



BTech

(Robotics & Artificial Intelligence)

Batchelor Degree Course in Mechanical Engineering Department

National Education Policy (NEP) Compliant Structure
(With effect from Academic Year 2023-24)



COEP Technological University (COEP Tech)

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BTech (Robotics & AI)

Level	Semester	Course Co	Course Type	Name of the Course	Engagement Hours					Credit
					L	T	P	SS	Total Hrs	
4.5	I		-	Induction Programme (72 Hrs)	-	-	-	-	-	-
4.5	I		BSC	Matrix Algebra, Univariate Calculus & Probability	2	1	0	1	4	3
4.5	I		BSC	Engineering Physics	2	0	2	0	4	3
4.5	I		ESC	Basic Electrical & Electronics Engineering	2	0	2	0	4	3
4.5	I		ESC	Engineering Drawing and Graphics	1	0	4	0	5	3
4.5	I		ESC	Engineering Mechanics	3	0	2	2	6	4
4.5	I		AEC	Communication Skills	1	0	2	2	5	2
4.5	I		CCA	Liberal Learning	0	0	2	0	2	1
4.5	I		ESC	Manufacturing Practices/ Fab Lab - I	0	0	2	0	2	1
				Total	11	1	16	5	32	20
4.5	II		BSC	Engineering Chemistry	2	0	2	0	4	3
4.5	II		BSC	Ordinary Differential Equation & Multivariate Calculus	2	1	0	1	3	3
4.5	II		BSC	Engineering Biology	2	0	0	1	2	2
4.5	II		ESC	Systems in Mechanical Engineering	2	0	2	0	4	3
4.5	II		ESC	Programming for Problem Solving	1	0	2	0	3	2
4.5	II		ESC	Design Thinking and Idea Lab	0	0	2	0	2	1
4.5	II		PCC	Material Science	2	0	0	0	2	2
4.5	II		VSEC	Manufacturing Practices/ Fab Lab - II	0	0	2	0	2	1
4.5	II		IKS	Indian Knowledge System	2	0	0	0	2	2
4.5	II		CCA	Co-curricular & Extracurricular Activity	0	0	2	0	2	1
4.5	II		CEA	Social Summer Internship-after Sem II-Exam in Sem III	0	0	0	0	60 days	0
				Total	13	1	12	2	26	20
For Exit after FY -- Additional Credits for Certificate (Any Four Skill Based Course)										
4.5	II		PCC	Computer Aided Geometric Modelling	1	0	2	0	2	2
4.5	II		PCC	Additive Manufacturing	1	0	2	0	2	2
4.5	II		PCC	Metallurgical Lab Practice - I	1	0	2	0	2	2
4.5	II		PCC	Basics of CNC programming	1	0	2	0	2	2
4.5	II		PCC	Basics of Robotics & AI	1	0	2	0	2	2
				Total	17	1	20	2	34	28
5	III		ELC	Social Summer Internship (Completed after Sem II)	2	0	0	0	0	2
5	III		OE	Open Elective (Preferably-Ordinary & Partial Differential Eqns)	2	0	0	0	2	2
5	III		PCC	Basics of Robotics & AI	3	0	0	0	3	3
5	III		PCC	Sensors for Industrial Robotics	2	0	2	0	4	3
5	III		VSEC	Industrial Robot Programming Lab	0	0	2	2	4	1
5	III		VEC	Humanity Science	2	0	0	0	2	2
5	III		AEC	Modern Indian language	2	0	0	1	3	2
5	III		CEA	Field / Mini Project	0	0	4	1	5	2
5	III		MP	Minor Course	2	0	0	0	2	2
5	III		IDE	Entrepreneurship	2	0	0	1	3	2
				Total	17	0	8	5	28	21
5	IV		BSC	Numerical Methods & Programming Language	1	0	2	2	3	2
5	IV		PCC	Analog & Digital Electronics	2	0	2	0	4	3
5	IV		PCC	Control Systems	2	0	2	0	4	3
5	IV		PCC	Drives for Robot Systems	2	0	2	3	7	3
5	IV		MP	Minor Course	3	0	0	0	3	3
5	IV		OE	Open Elective	2	0	0	0	2	2
5	IV		PCC	Standards & Ethics for Robot Applications	1	0	0	1	2	1
5	IV		IDE	Entrepreneurship	2	0	0	1	3	2
5	IV		VEC	Environmental Science	2	0	0	1	3	2
5	IV		ELC	Summer Internship-after Sem IV-Exam in Sem V	0	0	0	0	1M	0
				Total	17	0	8	8	31	21
For Exit after SY -- Additional Credits for Diploma										
5	IV		VSEC	Robotic Simulation Laboratory	1	0	2	0	3	2
5	IV		VSEC	Arial Robotics Programming Lab	1	0	2	2	3	2
5	IV		VSEC	Control Systems Laboratory	1	0	2	0	3	2
5	IV		VSEC	Mini Project	2	0	0	0	9	2
				Total	22	0	14	10	49	29

5.5	V	ELC	Internship (Completed after Sem - IV)	4	0	0	0	4	4
5.5	V	PCC	Artificial Intelligence & Machine Learning	3	0	2	0	5	4
5.5	V	PCC	Fundamentals of Robot Manipulators	2	0	0	0	2	2
5.5	V	PCC	Signals & Systems	2	0	2	2	6	3
5.5	V	PEC	Programme Elective Course -I (Refer separate List)	3	0	0	0	3	3
5.5	V	PEC	Programme Elective Course -II (Refer separate List)	3	0	0	0	3	3
5.5	V	MP	Minor Course	3	0	0	0	3	3
			Total	20	0	4	5	26	22
5.5	VI	PCC	Kinematics & Dynamics	3	0	0	2	5	3
5.5	VI	PCC	Robot Simulation Lab	1	0	4	0	4	3
5.5	VI	PCC	Microcontrollers & It's Applications	2	0	2	0	4	3
5.5	VI	PCC	Robot Safety & Maintenance	2	0	0	1	3	2
5.5	VI	PCC	Data Science	3	0	0	2	5	3
5.5	VI	PCC	Seminar on recent advances in R & AI	0	0	2	0	2	1
5.5	VI	VSEC	Arial Robotics Lab	0	0	2	0	2	1
5.5	VI	MP	Minor Course	3	0	0	0	3	3
5.5	VI	OE	Open Elective	2	0	0	0	2	2
5.5	VI	ELC	Summer Internship-after Sem VI-Exam in Sem VII	0	0	0	0	1M	0
			Total	16	0	10	5	30	21
For Exit after TY-- Additional Credits for B Vocational									
5.5	VI	PCC	Robot Operating System	0	0	4	0	4	2
5.5	VI	PCC	Autonomous Navigation Lab using SLAM	0	0	4	0	4	2
5.5	VI	PCC	Robot System Design	2	0	0	2	2	2
5.5	VI	VSEC	Mini Project	2	0	0	0	8	2
			Total	20	0	18	7	48	29

6	VII	ELC	Internship (Completed after Sem - VI)	4	0	0	0	4	4
6	VII	PEC	Programme Elective Course -III (Refer separate List)	3	0	0	0	3	3
6	VII	PEC	Programme Elective Course -IV (Refer separate List)	3	0	0	0	3	3
6	VII	PCC	Robot System Design	2	0	0	2	2	2
6	VII	PCC	SLAM for Navigation	0	0	2	2	2	1
6	VII	PCC	Robot Operating System	2	0	2	0	4	3
6	VII	RM	Research Methodology	2	0	0	1	2	2
6	VII	MP	Minor Course	3	0	0	0	3	3
			Total	19	0	4	5	23	21
6	VIII	PEC	Program Sp Elective-V (Refer separate List) / MOOCS	3	0	0	0	3	3
6	VIII	PEC	Program Sp Elective-VI (Refer separate List) / MOOCS	3	0	0	0	3	3
6	VIII	ELC	Internship / Project	0	0	16	5	16	8
			Total	6	0	16	5	22	14

Sr No.	Sem	L	T	P	SS	Total	Credit
1	I	11	1	16	5	32	20
2	II	13	1	12	2	26	20
3	III	17	0	8	5	28	21
4	IV	17	0	8	8	31	21
5	V	20	0	4	5	26	22
6	VI	16	0	10	5	30	21
7	VII	19	0	4	5	23	21
8	VIII	6	0	16	5	22	14
	Total	119	2	74	41	218	160

PEC

5.5	V	PEC	Programme Elective Course -I (Specify List)	3
5.5	V	PEC	Programme Elective Course -II (Specify List)	3
6	VII	PEC	Programme Elective Course -III (Specify List)	3
6	VII	PEC	Programme Elective Course -IV (Specify List)	3
6	VIII	PEC	Program Specific Elective- V (Specify List) / MOOCS	3
6	VIII	PEC	Program Specific Elective- VI (Specify List) / MOOCS	3

	PEC - I	PEC - II	PEC - III
Course Specialization / Track	Program Elective Course-I	Program Elective Course-II	Program Elective-III
Robotics	Mobile and Micro Robotics	Autonomous Robotics and Telecherics	Advanced Robotics Programming
AI	Data Analytics	Deep Learning	Advanced Artificial Intelligence
Mechatronics	Intelligent Manufacturing	Mechatronics System Design	Micro electromechanical Systems
Control Systems	Dynamic Control Systems	Microcontrollers Architecture and Programming	Advanced Control System

	PEC - IV	PEC - V	PEC - VI
Course Specialization / Track	Program Elective-IV	Program Specific Elective-V	Program Specific Elective-VI
Robotics	Biomedical Robotics	Agricultural Robotics	Medical Robotics Technology
AI	Augmented Reality and Virtual Reality	AI based Agriculture	AI for Medical Applications
Mechatronics	Advanced Mechatronics	Mechatronics for Agricuture	Mechatronics for Medical Applications
Control Systems	Robot Dynamics and Control	Agricultural Plant & Device Control	Control for Biomedical Instrumentation systems

Level	Semester	Course Co	Course Type	Name of the Course	L	T	P	SS	Total Hrs	Credit
4.5	II		CEA	Social Summer Internship-after Sem II-Exam in Sem II	0	0	0	0	60 days	0
5	III		ELC	Social Summer Internship (Completed after Sem II)	2	0	0	0	0	2
5	IV		ELC	Summer Internship-after Sem IV-Exam in Sem V	0	0	0	0	1M	0
5.5	V		ELC	Internship (Completed after Sem - IV)	4	0	0	0	4	4
5.5	VI		ELC	Summer Internship-after Sem VI-Exam in Sem VII	0	0	0	0	1M	0
6	VII		ELC	Internship (Completed after Sem - VI)	4	0	0	0	4	4

Open Electives-Robotics (4 Credits each)	Open Electives- AI (4 Credits each)	Double Minors (4 Credits each)	Honors (4 Credits each)
Mobile and Micro Robotics	Data Analytics	Mobile and Micro Robotics	Robot System Design
Autonomous Robotics & Telecherics	Deep Learning	Autonomous Robotics & Telecherics	Robot Safety & Maintenance
Advanced Robotics Programming	Advanced Artificial Intelligence	Medical Robotics Technology	Robot Operating System
Biomedical Robotics	Augmented Reality and Virtual Reality	Augmented Reality and Virtual Reality	AI for Robotics
Agricultural Robotics	AI based Agriculture	AI based Agriculture	Advance AI

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