
Robotics and Automation Engineering
Department KKWIEER, Nashik

NEP Compliant First, Second, Third and Final Year B.Tech
Structure (2023)

F.Y. B.Tech Robotics and Automation wef AY 202324

SEM-I

Course Code	Course Type	Title of Course	Teaching Scheme			Evaluation Scheme and Marks						Credits			
			TH	TU	PR	INSEM	ENDSEM	CCE	TUT /TW	PR /OR	TOTAL	TH	TU	PR	TOTAL
2300101A	BSC	Linear Algebra	3	1	0	20	60	20	25	0	125	3	1	0	4
2300103A	BSC	Applied Chemistry	3	0	2	20	60	20	50	0	150	3	0	1	4
2300105A	ESC	Fundamentals of Electrical Engineering	3	0	2	20	60	20	50	0	150	3	0	1	4
2300110A	ESC	Engineering Drawing	1	0	2	20	30	0	50	0	100	1	0	1	2
300112A	AEC	Communication Skills	1	0	2	0	0	25	50	0	75	1	0	1	2
2300117H	VSEC	Introduction to Matlab	1	0	2	0	0	25	25	0	50	1	0	1	2
2300115A	CC	Liberal Learning, Sports, Yoga, Art	0	2	0	0	0	0	50		50	0	2	0	2
Total			12	3	10	80	210	110	300	0	700	12	3	5	20

SEM-II															
Course Code	Couse Type	Title of Course	Teaching Scheme			Evaluation Scheme and Marks						Credits			
			TH	TU	PR	INSEM	ENDSEM	CCE	TUT /TW	PR /OR	TOTAL	TH	TU	PR	TOTAL
2300102A	BSC	Differential Calculus	3	1	0	20	60	20	25	0	125	3	1	0	4
2300104A	BSC	Applied Physics	3	0	2	20	60	20	50	0	150	3	0	1	4
2300107A	ESC	Fundamentals of Electronics Engineering	3	0	2	20	60	20	50	0	150	3	0	1	4
2300108A	ESC	Programming in C	1	0	2	20	30	0	50	0	100	1	0	1	2
2300118H	PCC	Fundamentals of Robotics	2	0	0	20	60	20	0	0	100	2	0	0	2
2300116A	IKS	Indian Knowledge System	0	2	0	0	0	0	50	0	50	0	2	0	2
2300111A	VSEC	Workshop Practices	1	0	2	0	0	25	25	0	50	1	0	1	2
2300115B	CC	Engineering Exploration	0	2	0	0	0	0	75	0	75	0	2	0	2
			13	5	8	100	270	105	325	0	800	13	5	4	22

Department Specific Exit Courses (To award Certificate)															
Course Code	Couse Type	Title of Course	Teaching Scheme			Evaluation Scheme and Marks						Credits			
			TH	TU	PR	INSEM	ENDSEM	CCE	TUT /TW	PR /OR	TOTAL	TH	TU	PR	TOTAL
2300119A	EXIT	Internship*	0	0	0	0	0	0	100	0	100	0	2	0	2
2300126A	EXIT	Robot operating and Programming	2	0	2	20	30	0	50	0	100	2	1	0	3
2300127A	EXIT	Robotic welding	2	0	2	20	30	0	50	0	100	2	1	0	3
Total			4	0	4	40	60	0	200	0	300	4	4	0	8

S.Y. B. Tech wef AY 2024-25

SEM-III

Course Code	Course Type	Title of Course	Teaching Scheme			Evaluation Scheme and Marks						Credits			
			TH	TU	PR	INSEM	ENDSEM	CCE	TUT /TW	PR /OR	TOTAL	TH	TU	PR	TOTAL
2300201D	PCC/ BSC	Applied Mathematics III	3	-	-	20	60	20			100	3	-	-	3
2312202	PCC	Electrical and Electronics Systems	3	-	-	20	60	20			100	3	-	-	3
2312203	PCC	Manufacturing Technology	3	-	-	20	60	20			100	3	-	-	3
2312204	PCC	Lab work Computer aided design	-	-	2	-	-	-	25	25	50	-	-	1	1
2312205	PCC	Lab work Electrical and Electronics Systems	-	-	2+2	-	-	-	50	50	100	-	-	2	2
2312206	MDM	Minor 1 in AI: Numerical Methods	3	-	-	20	60	20	-	-	100	3	-	-	3
2312207	MDM	Minor 1 in AI: Numerical Methods Lab	-	-	2	-	-	-	25	25	50	-	-	1	1
2312208	OE	Open Elective 1 in Sociology of tourism	2	-	-	-	-	50	-	-	50	2	-	-	2
2312209	VEC	Democracy	-	2	-	-	-	-	50	-	50	-	2	-	2
2312210	VSEC	Basic Robotics Workshop	-	1	2	-	-	-	TUT-25 TW-25	-	50	-	1	1	2
Total			14	03	10	80	240	130	200	100	750	14	3	5	22

SEM-IV

Course Code	Course Type	Title of Course	Teaching Scheme			Evaluation Scheme and Marks						Credits			
			TH	TU	PR	INSEM	ENDSEM	CCE	TUT /TW	PR /OR	TOTAL	TH	TU	PR	TOTAL
2312211	PCC/BSC	Robot Operating Systems	3	-	-	20	60	20			100	3	-	-	3
2312212	PCC	Computer Graphics for Robotics	3	-	-	20	60	20			100	3	-	-	3
2312213	PCC	Design of Machines and Mechanism	3	-	-	20	60	20			100	3	-	-	3
2312214	PCC	Robot Operating Systems Lab	-	-	2	-	-	-	25	25	50	-	-	1	1
2312215	PCC	Computer Graphics for Robotics Lab	-	-	4				50	50	100	-	-	2	2
2312216	MDM	Minor 2 in AI: Artificial Neural Networks and fuzzy systems	3	-	-	20	60	20	-	-	100	3	-	-	3
2312217	MDM	Minor 2 in AI: Artificial Neural Networks and fuzzy systems Lab	-	-	2	-	-	-	25	25	50	-	-	1	1
2312218	OE	Open Elective 2: Comparative Philosophy	2	-	-	-	-	50	-	-	50	2	-	-	2
2312219	VEC	UHV II	-	2	-	-	-	-	50	-	050	-	2	-	2
2312220	AEC	Soft skills	-	1	2	-	-	-	TUT-25 TW-25	-	050	-	1	1	2
Total			14	03	10	80	240	130	200	100	750	14	3	5	22

Department Specific Exit Courses (To award Diploma)															
Course Code	Course Type	Title of Course	Teaching Scheme			Evaluation Scheme and Marks						Credits			
			TH	TU	PR	INSEM	ENDSEM	CCE	TUT/TW	PR/OR	TOTAL	TH	TU	PR	TOTAL
2312221	EXIT 0	Internship*	2-weeks			Internship Report						-	-	-	2
2312222	EXIT 1	Aerial Robotics	40-60 hours online course			Online certification						-	-	-	3
2312223	EXIT 2	Robot Servicing and Maintenance	40-60 hours online course			Online certification						-	-	-	3
Total											-	-	-	8	

*Internship in industry for 2-weeks

To get certificate student should get following credits

Internship: 2 credits

Exit course-1: 3 credits

Exit course-2: 3 credits

Total credits: 8 credits

T.Y. B. Tech wef AY 2025-26

SEM-V

Course Code	Course Type	Title of Course	Teaching Scheme			Evaluation Scheme and Marks						Credits			
			TH	TU	PR	INSEM	ENDSEM	CCE	TUT /TW	PR /OR	TOTAL	TH	TU	PR	TOTAL
2312301	PCC	Robot Kinematics and Dynamics	3	-	-	20	60	20			100	3	-	-	3
2312302	PCC	Robot Path Planning	3	-	-	20	60	20			100	3	-	-	3
2312303	PCC	Microprocessors and Microcontrollers	3	-	-	20	60	20			100	3	-	-	3
2312304	PCC	Lab work Robot Kinematics and Dynamics	-	-	2	-	-	-	25	25	50	-	-	1	1
2312305	PCC	Lab work Microprocessors and Microcontrollers	-	-	2	-	-	-	25	25	50	-	-	1	1
2312306A 2312306B 2312306C 2312306D	PEC	A. Python programming B. Hydraulics and Pneumatics C. Hybrid Vehicle D. Strength of Materials	3	-	-	20	60	20			100	3	-	-	3
2312307A 2312307B 2312307C 2312307D	PEC	Lab work in: A. Python programming B. Hydraulics and Pneumatics C. Hybrid Vehicle D. Strength of Materials	-	-	2	-	-	-	25	25	50	-	-	1	1
2312308	OE	Open Elective -3 Understanding Cinema	2	-	-	-	-	50	-	-	50	2	-	-	2
2312309	MDM	Minor 3 in AI: Evolutionary Computation	3	-	-	20	60	20	-	-	100	3	-	-	3
2312310	CEP	Seminar	-	1	2	-	-	-	50	-	050	-	1	1	2
TOTAL			17	01	08	100	300	150	125	75	750	17	1	4	22

T.Y. B. Tech wef AY 2025-26

SEM-VI

Course Code	Course Type	Title of Course	Teaching Scheme			Evaluation Scheme and Marks						Credits					
			TH	TU	PR	INSEM	ENDSEM	CCE	TUT /TW	PR /OR	TOTAL	TH	TU	PR	TOTAL		
2312311	PCC	Sensors Technology	3	-	-	20	60	20			100	3	-	-	3		
2312312	PCC	Robot Programming	3	-	-	20	60	20			100	3	-	-	3		
2312313	PCC	Lab work in Sensors Technology	-	-	2	-	-	-	25	25	50	-	-	1	1		
2312314A 2312314B 2312314C 2312314D	PEC	A. Object-oriented programming B. Tool and Die Design C. Advanced Processors D. Machines and Mechanisms	3	-	-	20	60	20			100	3	-	-	3		
2312315A 2312315B 2312315C 2312315D		PEC	A. Cloud Computing B. Flexible Manufacturing Systems C. Power electronics and Drives D. Design of Machine Elements	3	-	-	20	60	20	-	-	100	3	-	-	3	
2312316A 2312316B 2312316C 2312316D			PEC	Lab work in: A. Cloud Computing B. FMS C. Power electronics and Drives D. Design of Machine Elements	-	-	2	-	-	-	25	25	50	-	-	1	1
2312317				MDM	Minor 4 in AI: Machine Vision	3	-	-	20	60	20			100	3	-	-
2312318	OE			Nutrition and weight Management	2	-	-	-	-	50	-	-	50	2	-	-	2
2312319	VSEC	Design thinking and problem solving (Mini Project)		-	1	2				25	25	50	-	1	1	2	
2312320	RM	Research Methodology	-	-	2	-	-	-	50	-	50	-	-	1	1		
Total			17	01	08	100	300	150	125	75	750	17	01	4	22		

Department Specific Exit Courses (To award B.Sc.)															
Course Code	Course Type	Title of Course	Teaching Scheme			Evaluation Scheme and Marks						Credits			
			TH	TU	PR	IN SEM	END SEM	CCE	TUT /TW	PR /OR	TOTAL	TH	TU	PR	TOTAL
2312321	EXIT 0	Internship*	2-weeks			Internship Report						-	-	-	2
2312322	EXIT 1	Industrial Automation	40-60 hours online course			Online certification						-	-	-	3
2312323	EXIT 2	Service Robots	40-60 hours online course			Online certification						-	-	-	3
Total											-	-	-	8	

*Internship in industry for 2-weeks

To get certificate student should get following credits

Internship 2 credits

Exit course-1 3 credits

Exit course-2 3 credits

Total credits 8 credits

Final year B. Tech wef AY 2026-27

SEM-VII

Course Code	Course Type	Title of Course	Teaching Scheme			Evaluation Scheme and Marks						Credits			
			TH	TU	PR	INSEM	ENDSEM	CCE	TUT /TW	PR /OR	TOTAL	TH	TU	PR	TOTAL
2312401	PCC	Embedded systems in Robotics	3	-	-	20	60	20			100	3	-	-	3
2312402	PCC	PLC and SCADA	3	-	-	20	60	20			100	3	-	-	3
2312403	PCC	Lab work in Embedded systems in Robotics	-	-	2	-	-	-	25	25	50	-	-	1	1
2312404	PCC	Lab work in PLC and SCADA	-	-	2	-	-	-	25	25	50	-	-	1	1
2312405A	PEC	A. Natural Language Processing	3	-	-	20	60	20	-	-	100	3	-	-	3
2312405B		B. Intelligent Manufacturing Systems													
2312405C		C. Micro-Electro-Mechanical Systems													
2312405D		D. Automobile Engineering													
2312406A	PEC	A. JAVA Programming	2	-	-	20	30	-	-	-	50	2	-	-	2
2312406B		B. Additive Manufacturing													
2312406C		C. Industry 4.0													
2312406D		D. Modelling and Simulation													
2312407	RM	Innovation, Entrepreneurship & IPR	3	-	-	20	60	20	-	-	100	3	-	-	3
2312408	HSSM -EEM	Supply Chain Management	2	-	-	-	-	50	-	-	50	2	-	-	2
2312409	PROJ	Project Stage	-	-	8	-	-	-	100	50	150	-	-	4	4
Total			16	00	12	100	270	130	150	100	750	16	-	6	22

Final year B. Tech wef AY 2026-27

SEM-VIII

Course Code	Course Type	Title of Course	Teaching Scheme			Evaluation Scheme and Marks						Credits			
			TH	TU	PR	INSEM	ENDSEM	CCE	TUT /TW	PR /OR	TOTAL	TH	TU	PR	TOTAL
2312411	PCC*	Wireless sensor network(online)	3	-	-	-	100	-			100	3	-	-	3
2312412	PEC*	Material handling systems and Robotics (Online)	3	-	-	-	100	-	-	-	100	3	-	-	3
2312413	HSSM-EEM*	Project and Finance Management	2	-	-	-	-	50	-	-	50	2	-	-	2
2312414	INTER NSHIP	Internship with Project work	-	-	24	-	-	-	300	200	500	-	-	12	12
Total			10	00	24	-	200	50	300	200	750	10	-	12	20

* Considering Internship of 6 months, these courses to be offered in online mode.

Dr. P.J. Pawar
Chairman BOS (R&A)

Dr. K. N. Nandurkar
Director, KKWIEER, Nashik