



**JSPM's**  
**RAJARSHI SHAHU COLLEGE OF ENGINEERING**  
**TATHAWADE, PUNE-33**

(An Autonomous Institute Affiliated to Savitribai Phule Pune University, Pune)



## **DEPARTMENT OF AUTOMATION AND ROBOTICS**

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### **Department of AUTOMATION and ROBOTICS**

#### **B. Tech Structure**

#### **(2023 Pattern)**

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Dr. A. M. Badadhe  
BOS Chairman (A & R)

Dr. A. M. Badadhe  
Dean Academics, RSCOE, Pune

Dr. S.P. Bhosle  
Director, RSCOE, Pune

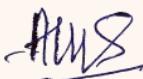
## **DEPARTMENT OF AUTOMATION AND ROBOTICS**

### **Vision:**

To become an ecosystem in the domain of Automation and Robotics that develops competent multidisciplinary professionals, researchers and entrepreneurs striving for technology led socio-economic development of the nation.

### **Mission:**

- To impart high quality education through best of the teaching-learning process by using industry ready curriculum.
- To establish centres of excellence in the area of Automation and Robotics where ideas, innovations and research will synergize.
- To align the practices and initiatives with high ethical standards to meet the needs of the society and at large the nation.

  
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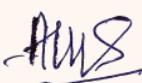
  
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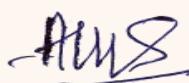
## DEPARTMENT OF AUTOMATION AND ROBOTICS

### Program Outcomes (POs)

- 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practices.
- 9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- 11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- 12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.



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### Program Specific Outcomes (PSOs)

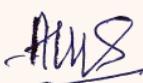
**At the end of this program, students will be able to -**

**PSO1:** To integrate principles of engineering in multidisciplinary approach to find out the solutions for complex engineering problems.

**PSO2:** To design & develop the Automation & Robotics systems for various applications

**PSO3:** To make a career in Automation & Robotics through industry, entrepreneurship, research and academia while contributing to the continuous development of individual, organisation, society and nation at large.

RSCOE



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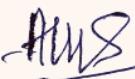
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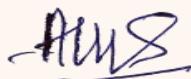
# DEPARTMENT OF AUTOMATION AND ROBOTICS

## *Highlights of the Syllabus*

The Curriculum of UG Program of **AUTOMATION AND ROBOTICS** has been designed in association with **Experts from Academics, industries / Corporate & Distinguish Alumni**. Major features of the curriculum are presented in the following diagram.



  
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## Unique Features of the Curriculum

### 1. Curriculum centered at Outcome Based Education:

The new Curriculum is based on student-centered instruction models that focus on measuring student performance through outcomes. The outcomes include subject knowledge, industry required skills and attitudes.

### 2. Emphasize on Fundamentals:

The nature of the new curriculum is rigorous and well prescribed so that the students can spend more time on preparation and self-study. The students have to learn core subjects, solve practical based assignments and must attempt periodical quizzes. This will benefit them to grasp and keep a strong hold on fundamentals of Engineering in the most effective way.

### 3. Experiential Learning:

The curriculum emphasizes on hands-on sessions along with theoretical information. The new curriculum considers Problem Based Learning (PBL) as a teaching pedagogy and includes different subjects that encourage the students for hands on learning through virtual labs, mini-projects, etc. Accordingly, the curriculum maintains good balance between theory and laboratory credits.

### 4. Promote Creativity and Innovation:

Along with experiential learning, the curriculum also motivates the students to inculcate creativity and innovation. Apart from conventional lab, the curriculum provides a freedom for students to perform industry assignments, pilot projects, innovative development, etc.

### 5. Inculcating Ethics and Values:

To improvise student's behavior, the curriculum has included systematic courses on ethics and values. The moral principles can help students to make right decisions, lead their professional lives and become ethical citizen.

### 6. Blend of Curricular and Extracurricular Activities

The curriculum also gives importance of different activities like co-curricular, extra-curricular, sports, culture, etc. This will help to do all round development of students in all possible ways.

### 7. Four Tracks in B-Tech:

By offering various courses/electives, flexibility in choosing work in specified field as:

I. Industry Internship

II. Entrepreneur

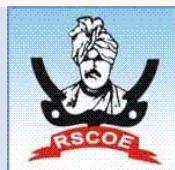
III. Higher Studies and Research

IV. In house Project

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**F. Y. B. Tech. Automation and Robotics**  
**Academic Year -2025-2026 (Semester -I)**

Course	Course Code	Course	Teaching Scheme				Credit	Examination Scheme				Total Marks	Ownership
			L	T	P	Hr		ISE	MSE	ESE	TW		
BSC	ES1201T	Engineering Mathematics-I	3	1	0	4	4	20	30	50	50	150	Mathematics
BSC	ES1207T	Chemistry for Engineers	3	0	0	3	3	20	30	50	-	100	Chemistry
BSC	ES1207L	Chemistry for Engineers Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	Chemistry
HSSM (VSEC)	ME1201L	Workshop Practice	0	0	4	4	2	ISCE: 60		40	-	100	Mechanical
ESC	EC1201T	Basic Electronics Engineering	2	0	0	2	2	20	30	50	-	100	E&TC
ESC	EC1201L	Basic Electronics Engineering Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	E&TC
ESC	CE1201T	Engineering Mechanics	3	0	0	3	3	20	30	50	-	100	Civil
ESC	CE1201L	Engineering Mechanics Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	Civil
ESC	CS1201L	Introduction to Computer Programming	1	0	0	1	1	20	10	20	-	50	Computer and IT
ESC	CS1201T	Introduction to Computer Programming Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	Computer and IT
HSSM (VSEC)	ES1208L	Introduction to Engineering and Engineering Products	-	-	2	2	1	ISCE: 30		20	-	50	Engineering Sciences
HSSM (IKS)	HS1207T	Indian Knowledge Systems	2	0	0	2	2	20	30	50	-	100	Humanities
HSSM	HS1201	Induction Training	Non-credit course										
<b>Total</b>			13	01	16	30	22					950	

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**F. Y. B. Tech. Automation and Robotics**  
Academic Year -2025-2026 (Semester -II)

Course	Course Code	Course	Teaching Scheme				Credit	Examination Scheme				Total Marks	Ownership
			L	T	P	Hr		ISE	MSE	ESE	TW		
BSC	ES1202T	Engineering Mathematics- II	3	1	0	4	4	20	30	50	50	150	Mathematics
BSC	ES1206T	Physics for Engineers	3	0	0	3	3	20	30	50	-	100	Physics
BSC	ES1206L	Physics for Engineers Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	Physics
(VSEC)	ME1202L	Engineering Drawing Laboratory	0	0	4	4	2	ISCE: 50		50	-	100	Mechanical
ESC	EE1201T	Introduction to Electrical Engineering	3	0	0	3	3	20	30	50	-	100	Electrical
ESC	EE1201L	Introduction to Electrical Engineering Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	Electrical
ESC	CS1202T	Fundamentals of Data Structure	1	0	0	1	1	20	10	20	-	50	Computer and IT
ESC	CS1202L	Fundamentals of Data Structure Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	Computer and IT
HSSM (AEC)	HS1202T/ HS1203T/ HS1204T/ HS1205T	Professional English Communication /English Language skills /German/ Japanese	2	0	0	2	2	20	30	50	-	100	Humanities
HSSM (AEC)	HS1202L/ HS1203L/ HS1204L/ HS1205L	Professional English Communication /English Language skills /German/ Japanese	0	0	2	2	1	ISCE: 30		20	-	50	Humanities
CEP	ES1209L	Community Engagement Project	0	0	4	4	2	ISCE: 50		50	-	100	Engineering Science
CC	AR1203	Co-curricular Courses	0	0	2	2	1	ISCE: 50		-	-	50	Respective Department
HSSM	HS1206	Indian Constitution	Non-credit course										
<b>Total</b>			13	01	16	30	22					900	

**Abbreviations:**

L – Lecture, T – Tutorial, P – Practical, Hr – Hours, C – Credits, ISE – In Semester Evaluation, MSE – Mid Semester Evaluation, ESE – End Semester Evaluation

**Notes:**

For Theory courses: There shall be MSE, ISE and ESE. The ESE is a separate head of passing.

For Lab courses: There shall be continuous assessment (ISCE consists of ISE and MSE). The ESE is a separate head of passing.

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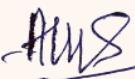
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### List of Exit Courses after completion of Semester I and II

1. Exit option is available for students those who have earned the total 44 credits at the End of Second Semester.
2. Student who wants to avail the exit option after first year has to earn additional 8 credits from the list of courses shown below.
3. These courses student have to complete within summer vacation after 1<sup>st</sup> Year.
4. After fulfillment as mentioned in 1 to 3 above, Students can earn **U.G Certificate** and same will be issued by the Institute.

Sr. No.	Course code	Name	Credits
1.	<b>EX-AR1201</b>	Fundamentals of Automation System	<b>2</b>
2.	<b>EX- AR1202</b>	Fundamentals of Robotics	<b>2</b>
3.	<b>EX- AR1203</b>	Certification in Design and Simulation of Hydraulic/Pneumatic System	<b>2</b>
4.	<b>EX- AR1204</b>	Certified Programmer in C++	<b>2</b>
5.	<b>EX- AR1205</b>	Mini Project	<b>2</b>
6.	<b>EX- AR1206</b>	Internship at Industry (4 Weeks)	<b>2</b>

  
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## **Course Type Abbreviations**

**BSC: Basic Science Course**

**ESC: Engineering Science Course**

**PCC: Programme Core Course**

**PEC: Programme Elective Course**

**MD M: Multidisciplinary Minor**

**OE: Open Elective**

**VSEC: Vocational and Skill Enhancement Course**

**HSSM: Humanities Social Science and Management**

**AEC: Ability Enhancement Course**

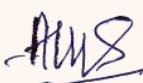
**IKS: Indian Knowledge System**

**VEC: Value Education Course**

**CEP: Comm. Engg. Project**

**FP: Field Project**

**CC: Co-curricular Courses**



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**S. Y. B. Tech (Automation and Robotics)**  
**Academic Year -2025-2026 (Semester –III)**

Course	Course Code	Course	Teaching Scheme				Credit	Examination Scheme				Total Marks	Ownership
			L	T	P	Hr		Cr	ISE	MSE	ESE	TW	
BSC	ES2207T	Engineering Mathematics -III	3	0	0	3	3	20	30	50	-	100	Mathematics
PCC	AR2201T	Manufacturing Technology and Metrology	3	0	0	3	3	20	30	50	-	100	A & R
PCC	AR2201L	Manufacturing Technology and Metrology Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	A & R
PCC	AR2202T	Electrical Machines and Control	3	0	0	3	3	20	30	50	-	100	A & R
PCC	AR2202L	Electrical Machines and Control Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	A & R
PCC	AR2203T	Principles of Automation and Robotics	3	0	0	3	3	20	30	50	-	100	A & R
PCC	AR2203L	Principles of Automation and Robotics Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	A & R
HSSM	HS2203T	Universal Human Values and Ethics	2	-	-	2	2	20	30	50	-	100	Humanities
HSSM	HS2207T	Innovation and Entrepreneurship	2	-	-	2	2	20	30	50	-	100	A & R
VEC	AR2206L	Introduction to Python Programming & Data Science- I	-	-	2	2	1	ISCE: 30		20	-	50	A & R
PCC	AR2210L	Product Development and Modeling	-	-	2	2	1	ISCE: 30		20	-	50	A & R
CC-II	AR2211L	Co-Curricular Course-II	-	-	2	2	1	ISCE: 50			-	50	A & R
<b>Total</b>			<b>16</b>	-	<b>12</b>	<b>28</b>	<b>22</b>					<b>900</b>	

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**S. Y. B. Tech (Automation and Robotics)**  
Academic Year -2025-2026 (Semester -IV)

Course	Course Code	Course	Teaching Scheme				Credit	Examination Scheme				Total Marks	Ownership
			L	T	P	Hr		Cr	ISE	MSE	ESE	TW	
PCC	AR2207T	Sensors and Instrumentation	3	0	0	3	3	20	30	50	-	<b>100</b>	A & R
Skill Course (VSEC)	AR2207L	Sensors and Instrumentation Laboratory	0	0	2	2	1	ISCE: 30		20	-	<b>50</b>	A & R
PCC	AR2208T	Hydraulic and Pneumatic Systems	3	0	0	3	3	20	30	50	-	<b>100</b>	A & R
Skill Course (VSEC)	AR2208L	Hydraulic and Pneumatic Systems Laboratory	0	0	2	2	1	ISCE: 30		20	-	<b>50</b>	A & R
PCC	AR2209T	Automatic Control System	3	0	0	3	3	20	30	50	-	<b>100</b>	A & R
PCC	AR2209L	Automatic Control System Laboratory	0	0	2	2	1	ISCE: 30		20	-	<b>50</b>	A & R
PCC	AR2205T	Industrial Psychology	2	-	-	2	2	20	30	50	-	<b>100</b>	A & R
MDM	ARM2201T	Multi-Disciplinary Minor -I	3	0	0	3	3	20	30	50	-	<b>100</b>	A & R
HSSM	HS2205T	Economics	2	-	-	2	2	20	30	50	-	<b>100</b>	Humanities
HSSM	ES2206T	Environmental Science and Engineering	2	-	-	2	2	20	30	50	-	<b>100</b>	Humanities
HSSM (AEC)	HS2206L	Soft skills	-	-	2	2	1	ISCE: 30		20	-	<b>50</b>	Humanities
<b>Total</b>			<b>16</b>	<b>-</b>	<b>12</b>	<b>28</b>	<b>22</b>					<b>900</b>	

**Abbreviations:**

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**Notes:**

For Theory courses: There shall be MSE, ISE and ESE. The ESE is a separate head of passing.

For Lab courses: There shall be continuous assessment (ISCE consists of ISE and MSE). The ESE is a separate head of passing.

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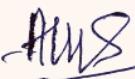
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### List of Exit Courses after completion of Semester III and IV

1. Exit option is available for students those who have earned the total 88 credits at the End of fourth Semester.
2. Student who wants to avail the exit option after second year has to earn additional 8 credits from the list of courses shown below.
3. These courses student have to complete within summer vacation after 2nd Year.
4. After fulfillment as mentioned in 1 to 3 above, Students can earn UG-Diploma/ Diploma-Eng and same will be issued by the Institute.

Sr. No.	Course code	Name	Credits
1.	<b>EX-AR2201</b>	Certification of PLC and SCADA Software	2
2.	<b>EX- AR2202</b>	Programming with Python	2
3.	<b>EX- AR2203</b>	Certification on 3D Modeling Software	2
4.	<b>EX- AR2204</b>	Certification on Robotics System Simulation	2
5.	<b>EX- AR2205</b>	Minor Project on Embedded System/Mechatronics System	2
6.	<b>EX- AR2206</b>	Internship in Automation Industry (4 Weeks)	2

  
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**T. Y. B. Tech (Automation and Robotics)**  
**Academic Year -2025-2026 (Semester -V)**

Course	Course Code	Course	Teaching Scheme				Credit	Examination Scheme				Total Marks	Ownership
			L	T	P	Hr		Cr	ISE	MSE	ESE	TW	
PCC	AR3201T	Computer Integrated Manufacturing Systems	3	0	0	3	3	20	30	50	-	100	A & R
PCC	AR3202T	Design of Machine Elements and Transmission System	3	0	0	3	3	20	30	50	-	100	A & R
PCC	AR3203T	PLC and SCADA	3	0	0	3	3	20	30	50	-	100	A & R
PCC	AR3203L	PLC and SCADA Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	A & R
PEC	AR3204T	Professional Elective- I	3	0	0	3	3	20	30	50	-	100	A & R
PEC	AR3204L	Professional Elective- I Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	A & R
MDM	ARM3201T	Multi-Disciplinary Minor -II	3	0	0	3	3	20	30	50	-	100	A & R
MDM	ARM3201L	Multi-Disciplinary Minor -II Lab	-	-	2	2	1	ISCE: 30		20	-	50	A & R
OE		Open Elective-I	3	0	0	3	3	20	30	50	-	100	Other Department
CC-III	AR3205L	Co-Curricular Course III	-	-	2	2	1	ISCE: 50			-	50	A & R
<b>Total</b>			<b>18</b>	-	<b>8</b>	<b>26</b>	<b>22</b>					<b>800</b>	

**Professional Elective**

Elective	Course Code	(Track-I)	Course Code	(Track -II)
Professional Elective- I	AR3204TA	Design of Mechatronics System	AR3204TB	Wireless Sensors Network for Robotics
Professional Elective- I Laboratory	AR3204LA	Design of Mechatronics System Laboratory	AR3204LB	Wireless Sensors Network for Robotics Laboratory
Elective	Course Code	Online MOOC - I	Course Code	Online MOOC - I
Professional Elective- I	AR3204TC	Introduction to Industry 4.0 and Industrial Internet of Things	AR3204TD	Automation in Production Systems and Management
Professional Elective- I Laboratory	AR3204LC	Introduction to Industry 4.0 and Industrial Internet of Things Laboratory	AR3204LD	Automation in Production Systems and Management Laboratory

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**Academic Year -2025-2026 (Semester –VI)**

Course	Course Code	Course	Teaching Scheme				Credit	Examination Scheme				Total Marks	Ownership
			L	T	P	Hr		ISE	MSE	ESE	TW		
PCC	AR3206T	Robotics Kinematics and Dynamics	3	0	0	3	3	20	30	50	-	100	A & R
PCC	AR3206L	Robotics Kinematics and Dynamics Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	A & R
PEC	AR3207T	Professional Elective- II	3	0	0	3	3	20	30	50	-	100	A & R
PEC	AR3208T	Professional Elective- III	3	0	0	3	3	20	30	50	-	100	A & R
PEC	AR3208L	Professional Elective- III Laboratory	-	-	2	2	1	ISCE: 30		20	-	50	A & R
MDM	ARM3202T	Multi-Disciplinary Minor -III	3	0	0	3	3	20	30	50	-	100	A & R
OE		Open Elective- II	3	0	0	3	3	20	30	50	-	100	Other Department
HSSM (VSEC)	AR3209L	Object Oriented Programming	-	1	2	3	2	ISCE: 30		20	50	100	A & R
PEC	AR3210L	Automated Visual Inspection Lab	0	0	2	2	1	ISCE: 30		20	-	50	A & R
Project	AR3211L	Engineering Innovation and Society-I	-	-	4	4	2	ISCE: 50		50	-	100	A & R
<b>Total</b>			<b>15</b>	<b>01</b>	<b>12</b>	<b>28</b>	<b>22</b>					<b>850</b>	

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**Professional Elective**

Elective	Course Code	(Track-I)	Course Code	(Track -II)
Professional Elective- II	AR3207AT	Machine Vision System	AR3207BT	Integrated Automation
Elective	Course Code	Online MOOC - I	Course Code	Online MOOC - I
Professional Elective- II	AR3207CT	Autotronics	AR3207DT	Aeromechanics of Unmanned Aerial Vehicles/Drones
Professional Elective- III	AR3208AT	Artificial Intelligence and Machine Learning	AR3208BT	Autonomous Robotics
Professional Elective- III Laboratory	AR3208AL	Artificial Intelligence and Machine Learning Laboratory	AR3208BL	Autonomous Robotics Laboratory

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### List of Exit Courses after completion of Semester V and VI

1. Exit option is available for students those who have earned the total 132 credits at the End of sixth Semester.
2. Student who wants to avail the exit option after third year has to earn additional 8 credits from the list of courses shown below.
3. These courses student have to complete within summer vacation after 3<sup>rd</sup> Year.
4. After fulfillment as mentioned in 1 to 3 above, Students can earn **B.Voc./ B.Sc. Engg** and same will be issued by the Institute.

Sr. No.	Course code	Name	Credits
1.	<b>EX-AR3201</b>	Certification on Fundamentals of Industry 4.0	2
2.	<b>EX- AR3202</b>	Certification on Augmented Reality and Virtual Reality Simulation Software	2
3.	<b>EX- AR3203</b>	Certification on AI & ML	2
4.	<b>EX- AR3204</b>	Internship at Industry on 3D Printing	2
5.	<b>EX- AR3205</b>	Certification Program on Automation System for suitable Industrial application	2
6.	<b>EX- AR3206</b>	Major Project on Implementation on IIOT	2



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**TATHAWADE, PUNE-33**

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**B. Tech (Automation and Robotics)**  
**Academic Year -2026-2027 (Semester –VII)**  
**Proposed Structure Semester -VII**  
**(Level 6 – B. Tech) -Semester VII**

Course	Course Code	Course	Teaching Scheme				Credit	Examination Scheme				Total Marks	Ownership
			L	T	P	Hr		ISE	MSE	ESE	TW		
PCC	AR4201T	Additive Manufacturing	3	0	0	3	3	20	30	50	-	100	A & R
PCC	AR4201L	Additive Manufacturing Laboratory	0	0	2	2	1	ISCE: 30		20	-	100	A & R
PCC	AR4202T	Microcontrollers and Embedded Systems	3	0	0	3	3	20	30	50	-	100	A & R
PCC	AR4202L	Microcontrollers and Embedded Systems Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	A & R
PEC	AR4203T	Professional Elective- IV	3	0	0	3	3	20	30	50	-	100	A & R
PEC	AR4203L	Professional Elective- IV Laboratory	-	-	2	2	1	ISCE: 30		20	-	50	A & R
PCC	AR4204T	SWAYAM Professional Elective Course	2	-	-	2	2	20	30	50	-	100	A & R
MDM	ARM4201T	Multi-Disciplinary Minor -IV	3	0	0	3	3	20	30	50	-	100	A & R
MDM	ARM4201L	Multi-Disciplinary Minor -IV Laboratory	-	-	2	2	1	ISCE: 30		20	-	50	A & R
Project	AR4205L	Engineering Innovation and Society-II	-	-	12	12	6	ISCE: 150		150	-	300	A & R
<b>Total</b>			<b>14</b>	<b>0</b>	<b>20</b>	<b>34</b>	<b>24</b>					<b>850</b>	

**Professional Elective**

Elective	(Track-I)	(Track -II)
Professional Elective- IV	Cognitive Robotics	Augmented Reality and virtual Reality for Robotics

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**B. Tech (Automation and Robotics)**  
**Academic Year -2026-2027 (Semester –VIII)**  
**Proposed Structure Semester -VIII**  
**(Level 6 – B. Tech) -Semester VIII**

**Track I – Regular Track**

Course	Course Code	Course	Teaching Scheme				Credit	Examination Scheme				Total Marks	Ownership
			L	T	P	Hr		ISE	MSE	ESE	TW		
PCC	AR4206T	Advance Manufacturing Techniques	3	0	0	3	3	20	30	50	-	100	A & R
PCC	AR4206L	Advance Manufacturing Techniques Laboratory	0	0	2	2	1	ISCE: 30		20	-	50	A & R
PCC	AR4207T	Mobile Robotics	3	0	0	3	3	20	30	50	-	100	A & R
PCC	AR4207L	Mobile Robotics Laboratory	-	-	2	2	1	ISCE: 30		20	-	50	A & R
PCC	AR4208T	Skill Based Course	3	0	0	3	3	20	30	50	-	100	A & R
PCC	AR4208L	Skill Based Course Laboratory	-	-	2	2	1	ISCE: 30		20	-	50	A & R
VSEC	AR4209T	SWAYAM Professional Elective Course	2	-	-	2	2	-	-	-	-	50	A & R
<b>Total</b>			<b>11</b>	<b>0</b>	<b>06</b>	<b>17</b>	<b>14</b>					<b>500</b>	

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**B. Tech (Automation and Robotics)**  
**Academic Year -2026-2027 (Semester –VIII)**  
**Proposed Structure Semester -VIII**  
**(Level 6 – B. Tech) -Semester VIII**

**Track II – Internship and Training**

Course	Course Code	Course	Teaching Scheme				Credit	Examination Scheme				Total Marks	Ownership
			L	T	P	Hr		Cr	ISE	MSE	ESE	TW	
Internship	AR4110L	Industry Internship Program	-	-	28	28	14	ISCE: 300				-	500
<b>Total</b>			<b>0</b>	<b>0</b>	<b>28</b>	<b>28</b>	<b>14</b>						<b>500</b>

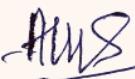
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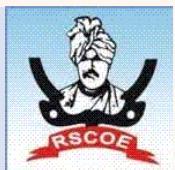
  
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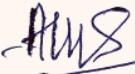
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### PROFESSIONAL ELECTIVES

Elective	(Track-I)	(Track -II)
Professional Elective- I	Design of Mechatronics System	Wireless Sensors Network for Robotics
Professional Elective- II	Machine Vision System	Integrated Automation
Professional Elective- III	Artificial Intelligence and Machine Learning	Autonomous Robotics
Professional Elective- IV	Cognitive Robotics	Augmented Reality and virtual Reality for Robotics

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**Department of Automation and Robotics**  
**Multidisciplinary Minor (offered to other Departments)**  
**Multidisciplinary Minor in Industrial Automation and Robotics**  
**Structure (Effective from 2024-25)**

Course Code	Course	Teaching Scheme				Credit	Examination Scheme			Total Marks
		L	T	P	Hr		ISE	MSE	ESE	
S. Y. Sem IV										
ARM2201T	Industrial Sensors and its applications	3	-	-	3	3	20	30	50	100
T. Y. Sem V										
ARM3201T	Robotics and its applications	3	-	-	3	3	20	30	50	100
ARM3201L	Robotics and its applications Laboratory	-	-	2	2	1	ISCE: 30		20	50
T. Y. Sem VI										
ARM3202T	Essentials of Industrial Automation	3	-	-	3	3	20	30	50	100
B. Tech. Sem VII										
ARM4201T	Fundamentals of PLC and SCADA	3	-	-	3	3	20	30	50	100
ARM4201L	Fundamentals of PLC and SCADA Laboratory	-	-	2	2	1	ISCE: 30		20	50
<b>Total</b>		<b>12</b>	<b>-</b>	<b>4</b>	<b>16</b>	<b>14</b>				<b>500</b>

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**Department of Automation and Robotics**

**Minor in Emerging Area**

**RPA and Data Science**

**Structure (Effective from 2024-25)**

Course Code	Course	Teaching Scheme				Credit	Examination Scheme			Total Marks
		L	T	P	Hr		C	ISE	MSE	
S. Y. Sem IV										
ARH2201T	Robotic Process Automation	3	-	-	3	3	20	30	50	100
ARH2201L	Robotic Process Automation Laboratory	-	-	2	2	1	ISCE: 30		20	50
T. Y. Sem V										
ARH3201T	Data Science	3	-	-	3	3	20	30	50	100
ARH3201L	Data Science Laboratory	-	-	2	2	1	ISCE: 30		20	50
T. Y. Sem VI										
ARH3202T	Industrial Internet of Things	3	1	-	3	4	20	30	50	100
B. Tech. Sem VII										
ARH4201T	Industry 5.0	3	-	-	3	3	20	30	50	100
ARH4202L	Mini Project	-	-	6	6	3	ISCE: 50		50	100
<b>Total</b>		<b>12</b>	<b>1</b>	<b>10</b>	<b>22</b>	<b>18</b>				<b>600</b>

Eligibility for admission to the UG Bachelor's Degree with Double Minor: Minimum CGPA/CPI of 7.5 or minimum 75% after second semester for UG Bachelor's Degree

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**Department of Automation and Robotics**  
**Honors with Research**  
**Structure (Effective from 2024-25)**

Course Code	Course	Teaching Scheme				Credit	Examination Scheme			Total Marks
		L	T	P	Hr		C	ISE	MSE	
B. Tech. Sem VII										
CSR4101T	Research Specific core course (Online NPTEL course)	4	-	-	4	4	20	30	50	100
CSR4102T	Design Thinking and Innovation (online/offline)	4	-	-	4	4	20	30	50	100
CSR4103L	Research Project Stage I	-	-	4	4	2	ISCE: 50		50	100
B.Tech. Sem VIII										
CSR4104L	Comprehensive Evaluation	-	-	4	4	2	ISCE: 100			100
CSR4105L	Research Project Stage II	-	-	12	6	6	ISCE: 100		100	200
<b>Total</b>		<b>6</b>	<b>2</b>	<b>20</b>	<b>22</b>	<b>18</b>				<b>600</b>

Eligibility for admission to the UG Bachelor's Degree with Research: Minimum CGPA/CPI of 7.5 or minimum 75% after sixth semester for UG Bachelor's Degree

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**Note:** For Evaluation of Online NPTEL course ISE Marks will be marks obtained by students in the assignments given by NPTEL, MSE will be the marks obtained in NPTEL certification.

Students who will secure NPTEL certification will be only eligible for ESE of the same course which will be conducted at institute.

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