG ₁ . C// 3rd year students of UG1 program	60+2	60+0	60+1
UG ₁ . D// 4th year students of UG1 program	60+0	60+1	60+1
UG₁ (UG-Engineering-Robotics and Automation) // Total no.of students(2nd, 3rd, 4th) in UG1 program	U G ₁ . B+ U G ₁ . C+ U G ₁ . D=64+62+60=186	U G ₁ . B+ U G ₁ . C+ U G ₁ . D=63+60+61=184	U G ₁ . B+ U G ₁ . C+ U G ₁ . D=60+61+61=182

UG ₂ . B// 2nd year students of UG2 program	60+1	60+4	30+1
UG ₂ . C// 3rd year students of UG2 program	60+4	30+0	30+1
UG ₂ . D// 4th year students of UG2 program	30+0	30+1	30+0
UG ₂ (UG-Engineering- Electronics and Communication Engineering) // Total no.of students(2nd, 3rd, 4th) in UG2 program	UG ₂ .B+ UG ₂ .C+ UG ₂ .D=155	UG ₂ .B+ UG ₂ .C+ UG ₂ .D =125	UG ₂ .B+ UG ₂ .C+ UG ₂ .D = 92
PG ₁ . A // 1st year students of PG ₁ program	0	0	12
PG ₁ . B // 2nd year students of PG ₁ program	0	12	12
PG₁ (PG-Engineering-ECE) // Total no.of students(1st, 2nd) in PG ₁ program	PG ₁ .A+ PG ₁ .B=0	PG ₁ .A+ PG ₁ .B = 0+12=12	PG ₁ .A+PG ₁ .B=12+12=24
DS=Total no. of students in all UG and PG programs in the Department	186	184	182
AS=Total no. of students of all UG and PG programs in allied departments	155	137	116
S=Total no. of students in the Department (DS) and allied departments (AS)	S1=UG ₁ +UG ₂ +PG ₁ =341	S2=UG ₁ +UG ₂ +PG ₁ =321	S3=UG ₁ +UG ₂ +PG ₁ = 298
DF=Total no. of faculty members in the Department	10	10	12
AF= Total no. of faculty members in the allied Departments	8	9	9
F=Total no. of faculty members in the Department (DF) and allied Departments (AF)	F1=18	F2=19	F3=21
FF=The faculty members in F who have a 100% teaching load in the first-year courses	FF1=0	FF2=0	FF3=0
Student Faculty Ratio (SFR)=S/(F-FF)	SFR1= S1/(F1- FF1)= 341/18=18.94	SFR2=S2/(F2- FF2)= 321/19=16.89	SFR3=S3/(F3- FF3) = 298/21= 14.19
Average SFR for 3 years	Average SFR=(SFR1+SFR2+SFR3)/3 =(18.94+16.89+14.19)/3 = 16.67		

C3. Faculty Qualification

- ❖ Faculty qualification index (FQI) = $2.5 * [(10X + 4Y)/RF]$ where
 - X=No. of faculty members with Ph.D. degree or equivalent as per AICTE/UGC norms.
 - Y=No. of faculty members with M. Tech. or ME degree or equivalent as per AICTE/ UGC norms.

- RF=No. of required faculty in the Department including allied Departments to adhere to the 20:1 Student-Faculty ratio, with calculations based on both student numbers and faculty requirements as per section 5.1 of SAR; (RF=S/20).

Table No.C3.1: Faculty qualification.

Year	X	Y	RF	FQI= $2.5 * [(10X + 4Y)/RF]$
CAY	4	14	17	14.12
CAYm1	4	15	16	15.62
CAYm2	4	17	14	19.29

C4: Faculty Cadre Proportion

- ❖ Faculty Cadre Proportion is 1(RF1): 2(RF2): 6(RF3)
- RF1= No. of Professors required = $1/9 * \text{No. of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (S) as per C2 of this documents:}$.
- RF2= No. of Associate Professors required = $2/9 * \text{No. of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (S) as per section C2 of this documents:}$.
- RF3= No. of Assistant Professors required = $6/9 * \text{No. of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (S) as per section C2 of this documents:}$.
- ❖ Faculty cadre and qualification and experience should be as per AICTE/UGC norms.

Table No.C4.1: Faculty cadre proportion details.

Year	Professors		Associate Professors		Assistant Professors	
	Required Faculty (RF1)	Available Faculty (AF1)	Required Faculty (RF2)	Available Faculty (AF2)	Required Faculty (RF3)	Available Faculty (AF3)
CAY	1	2	3	2	11	11
CAYm1	1	1	3	2	10	14
CAYm2	1	1	3	2	9	16
Average Numbers	RF1= 1	AF1= 1.33	RF2= 3	AF2= 2	RF3= 10	AF3= 13.67

C5: Visiting/Adjunct Faculty/Professor of Practice

Table No. C5.1: List of visiting/adjunct faculty/professor of practice and their teaching and practical loads.

S.N.	Name of the Person	Designation & Organization	Name of the Course	No. of hours handled
CAYm1(2024-2025)				
1	Mr.Sunil Paul	Chief Executive Officer, Srishti Robotics Technologies Pvt. Ltd	Embedded Systems and IoT	25 hrs

2	Mr.Anfil Shajo	Managing Partner, DC Robotics	Drone Technology	25 hrs
3	Mr.Ramesh Babu	Manager Fanuc India Pvt.Ltd	Robot Training	30 hrs
4	Mr. Muraleedharan.M.T	Head Of the Department GPTCK – BOSCH REXROTH AUTOMATION CENTRE	Automation Technologies	42 hrs
Total no. of hours:				122 hrs
CAYm2(2023-2024)				
1	Mr.Sunil Paul	Chief Executive Officer Srishti Robotics Technologies Pvt. Ltd	Embedded Systems, IoT	25 hrs
2	Mr.Ramesh Babu	Manager Fanuc India Pvt.Ltd	Robot Training	30 hrs
3	Mr. Muraleedharan.M.T	Head Of the Department GPTCK – BOSCH REXROTH AUTOMATION CENTRE	Automation Technologies	42 hrs
Total no. of hours:				97 hrs
CAYm3(2022-2023)				
1	Mr.Sunil Paul	Chief Executive Officer Srishti Robotics Technologies Pvt. Ltd	Embedded Systems, IoT	25 hrs
2	Mr. Muraleedharan.M.T	Head Of the Department GPTCK – BOSCH REXROTH AUTOMATION CENTRE	Automation Technologies	42 hrs
Total no. of hours:				67 hrs

C6: Academic Research

Table No. C6.1: Faculty publication details.

S.N.	Item	CAYm1	CAYm2	CAYm3
1	No. of peer reviewed journal papers published	3	2	0
2	No. of peer reviewed conference papers published	6	3	28
3	No. of books/book chapters published	0	0	0

C7: Sponsored Research Project

Table No. C7.1: List of sponsored research projects received from external agencies.

S. N.	PI name	Co-PI names if any	Name of the Dept.,where project is sanctioned	Project title*	Name of the Funding agency	Duration of the project	Amount (Lacs)
CAYm1							

1	Dr. Georgina Binoy Joseph	Dr. Deepa Elizabeth George, Ms. Dhanya R	Robotics and Automation	Integration of MEMS Accelerometer and GNSS for Landslide Prediction	ACARR, CUSAT Approved by NSIL, ISRO	1 year	1.16
2	Dr. Georgina Binoy Joseph		Robotics and Automation	ROS Enabled Agricultural Robot with Machine learning and Custom User Interface	APJAKTU - Financial Assistance to Student Projects	1 year	0.20
3	Dr. S. Perumal Sankar	Dr. Deepa Elizabeth George / Asst. Prof. Dhanya R	Robotics and Automation	Real Time Soil Moisture monitoring System	ACARR, CUSAT Approved by NSIL, ISRO	1 year	0.25
4	Ms. Anu Jose		Robotics and Automation	BOT ARM - Assisting Differently Abled Students	APJAKTU - Financial Assistance to Student Projects	1 year	0.24
Amount received (Rs.)							1.85
CAYm2							
1	Dr. Deepa Elizabeth George		Robotics and Automation	Neuro Nav Chair	APJKTU - Centre for Engineering Research and Development (CERD)	1 year	0.26
2	Dr. Georgina Binoy Joseph		Robotics and Automation	Sparklink: The Universal Autonomous UAV Battery Swapping and Charging dock with Precision Robotic Arm	APJAKTU - Financial Assistance to Student Projects	1 year	0.30
Amount received (Rs.)							0.56

CAYm3							
1	Dr.Deepa Elizabeth George		Robotics and Automation	Offshore Communication and Tracking System(OCTS)	Seed Support - Jilla Panchayat h Local Economic Developm ent Scheme	6 months	0.29
Amount received (Rs.)							0.29
Total Amount (Lacs) Received for the Past 3 Years							2.7

C8: Consultancy Work

Table No. C8.1: List of consultancy projects received from external agencies

S.N.	PI name	Co-PI names if any	Name of the Dept., where project is sanctioned	Project title*	Name of the Funding agency	Duration of the project	Amount (Lacs)
CAYm1							
1	-	-	-	-	-	-	-
Amount received (Rs.)							NIL
CAYm2							
1	-	-	-	-	-	-	-
Amount received (Rs.)							NIL
CAYm3							
1	-	-	-	-	-	-	-
Amount received (Rs.)							NIL

Total amount (Lacs) received for the past 3 years	NIL
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C9: Institution Seed Money or Internal Research Grant to its Faculty for Research Work

Table No. C9.1: List of faculty members received seed money or internal research grant from the Institution.

Institution:						
S.N.	Faculty name	Project title/ Support for Activity	Duration	Amount (Lacs)	Amount Utilized (Lacs)	Outcomes of the project
CAYm1						
-	-	-	-	-	-	-
Amount received (Rs.)				NIL		
CAYm2						
1	Dr. Georgina Binoy Joseph	ISRO IRoC24Challenge	1 Year	1.00	1.00	Design and Development
Amount received (Rs.)						1.00
CAYm3						
-	-	-	-	-	-	-
Amount received (Rs.)						NIL
Total amount (Lacs) received for the past 3 years						1.00

PART-D: Laboratory Infrastructure in the Department

(Data to be filled in for the Department).

D1: Adequate and Well-Equipped Laboratories, and Technical Manpower

Table No.D1.1: List of laboratories and technical manpower.

					Technical Manpower support
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S. N.	Name of the Laboratory	No. of students per setup (Batch Size)	Name of the major equipment	Weekly utilization status (all the courses for which the lab is utilized)	Name of the technical staff	Designation	Qualification
1.	ROBOTICS LAB	2	1.4 DOF Articulated Robotic Manipulator - with various end-effector options, including a suction cup, pen holder for drawing/laser engraving, and a 3D printer head, as well as an automated conveyor system for robotic material handling 2. Automated Conveyor System for Robotic Material Handling -equipped with a photoelectric distance sensor and a colour sensor 3. Integrated Visual Servoing System - uses a 5MP USB 3.0 camera with a fixed-focus lens, adjustable LED ring light, and Dobot Vision Studio software for real-time detection,	6hrs (RAL332)	Mr. Prakash Mohan	Lab Instructor Gr II	MSc Electronics

			tracking, and robotic control. 4. Single-nozzle 3D Printing Extruder - features a 0.4 mm nozzle, uses 1.75 mm filament at ~200 °C, and integrates with the Dobot Magician for additive manufacturing and prototyping 5. SLAM Robot - TurtleBot3 Burger - a modular powered by Raspberry Pi 4 and ROS, featuring lidar-based localization and a differential-drive system for autonomous navigation. 6. Pixy Cam2 Smart Vision Sensor - a compact, fast vision sensor with onboard image processing that detects objects and lines up to 60 FPS and integrates easily via USB or UART. 7. RP Lidar A1M8 for SLAM - a compact 2D LiDAR sensor offering 360° coverage, a 12 m range, and a 5.5 Hz scan rate for				
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			precise SLAM and robotic navigation 8. Differential Drive Mobile Robot equipped with ultrasonic sensors for obstacle detection and navigation. 9. ABB Robot Studio - a cutting-edge simulator for robot programming and offline validation, while ROS is an open-source middleware framework for robotics software development. 10. Robot Operating System – middleware framework for developing and integrating robotics software				
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2.	ROS / EMBEDDED SYSTEMS LAB	2	1.Core i7, i5, and i3 computers - high-performance workstations for running ROS nodes, simulations, and robotics development tools. 2. Robot Operating System (ROS)-Open-source middleware framework for robot software development, simulation, and communication between nodes. 3.Rviz -ROS visualization tool 4. Gazebo 3D Simulation Tool- physics based 3D Robotic Simulation Tool 5. 8051 Microcontroller Trainer Kits- Hands-on hardware kits for learning and experimenting with 8051 microcontroller programming and interfacing. 6. Arduino Uno R3 SMD Boards & Software-Compact and versatile	6 Hrs RAL333, PCRUL 308	Ms. Devika Krishnan	Lab Instructor	Diploma in Electronics Engineering. 9.
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			Microcontroller boards based on ATmega328P, ideal for embedded system prototyping and ROS integration. 7.IDE for ARM based Microcontrollers-Keil uVision5				
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3.	AUTOMATI ON LAB	2	1.HYDAC Hydraulic Trainer -(Model: HQ12002)- Double-sided modular training frame enabling simultaneous experimental setups with industrial-grade hydraulic components and transparent safety panels for operational visibility and safety, mounted on a mobile frame with lockable caster wheels for ease of repositioning 2. HYDAC Mobile Storage Rack- Heavy-duty steel storage frame designed for safe and organized placement of hydraulic components with lockable swivel casters for mobility and convenience. 3. Hydraulic Control Valve and Actuator Assembly (Bosch Rexroth) - fully equipped hydraulic system for circuit design and testing, featuring 4/3 and 4/2 spool-type directional	6hrs RAL 331	Ms. Devika Krishnan	Lab Instructor	Diploma in Electronics Engineerin g.
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			control valves, flow and pressure control valves including pressure relief, reducing, and sequence valves, single-acting and double-acting hydraulic cylinders, precision pressure gauges for monitoring, and high- pressure hoses with quick-connect couplings for safe and flexible circuit assembly 4.Festo Pneumatic Training Bench workstation - constructed on a durable and modular Festo Didactic aluminium profile frame, featuring an integrated 230 V, 0.55 kW air compressor with a maximum pressure of 800 kPa, single-acting and double-acting pneumatic cylinders, a Filter– Regulator– Lubricator (FRL) unit (Model: TP101) for air quality and pressure stability, directional control valves in 5/2,				
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			4/3, 4/2, and 3/2 configurations (push button and roller lever operated), logic valves including dual-pressure (AND) and shuttle (OR) valves, one-way flow control valves for actuator speed regulation, manifold and quick-connect fittings for flexible circuit assembly, and an electro-pneumatic solenoid-operated directional control valve (Model: 4V210-08) for integration with PLC and relay logic systems suitable for automation-based pneumatic control. 5. PLC-HMI Integrated Industrial Automation Trainer - (DELTA AS218TX)-Controller Model:Delta AS218TX, supporting modular onfiguration and expandability. compatible with communication protocols such as Modbus, RS-232, RS-485, and Ethernet, ensuring industrial				
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			connectivity. - System can be configured and programmed using WPLSoft for PLC programming and DOPSoft for HMI Configuration 6. PLC-VFD Automation Training Workstation - Delta DVP14SS211R PLC with a modular I/O configuration for digital and analog signal interfacing, and Delta VFD4A8MS23ANSA A Variable Frequency Drive for motor speed regulation and process control, compatible with sensors including proximity sensors, pressure sensors, and encoders for closed- loop control experiments, and facilitates PLC-VFD communication via Modbus or RS-485 interfaces - Programmed and monitored using WPLSoft or ISPSOft for PLC programming and Diaview SCADA				
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			for real-time data visualization. 7. Software Tools – Technical Features: The software tools of the system include Diaview for SCADA development, enabling real-time data acquisition, visualization, and monitoring of automation processes. - Equipped with DOPSoft for Human–Machine Interface (HMI) screen design, configuration, and parameter control, and utilizes WPLSoft and ISPSOFT for PLC program development, logic design, debugging, and system testing. - supports seamless integration and communication between PLC, HMI, and VFD modules for comprehensive automation control.				
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D2: ` Safety Measures in Laboratories

Table No. D2.1: List of various safety measures in laboratories.

S.N.	Name of the Laboratory	Safety measures
1.	ROBOTICS LAB	Electrical Infrastructure & Safety Measures:

		• Equipped with Uninterruptible Power Supply (UPS) systems to prevent data loss and ensure continuous operation of PCs, sensitive instruments and hardware. • Standard earth and grounding mechanisms are installed in compliance with electrical safety norms • Earth Leakage Circuit Breakers (ELCBs) are installed in all labs to prevent electric shock hazards and equipment damage • The Electrical Maintenance Department conducts regular inspections and tests on the lab's electrical systems General Safety Measures • Every lab is equipped with a functional fire extinguisher • A fully stocked first aid box is available and maintained in every lab for handling minor injuries or accidents • Posters and charts displaying laboratory safety rules and emergency procedures are prominently displayed • Wearing of lab coats is mandatory for all students during lab hours
2.	ROS / Embedded Systems LAB	Electrical Infrastructure & Safety Measures: • Equipped with Uninterruptible Power Supply (UPS) systems to prevent data loss and ensure continuous operation of PCs, sensitive instruments & hardware. • Standard earth and grounding mechanisms are installed in compliance with electrical safety norms • Earth Leakage Circuit Breakers (ELCBs) are installed in all labs to prevent electric shock hazards and equipment damage • The Electrical Maintenance Department conducts regular inspections and tests on the lab's electrical systems General Safety Measures

		• Every lab is equipped with a functional fire extinguisher • A fully stocked first aid box is available and maintained in every lab for handling minor injuries or accidents • Posters and charts displaying laboratory safety rules and emergency procedures are prominently displayed • Wearing of lab coats is mandatory for all students during lab hours
3.	AUTOMATION LAB	Electrical Infrastructure & Safety Measures: • Equipped with Uninterruptible Power Supply (UPS) systems to prevent data loss and ensure continuous operation of PCs , sensitive instruments & hardware • Standard earth and grounding mechanisms are installed in compliance with electrical safety norms • Earth Leakage Circuit Breakers (ELCBs) are installed in all labs to prevent electric shock hazards and equipment damage • The Electrical Maintenance Department conducts regular inspections and tests on the lab's electrical systems General Safety Measures • Every lab is equipped with a functional fire extinguisher • A fully stocked first aid box is available and maintained in every lab for handling minor injuries or accidents • Posters and charts displaying laboratory safety rules and emergency procedures are prominently displayed • Wearing of lab coats & footwear (shoes) are mandatory for all students during lab hours
4.	PROJECTS LAB	Electrical Infrastructure & Safety Measures:

		• Equipped with Uninterruptible Power Supply (UPS) systems to prevent data loss and ensure continuous operation of PCs sensitive instruments and hardware • Standard earth and grounding mechanisms are installed in compliance with electrical safety norms • Earth Leakage Circuit Breakers (ELCBs) are installed in all labs to prevent electric shock hazards and equipment damage • The Electrical Maintenance Department conducts regular inspections and tests on the lab's electrical systems General Safety Measures • Every lab is equipped with a functional fire extinguisher • A fully stocked first aid box is available and maintained in every lab for handling minor injuries or accidents • Posters and charts displaying laboratory safety rules and emergency procedures are prominently displayed • Wearing of lab coats is mandatory for all students during lab hours
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D3:Project Laboratory/Research Laboratory

Table No. D3.1: List of project laboratory/research laboratory /Centre of Excellence.

S.N.	Name of the Laboratory
1	Project Laboratory
2	Center of Excellence for Intelligent Embedded Edge AI and IoT Systems
3	CENTELON -TIST Industry-Academia Centre for Advanced Robotics

PART E: First Year faculty and financial Resources.

(Data to be filled in for the first year course faculty and budget allocation and utilization)

E1: First Year Student-Faculty Ratio (FYSFR)

Table No. E1.1: FYSFR details.

Year	Sanctioned intake of all UG programs (S4)	No. of required faculty (RF4= S4/20)	No. of faculty members in Basic Science Courses & Humanities and Social Sciences including Management courses (NS1)	No. of faculty members in Engineering Science Courses (NS2)	Percentage= No. of faculty members ((NS1*0.8) +(NS2*0.2))/(No. of required faculty (RF4)); Percentage=((NS1*0.8) + (NS2*0.2))/RF4
CAY	570	28	16	0	46
CAYm1	480	24	16	0	53
CAYm2	450	22	15	0	55

E2: Budget Allocation, Utilization, and Public Accounting at Institute Level**Table No. E2.1:** Budget and actual expenditure incurred at Institute level.

Items	Budget ed in CFY	Actual expense s in CFY (till ...)	Budget ed in CFYm1	Actual Expens es in CFYm1	Budget ed in CFYm2	Actual Expense s in CFYm2	Budget ed in CFYm3	Actual Expenses in CFYm3
Infrastruct ure Built-Up	3800000	2884185	2600000	2375445	800000	625786	1250000	1107788
Library	3500000	2779682	3500000	3351460	3100000	2917670	2700000	2629599
Laboratory equipment	1276160	7964860	1103500	1037486	3362000	3273271	6900500	8364798
Teaching and non-teaching staff salary	1220000	9166704	1140000	1139007	1105000	1102963	1100000	1087773
Outrea ch Progra ms	42000	3105	50500	32664	33000	26250	39000	6605
R&D	1117000	797006	387000	345664	300000	248216	700000	638317
Training, Placement and Industry linkage	5725000	4205924	4368000	4004126	3628000	3245828	3445000	2957092
SDGs	143500	102900	182000	174698	334000	325105	278000	70000

Entrepreneurs hip	200000	0	150000	112000	0	0	0	0
Others*,pl. specify	6379700	4931418	5971050	5748113	6196430	6049054	5942850	5683229
Total amount	213086100	159718887	195983000	192152782	184021300	181448996	184741000	181383861

E3: Budget Allocation, Utilization, and Public Accounting at Program Specific Level

Table No. E3.1: Budget and actual expenditure incurred at program level.

Items	Budget ed in CFY	Actual expense s in CFY (till ...)	Budget ed in CFYm1	Actual Expens es in CFYm1	Budget ed in CFYm2	Actual Expens es in CFYm2	Budget ed in CFYm3	Actual Expens es in CFYm3
Laboratory equipment	313000	310194	306000	303621	280000	280000	1365000	1351003
Software	530000	528000	64000	63720	0	0	0	0
SDGs	60000	48300	54000	48698	77000	76250	30000	28000
Support for faculty development	25000	24679	10000	9912	5000	0	5000	0
R & D	30000	0	79000	78551	44000	42503	170000	167999
Industrial Training, Industry expert, Internship	417000	342365	383000	368912	253000	247893	384000	371793
Miscellaneous expenses *	199000	121243	181000	176409	77000	73450	18000	11989
Total amount	1574000	1374781	1077000	1049823	736000	720096	1972000	1930784