



Symbiosis Institute of Technology, Pune
Bachelor of Technology (Robotics and Artificial Intelligence)
Programme Structure 2026-30
Annexure A

Semester : 1

Generic Core Courses

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
TEE7237	0701340101	Calculus	BS		3	1	0	0	0	40	60	4	100
TEE7357	0701340102	Programming for Engineers	ES		2	0	2	15	10	20	30	3	75
P6128	0701340103	Fundamentals of AI	PC		0	0	2	15	10	0	0	1	25
P6118	0701340104	Principles of Electrical and Electronics Engineering	ES		2	0	2	15	10	20	30	3	75
P6127	0701340105	Introduction to Robotics	PC		2	0	2	15	10	20	30	3	75
TEE7342	0701340106	Biophysics and Mechanics	ES		3	0	0	0	0	30	45	3	75
TM2278	0701340107	Introduction to Environment and Sustainability	ES		0	0	2	25	0	0	0	1	25
TEE7364	0701340108	Tinker and IDEA Lab	ES		0	0	2	25	0	0	0	1	25
T6873	0701340109	Creative Thinking	HSMC		1	0	0	0	0	25	0	1	25

TEE7265	0701340209	Career Essentials - I *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
Total Required Credits					8	2	14	105	70	130	120	17	425



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					L	T	Lab	Practical		Theory			
								CA	ESE	CA	ESE		
Semester : 3													
Generic Core Courses													
TEE7254	0701340301	Discrete Mathematics	BS		2	0	0	0	0	20	30	2	50
P6132	0701340302	Supervised and Unsupervised Machine Learning	PC		2	0	4	30	20	20	30	4	100

P5728	0701340303	Robotic Control Systems	PC		2	0	2	15	10	20	30	3	75
P6133	0701340304	Data Structures and Algorithmic Techniques	PC		2	0	2	15	10	20	30	3	75
P5779	0701340305	Hydraulic and Pneumatic Systems	PC		2	0	2	15	10	20	30	3	75
TEE7401	0701340306	Total Productive Maintenance	PC		0	0	2	15	10	0	0	1	25
TEE7407	0701340307	Mechatronics	PC		1	0	0	0	0	10	15	1	25
P5930	0701340308	Mechatronics Lab	PC		0	0	2	15	10	0	0	1	25
P4411	0701340309	Principles of Economics	HSMC		1	0	0	0	0	10	15	1	25
P4781	0701340310	Career Essentials - II *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
TH4788	0701340311	Health and Wellness Module I #			0	0	0	0	0	0	0	0	0
Total Required Credits					12	0	14	105	70	120	180	19	475

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	Lab	Practical		Theory			
								CA	ESE	CA	ESE		
Semester : 4													

Generic Core Courses													
TE7699	0701340401	Probability and Random Processes	BS		2	1	0	0	0	30	45	3	75
P4350	0701340402	Robot Kinematics and Dynamics	PC		2	0	2	15	10	20	30	3	75
TEE7397	0701340403	Servo Motors and Drives	PC		1	0	0	0	0	10	15	1	25
TEE7398	0701340404	Servo Motors and Drives Lab	PC		0	0	2	15	10	0	0	1	25
P5735	0701340405	Process Control and Instrumentation	PC		2	0	4	30	20	20	30	4	100
P5733	0701340406	Programmable Logic Controller and Human Machine Interface	PC		2	0	4	30	20	20	30	4	100
P4618	0701340407	Service Learning	HSMC		0	0	4	30	20	0	0	2	50
T2646	0701340408	Entrepreneurship Venture	HSMC		1	0	0	0	0	10	15	1	25
P4782	0701340409	Career Essentials - III *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
TH4789	0701340410	Health and Wellness Module II #			0	0	0	0	0	0	0	0	0
Total					10	1	16	120	80	110	165	19	475
Multidisciplinary Open Elective (Choose any one course)													
P5208	0701340411	Quantum Computing for Engineers	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P5209	0701340412	Mathematics for Data Science	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P4627	0701340413	Smart Cities Planning and Management	MOPE	Civil	2	1	0	0	0	30	45	3	75
P4633	0701340414	Intelligent Waste Management Techniques	MOPE	Civil	2	1	0	0	0	30	45	3	75

P4811	0701340415	Web Technologies	MOPE	CSE	2	1	0	0	0	30	45	3	75
P4812	0701340416	Data Science	MOPE	CSE	2	1	0	0	0	30	45	3	75
TEE7018	0701340417	Engineering Simulation and Modelling Tools	MOPE	ENTC	2	1	0	0	0	30	45	3	75
P4278	0701340418	Medical Electronics	MOPE	ENTC	2	1	0	0	0	30	45	3	75
TE7351	0701340419	3D Printing and Prototyping	MOPE	Mechanical	2	1	0	0	0	30	45	3	75
P5275	0701340420	Battery Management Systems	MOPE	Mechanical	2	1	0	0	0	30	45	3	75
P4787	0701340421	Fundamentals of Machine Learning	MOPE	AIML	2	1	0	0	0	30	45	3	75
P4788	0701340422	AI System development	MOPE	AIML	2	1	0	0	0	30	45	3	75
				Total Required Credits	2	1	0	0	0	30	45	3	75
Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department				Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
				Program Elective (Choose any one course)									
P5788	0701340423	Robotic Perception and Actuation	PE		2	0	2	15	10	20	30	3	75
P6134	0701340424	Cloud Computing Essentials	PE		2	0	2	15	10	20	30	3	75
P4900	0701340425	Unmanned Aerial Vehicles	PE		2	0	2	15	10	20	30	3	75
Total Required Credits					2	0	2	15	10	20	30	3	75



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					L	T	La b	Practical		Theory			
								CA	ES E	CA	ESE		
Semester : 5													
Generic Core Courses													
P5230	0701340501	Design Thinking	ES		1	0	0	0	0	10	15	1	25
P6135	0701340502	Deep Learning	PC		2	0	2	15	10	20	30	3	75
P4361	0701340503	Microcontroller and Embedded Systems	PC		2	0	2	15	10	20	30	3	75
P5741	0701340504	Industrial Internet of Things	PC		2	0	4	30	20	20	30	4	100

P5742	0701340505	AI for Manufacturing	PC		2	0	4	30	20	20	30	4	100
TEE7385	0701340506	Applied ARVR	PC		0	0	2	15	10	0	0	1	25
P5740	0701340507	Manufacturing Systems	PC		2	0	4	30	20	20	30	4	100
P4784	0701340508	Career Essentials - IV *	MC		0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
SMC001	0701340509	Vasudhaiva Kutumbakam			0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
Total Required Credits					11	0	18	135	90	110	165	20	500

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Multi-disciplinary Open Elective Courses (Choose any one Course)													
P5210	0701340510	Financial Mathematics	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P5211	0701340511	Advanced Materials	MOPE	Applied Science	2	1	0	0	0	30	45	3	75

P4656	0701340512	Sustainability Engineering- Design and Innovation	MOPE	Civil	2	1	0	0	0	30	45	3	75
P4658	0701340513	Occupational Health and Safety Management	MOPE	Civil	2	1	0	0	0	30	45	3	75
P4840	0701340514	Introduction to Cloud Computing	MOPE	CSE	2	1	0	0	0	30	45	3	75
P4844	0701340515	Agile Methodologies	MOPE	CSE	2	1	0	0	0	30	45	3	75
P4472	0701340516	Embedded System & IoT	MOPE	ENTC	2	1	0	0	0	30	45	3	75
P5241	0701340517	Basics of 5G Technology	MOPE	ENTC	2	1	0	0	0	30	45	3	75
P2253	0701340518	Electric and Hybrid Vehicles	MOPE	Mechanical	2	1	0	0	0	30	45	3	75
T7650	0701340519	Six Sigma	MOPE	Mechanical	2	1	0	0	0	30	45	3	75
P4790	0701340520	Deep Learning Essentials	MOPE	AI/ML	2	1	0	0	0	30	45	3	75
P4789	0701340521	Optimization for ML Systems	MOPE	AI/ML	2	1	0	0	0	30	45	3	75
Total Required Credits					2	1	0	0	0	30	45	3	75



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								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
Generic Core Courses													
P4528	0701340601	Natural Language Processing and Linguistics	PC		2	0	2	15	10	20	30	3	75
P4529	0701340602	Computer Networks and Advances	PC		2	0	0	0	0	20	30	2	50
P5225	0701340603	Computer Vision and Image Processing	PC		2	0	2	15	10	20	30	3	75
P5782	0701340604	Robot Operating System	PC		1	0	4	30	20	10	15	3	75

P4371	0701340605	Responsible AI	HSMC		1	0	0	0	0	10	15	1	25
P5783	0701340606	Project Based Learning	PIS		0	0	4	30	20	0	0	2	50
P4785	0701340607	Career Essentials - V *	MC		0	0	0	0	0	0	0	Mand at ory Non- Cr edit Cours e	0
Total Required Credits					8	0	12	90	60	80	120	14	350

Multi-disciplinary Open Elective Courses (Choose any one Course)

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	Lab	CA	ESE	CA	ESE		
P5212	0701340608	Bioinformatics	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P5213	0701340609	Introduction to Space Science	MOPE	Applied Science	2	1	0	0	0	30	45	3	75
P4657	0701340610	GIS and Remote Sensing Analytics	MOPE	Civil	2	1	0	0	0	30	45	3	75
P4659	0701340611	Environmental Impact Assessment	MOPE	Civil	2	1	0	0	0	30	45	3	75
P4830	0701340612	Software Testing and Quality Assurance	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75

P4831	0701340613	Introduction to AR-VR	MOPE	Computer Science and Engineering	2	1	0	0	0	30	45	3	75
P4475	0701340614	Renewable Energy Systems	MOPE	ENTC	2	1	0	0	0	30	45	3	75
P4274	0701340615	Semiconductor Technology Trends	MOPE	ENTC	2	1	0	0	0	30	45	3	75
P4448	0701340616	Supply Chain Management	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P4449	0701340617	Smart Manufacturing and Introduction of Industry 5.0	MOPE	Mechanical Engineering	2	1	0	0	0	30	45	3	75
P4792	0701340618	Data Engineering and Applications	MOPE	AI/ML	2	1	0	0	0	30	45	3	75
P4791	0701340619	Gen AI Tools and Techniques	MOPE	AI/ML	2	1	0	0	0	30	45	3	75
				Total Required Credits	2	0	0	0	0	30	45	3	75
Program Elective IV (Choose any one Course)													
P5730	0701340620	Advanced Microcontrollers and Microprocessors	PE		2	0	2	15	10	20	30	3	75
	0701340621	Data Engineering	PE		2	0	2	15	10	20	30	3	75
P5218	0701340622	Mobile Robotics	PE		2	0	2	15	10	20	30	3	75
				Total Required Credits	2	0	2	15	10	20	30	3	75



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					L	T	La b	Practical		Theory			
								CA	ES E	CA	ESE		
Semester : 7 (Track 1)													
Generic Core Courses													
F0001	0701340701	Flexi-Credit Course	PC		3	0	0	0	0	30	45	3	75
F0001	0701340702	Flexi-Credit Course	PC		3	0	0	0	0	30	45	3	75

P4534	0701340703	Reinforcement Learning	PC		2	0	2	15	10	20	30	3	75
T7804	0701340704	Project	PIS		0	0	8	60	40	0	0	4	100
SMC003	0701340705	Health and Wellness *			0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
Total					6	0	10	75	50	80	120	13	325
Professional Elective – V (Choose any one Course)													
P5789	0701340706	Embedded Linux and Real Time Operating Systems	PE		2	0	2	15	10	20	30	3	75
P4901	0701340707	Machine Learning Operations	PE		2	0	2	15	10	20	30	3	75
P5746	0701340708	Swarm Robotics	PE		2	0	2	15	10	20	30	3	75
Total					2	1	0	0	0	30	45	3	75

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ES E	CA	ESE		
Professional Elective VI (Choose any one Course)													
P5743	0701340708	Embedded Machine Learning	PE		2	1	0	0	0	30	45	3	75
P5747	0701340709	Foundations of GEN AI and LLM	PE		2	1	0	0	0	30	45	3	75
P4365	0701340710	Biomedical Robotics	PE		2	1	0	0	0	30	45	3	75
Total Required Credits					2	1	0	0	0	30	45	3	75
Professional Elective - VII (Choose any one Course)													
P4897	0701340711	Hardware and Network Security	PE		2	1	0	0	0	30	45	3	75
P5785	0701340712	Graph Neural Networks and Applications	PE		2	1	0	0	0	30	45	3	75
P4905	0701340713	Collaborative and Service Robotics	PE		2	1	0	0	0	30	45	3	75
Total Required Credits					2	1	0	0	0	45	30	3	75

Semester : 7 (Track 2)													
T7804	701270707	Project	PIS		0	0	8	60	40	0	0	4	100
SMC003	701270708	Health and Wellness *			0	0	0	0	0	0	0	Mandatory Non-Credit Course	0
F0003	701270713	Flexi-Credit Course	PC		3	0	0	0	0	30	45	3	75
F0001	701270714	Flexi-Credit Course	PC		3	0	0	0	0	30	45	3	75
Generic Elective courses Group (Choose any one Course)													
T7912	701270715	Startup Internship	PIS		0	0	24	180	120	0	0	12	300
T7912	701270716	Research Internship	PIS		0	0	24	180	120	0	0	12	300
T7912	701270717	Industry Internship	PIS		0	0	24	180	120	0	0	12	300
Total Required Credits					180	120	0	0	12	300	180	120	0
Semester : 8													
Generic Core Courses													
T7912	0701270801	Internship	PIS		0	0	24	180	120	0	0	12	300
T7802	0701270802	Seminar	PIS		0	0	4	30	20	0	0	2	50
Total					0	0	28	210	140	0	0	14	350

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Abbreviations (Nature)

BS	Basic Sciences
ES	Engineering Sciences
HS	Humanities and Social Sciences
OE	Open Electives
PC	Professional Core
PE	Professional Elective
PIS	Project, Internship, Seminar
PD	Professional Development Course
MC	Mandatory Course
L	Lecture
T	Tutorial
CA	Continuous Assessment
ESE	End Semester Examination
GE	Generic Elective



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Semester	Internal Credits	External Credits	Total Credits	Total Marks
Semester 1	3	17	20	500
Semester 2	4	16	20	500
Semester 3	4	16	20	500
Semester 4	6	16	22	550
Semester 5	4	19	23	575
Semester 6	5	16	21	525
Semester 7	Track 1-4,Track 2-4	Track 1-16,Track 2-16	20	500
Semester 8	0	14	14	350
Total	30	130	160	4000



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Annexure B

Optional 'Honours' Specialization

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
								Practical		Theory			
					L	T	La b	CA	ESE	CA	ESE		
Semester : 5													
Aerial Robotics and Drone Technology Specialization Core Courses													
TE7850	0701340522	Introduction to Aerial Robotics and Drones	PC		3	0	0	0	0	30	45	3	75
P5288	0701340523	Motion Planning and Control	PC		2	0	2	15	10	20	30	3	75
				Total	5	0	2	15	10	50	75	6	150
Semester : 6													
Aerial Robotics and Drone Technology Specialization Core Courses													
TE7884	0701340623	Robotics Mobility and Perception	PC		3	0	0	0	0	30	45	3	75

TE7883	0701340624	Robotics Estimation and Learning	PC		2	0	0	0	0	20	30	2	50
TE7866	0701340625	Navigation and Communication Lab	PC		0	0	4	30	20	0	0	2	50
Total					5	0	4	30	20	50	75	7	175



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Annexure B

Optional 'Honours' Specialization

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
							Practical		Theory				
					L	T	Lab	CA	ESE	CA	ESE		
Semester : 7													

Aerial Robotics and Drone Technology Specialization Core Courses													
P5295	0701340718	Honours Project	PIS		0	0	10	75	50	0	0	5	125
P5296	0701340719	Honours Seminar	PIS		0	0	4	30	20	0	0	2	50
Total					0	0	14	105	70	0	0	7	175

Semester	Continuous Assessment	Term End Examination	Total Credits	Total Marks
Aerial Robotics and Drone Technology				
Semester 5	0	6	6	150
Semester 6	0	7	7	175
Semester 7	0	7	7	175
Total	0	20	20	500



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Annexure C

Optional 'Minor' Specialization

Catalog Course Code	Course Code	Course Title	Nature	Specialization/ Area/ Department	Teaching Scheme (Hours Per Week)			Examination Scheme (Marks)				Total Credits	Total
					L	T	La b	Practical		Theory			
								CA	ESE	CA	ESE		
Semester : 3													
Computer Science Engineering Fundamentals Specialization Core Courses													
TEE7290	0701220314	Computer Architecture and Organization	PC		2	0	2	15	10	20	30	3	75
P4807	0701220315	Programming with JAVA	PC		0	0	4	30	20	0	0	2	50
Total					2	0	6	45	30	20	30	5	125
Semester : 4													
Computer Science Engineering Fundamentals Specialization Core Courses													
P4806	0701270425	Database Management Systems	PC		2	0	4	30	20	20	30	4	100
P4801	0701270426	Computer Networks	PC		3	0	2	15	10	30	45	4	100

P5300	0701270527	Operating Systems	PC		3	0	0	0	0	75	0	3	75
Total					3	0	0	0	0	75	0	3	75
Semester : 6													
Computer Science Engineering Fundamentals Specialization Core Courses													
TEE7306	0701270627	Cyber Security	ES		1	0	2	25	0	25	0	2	50
Total					1	0	2	25	0	25	0	2	50



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Annexure C Optional 'Minor'
Specialization

Semester	Continuous Assessment	Term End Examination	Total Credits	Total Marks
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Computer Science Engineering Fundamentals				
Semester 3	0	5	5	125
Semester 4	0	8	8	200
Semester 5	0	3	3	75
Semester 6	0	2	2	50
Total	0	18	18	500

