

Curriculum Structure for UG Robotics and Automation (applicable from AY 2024-25)

Curriculum Structure for UG Robotics and Automation (applicable from AY 2024-25)															
	F.Y.	B.Tech. AY 2024-25 onwards													
Sr. No.	Sem	NEP Category	NEP Category	Code	Course Name	L	T	P	Hr	Cr	MSE/LA1	ISE/LA2	ESE	OE	POE
1	1	Basic Science Course	BSC	7MA101	Engineering Mathematics-I	3	1	0	4	4	30	20	50		
2	1	Basic Science Course	BSC	7CH101	Engineering Chemistry	3	0	0	3	3	30	20	50		
3	1	Engineering Science Course	ESC	7ME107	Engineering Graphics	2	0	0	2	2	30	20	50		
4	1	Engineering Science Course	ESC	7EE106	Electrical and Electronics Engineering	3	0	0	3	3	30	20	50		
5	1	Engineering Science Course	ESC	7CS106	Computer Programming	1		2	3	2	30	30	40		
6	1	Basic Science Course	BSC	7CH155	Engineering Chemistry Lab		0	2	2	1	30	30	40		
7	1	Engineering Science Course	ESC	7ME157	Engineering Graphics Lab		0	2	2	1	30	30	40		
8	1	Engineering Science Course	ESC	7EE156	Electrical and Electronics Engineering Lab		0	2	2	1	30	30	40		
9	1	Professional Core Course	PCC	7RA101	Elements of Robotics and Automation	3	0	0	3	3	30	20	50		
10	1	Professional Core Course	PCC	7RA151	Elements of Robotics and Automation Lab		0	2	2	1	30	30	40	OE	
11	1	Vocational Skill Enhancement Course	VSEC	7VS152	Engineering Skills-II		0	2	2	1	30	30	40		
		Total				15	1	12	28	22					
Sem	NEP Category	NEP Category	Code	Course Name	L	T	P	Hr	Cr	MSE/LA1	ISE/LA2	ESE	OE	POE	
12	2	Basic Science Course	BSC	7MA102	Engineering Mathematics- II	3	1	0	4	4	30	20	50		
13	2	Basic Science Course	BSC	7PH101	Engineering Physics	3	0	0	3	3	30	20	50		
14	2	Engineering Science Course	ESC	7AM101	Engineering Mechanics	3	0	0	3	3	30	20	50		
15	2	Engineering Science Course	ESC	7CV106	Basic Civil Engineering	2	0	0	2	2	30	20	50		
16	2	Ability Enhancement Course	AEC	7HS101	Communication and Generic Skills	1		2	3	2	30	30	40		
17	2	Basic Science Course	BSC	7PH151	Engineering Physics Lab	0	0	2	2	1	30	30	40		
18	2	Engineering Science Course	ESC	7AM155	Engineering Mechanics Lab	0	0	2	2	1	30	30	40		
19	2	Engineering Science Course	ESC	7CV156	Basic Civil Engineering Lab	0	0	2	2	1	30	30	40		
20	2	Professional Core Course	PCC	7RA102	Measurement and Metrology	3	0	0	3	3	30	20	50		
21	2	Professional Core Course	PCC	7RA152	Measurement and Metrology Lab	0	0	2	2	1	30	30	40	OE	
22	2	Vocational Skill Enhancement Course	VSEC	7VS151	Engineering Skills - I	0	0	2	2	1	30	30	40		
		Total				15	1	12	28	22					
S.Y.	B.Tech. AY 2025-26 onwards														
Sr. No.	Sem	NEP Category	NEP Category	Code	Course Name	L	T	P	Hr	Cr	MSE/LA1	ISE/LA2	ESE	OE	POE
23	3	Basic Science Course	BSC	7MA202	Applied Mathematics for Robotics	3			3	3	30	20	50		
24	3	Entrepreneurship/Economics/	EEM	7EE201	Understanding Incubation and Entrepreneurship (NPTEL)	3			3	3	30	20	50		
25	3	Value Education Course	VEC	7VE201	Value Education	2			2	2	30	20	50		
26	3	Professional Core Course	PCC	7RA201	Strength of Materials	2			2	2	30	20	50		
27	3	Professional Core Course	PCC	7RA202	Materials Science and Metallurgy	3			3	3	30	20	50		
28	3	Professional Core Course	PCC	7RA203	Manufacturing Technology	3			3	3	30	20	50		
29	3	Professional Core Course	PCC	7RA204	Digital Electronics	3			3	3	30	20	50		
30	3	Professional Core Course	PCC	7RA251	Metallurgy and Manufacturing Technology Lab			2	2	1	30	30	40		
31	3	Professional Core Course	PCC	7RA252	Digital Electronics Lab			2	2	1	30	30	40		
33	3	Community Engagement Project / Field Pro	CEP/FP	7CERA251	Techno-Societal Case Study			2	2	1	30	30	40		
34	3	Vocational Skill Enhancement Course	VSEC	7VSRA251	Programming and Problem Solving Lab			2	2	1	30	30	40		
		Total				19	0	8	27	23					
Sem	NEP Category	NEP Category	Code	Course Name	L	T	P	Hr	Cr	MSE/LA1	ISE/LA2	ESE	OE	POE	
35	4	Engineering Science Course	PCC	7RA221	Control System Engineering	3			3	3	30	20	50		
36	4	Ability Enhancement Course	AEC	7AE201	Employability skills	2			2	2	30	20	50		
37	4	Indian Knowledge System	IKS	Refer List	IKS Elective	2			2	2	30	20	50		
38	4	Professional Core Course	PCC	7RA222	Design of Machine Elements	2	1		3	3	30	20	50		
39	4	Professional Core Course	PCC	7RA223	Robot Drive Systems and Programming	3			3	3	30	20	50		

40	4	Professional Core Course	PCC	7RA224	Sensors and Instrumentation	2	1		3	3	30	20	50		
41	4	Professional Core Course	PCC	7RA271	Control System Engineering Lab			2	2	1	30	30	40		
43	4	Multy Disp. Minor	MDM	Refer List	MDM					3	30	30	40		
44	4	Professional Core Course	PCC	7RA272	Robot Operating System Lab			2	2	1	30	30	40		
45	4	Vocational Skill Enhancement Course	VSEC	7VSRA245	Mini Project-1			2	2	1	30	30	40		
Total						14	2	6	22	22					
	T.Y.	B.Tech. AY 2026-27 onwards													
Sr. No.	Sem	NEP Category	NEP Category	Code	Course Name	L	T	P	Hr	Cr	MSE/LA1	ISE/LA2	ESE	OE	POE
46	5	Multy Disp. Minor	MDM	Refer List	MDM				0	3	30	20	50		
47	5	Open Elective	OE	Refer List	Open Elective - 1	3			3	3	30	20	50		
48	5	Value Education Course	VEC	7VE301	Environmental Science	2			2	2	30	20	50		
49	5	Professional Core Course	PCC	7RA301	Microcontroller based system design	3			3	3	30	20	50		
50	5	Professional Core Course	PCC	7RA302	Hydraulics and Pneumatics	3			3	3	30	20	50		
51	5	Professional Core Course	PCC	7RA303	Robot Kinematics and Dynamics	3			3	3	30	20	50		
52	5	Professional Core Course	PCC	7RA304	Signal Processing	3			3	3	30	20	50		
53	5	Professional Core Course	PCC	7RA351	Microcontroller based system design Lab			2	2	1	30	30	40		
54	5	Professional Core Course	PCC	7RA352	Hydraulics, Pneumatics and Sensors Lab			2	2	1	30	30	40		
55	5	Professional Core Course	PCC	7RA353	Robot Kinematics and Dynamics Lab			2	2	1	30	30	40		
Total						17	0	6	23	23					
Sr. No.	Sem	NEP Category	NEP Category	Code	Course Name	L	T	P	Hr	Cr	MSE/LA1	ISE/LA2	ESE	OE	POE
56	6	Professional Elective Course	PEC	Refer List	Program Elective - 1	3			3	3	30	20	50		
57	6	Multy Disp. Minor	MDM	Refer List	MDM					4	30	20	50		
58	6	Open Elective	OE	Refer List	Open Elective - 2	3			3	3	30	20	50		
59	6	Entrepreneurship/Economics/	EEM	7EE301	Finance for Engineering	2			2	2	30	20	50		
60	6	Professional Core Course	PCC	7RA321	PLC and SCADA Programming	3			3	3	30	20	50		
61	6	Professional Core Course	PCC	7RA322	Robot Programming	3			3	3	30	20	50		
62	6	Professional Core Course	PCC	7RA323	Artificial Intelligence for Robotics	2			2	2	30	20	50		
64	6	Professional Core Course	PCC	7RA371	Robot Programming Lab			2	2	1	30	30	40		
65	6	Professional Core Course	PCC	7RA372	Artificial Intelligence for Robotics LAB			2	2	1	30	30	40		
66	6	Vocational Skill Enhancement Course	VSEC	7VSRA345	Mini Project-2			2	2	1	30	30	40		
Total						16	0	6	22	23					
	Final.Y.	B.Tech. AY 2027-28 onwards	Sem A												
Sr. No.	Sem	NEP Category	NEP Category	Code	Course Name	L	T	P	Hr	Cr	MSE/LA1	ISE/LA2	ESE	OE	POE
67	A	Professional Elective Course	PEC	Refer List	Program Elective - 2	3			3	3	30	20	50		
68	A	Professional Elective Course	PEC	Refer List	Program Elective - 3	3			3	3	30	20	50		
69	A	Research Methodology	RM	7RM401	Reserch Methodology	2			2	2	30	20	50		
70	A	INTERNSHIP	INTERNSHIP	7RA445	Internship				0	8	30	30	40		
Total						8	0	0	8	16					
			Sem B												
Sr. No.	Sem	NEP Category	NEP Category	Code	Course Name	L	T	P	Hr	Cr	MSE/LA1	ISE/LA2	ESE	OE	POE
71	B	Professional Elective Course	PEC	Refer List	Program Elective - 4	3			3	3	30	20	50		
72	B	Professional Elective Course	PEC	Refer List	Program Elective - 5	3			3	3	30	20	50		
73	B	Multy Disp. Minor	MDM	Refer List	MDM					4	30	20	50		
74	B	Professional Core Course	PCC	7RA421	Machine Vision System	2			2	2	30	20	50		
75	B	Professional Core Course	PCC	7RA422	Robot System Reliability and Safety	2			2	2	30	20	50		
76	B	Professional Core Course	PCC	7RA471	Machine Vision System Lab			2	2	1	30	30	40		
77	B	Professional Core Course	PCC	7RA472	Robot System Reliability and Safety Lab			2	2	1	30	30	40		

78	B	Co-curricular Course Activity	CCA	7CC471	Techno Socio Activities			2	2	1	30	30	40		
79	B	Vocational Skill Enhancement Course	VSEC	7VSRA471	Skill Based Learning			2	2	1	30	30	40		
80	B	Research Project	PROJECT	7RA491	Project			10	10	5	30	30	40		
		Total				10	0	18	28	23					
								Total Credits		17.5					