School of Engineering Sciences

Department of Mechanical Engineering

RBU

RAMDEOBABA UNIVERSITY, NAGPUR

Formerly Shri Ramdeobaba College of Engineering & Management (RCOEM) Est. 1984

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PROGRAMME SCHEME

B.Tech. Robotics and Artificial Intelligence 2025-26

Total Credits: 162

B.Tech. Robotics and Artificial Intelligence 2025-26

SEMESTER – I												
SN	Course Type	Course Code	Course Name	Hours/Week			Credits	Maximum Marks			Total	ESE Duration (Hrs.)
				L	P	S		Cont. Evaluation		End Sem Exam		
								TH	PR			
1	BSC	25HS03TP0107	Differential Calculus and Basics of Statistics	3	2	2	4	50	50	50	150	3
2	ESC	25EE07TP0106	Basics of Electrical Engineering	2	2	2	3	50	50	50	150	2
3	ESC	25ES03TH0101	Engineering Mechanics	3	0	1	3	50	-	50	100	3
4	ESC	25ES03TP0102	Engineering Graphics	2	2	1	3	50	50	50	150	2
5	ESC	25ES03TP0103	Programming for Problem Solving	2	2	2	3	50	50	-	100	-
6	AEC/ HSSM	25HS02TP0101	English for Professional Communication	2	2		3	50	25	50+25	150	2
7	VEC/ HSSM	25HS02TH0104	Foundational Course in Universal Human Values	1	0		1	50	-	-	50	-
			TOTAL	**15**	**10**	**8**	**20**	**350**	**225**	**200**	**850**	**12**

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Semester II												
SN	Course Type	Course Code	Course Name	Hours/ week			Credits	Maximum Marks				ESE Duration (Hrs.)
				L	P	S		Cont. Evaluation		End Sem Exam	Total	
								Th	Pr			
1	BSC	25HS03TH0217	Linear Algebra and Integral calculus	3	0	1	3	50	-	50	100	3
2	BSC	25HS05TP0203	Applied Physics	3	2	1	4	50	50	50	150	3
3	ESC	25ES03TH0201	Introduction to Artificial Intelligence	3	0	1	3	50	-	50	100	3
4	ESC	25ES03TH0202	Theory of Mechanisms and Elasticity	3	0	1	3	50	-	50	100	3
5	ESC	25ES03TP0203	Digital Logic Design	2	2	1	3	50	50	50	150	2
6	ESC	25ES03TP0204	Data Structure and OOPS	2	2	2	3	50	50	50	150	2
7	VSEC	25ES03TP0205	Fabrication Practices	1	2		2	50	50		100	-
8	CCA	25HS02PR0206-1-17	Liberal/Performing Arts Lab	0	2		1	-	25	25	50	-
9	CCA	25HS04PR0201	Sports-Yoga-Recreation	0	2		1		50		50	
			TOTAL	**17**	**12**	**7**	**23**	**350**	**275**	**325**	**950**	**16**

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Semester III

SN	Course Type	Course Code	Course Name	Hours/Week			Credits	Maximum Marks			Total	ESE Duration (Hrs.)
				L	P	S		Cont. Evaluation		End Sem Exam		
								TH	PR			
1	BSC	25HS03TH0303	Probability and Statistics	3	0	1	3	50	-	50	100	3
2	PCC	25ES03TH0301	Fundamentals of Robotics	3	0	1	3	50	-	50	100	3
3	PCC	25ES03TP0302	Design of Manipulator and End effector	2	2	1	3	50	50	-	100	-
4	PCC	25ES03TP0303	Microcontrollers and Interfacing	3	2	1	4	50	50	50	150	3
5	PCC	25ES03TP0304	Introduction to Python	2	2	1	3	50	50	-	100	-
6	OE	25ESOEC03TH0306	Open Elective-I/ MOOC	2	0	1	2	50	-	50	100	2
7	MDM	25ES03TH0307	MDM-I (Defense Platform)	3	0	1	3	50	-	50	100	3
8	AEC	25ES03TP0305	Design Thinking	1	2	1	2	50	50	-	100	-
			TOTAL	**19**	**8**	**8**	**23**	**400**	**200**	**250**	**850**	**14**

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Semester IV												
SN	Course Type	Course Code	Course Name	Hours/Week			Credits	Maximum Marks			Total	ESE Duration (Hrs.)
				L	P	S		Cont. Evaluation		End Sem Exam		
								TH	PR			
1	PCC	25ES03TP0401	Kinematics and Dynamics of Robot	3	2	2	4	50	50	50	150	3
2	PCC	25ES03TP0402	Control Systems for Robotics	3	2	2	4	50	50	50	150	3
3	PCC	25ES03TP0403	Machine Learning	3	2	2	4	50	50	50	150	3
4	PCC	25ES03TP0404	Mechatronics	2	2	1	3	50	50	50	150	2
5	CEP/FP	25ES03PR0405	Project-I	0	2	3	1	-	50	-	50	-
6	OE	25ESOEC03TH0406	Open Elective-II/ MOOC	2	0	1	2	50	-	50	100	2
7	MDM	25ES03TH0407	MDM-II (Warfare systems)	3	0	1	3	50	-	50	100	3
8	AEC	CDPC	Basic Competitive Coding Lab	0	2	2	1	-	50	-	50	-
9	VEC	25HS01TP0401	Environmental Science	1	2	0	1	50	50	-	100	-
			TOTAL	**17**	**14**	**14**	**24**	**350**	**350**	**300**	**1000**	**16**

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Semester V												
SN	Course Type	Course Code	Course Name	Hours/Week			Credits	Maximum Marks			Total	ESE Duration (Hrs.)
				L	P	S		Cont. Evaluation		End Sem Exam		
								TH	PR			
1	PCC	25ES03TP0501	Deep Learning	3	2	1	4	50	50	50	150	3
2	PCC	25ES03TP0502	Industrial Hydraulics and Pneumatics	3	2	1	4	50	50	50	150	3
3	PCC	25ES03TP0503	Industrial Internet of Things (IoT)	2	2	1	3	50	50	50	150	2
4	PSE	25ES03TH0504	Program Specific Elective -I	3	0	1	3	50		50	100	3
5	PCC	25ES03TP0505	Robot Operating System (ROS)	1	2	2	2	50	50	-	100	-
6	PCC	25ES03PR0506	Comprehensive Viva	0	2	1	1	-	50	-	50	-
7	OE	25ESOEC03TH0506	Open Elective-III/ MOOC	2	0	1	2	50	-	50	100	2
8	MDM	25ES03TH0507	MDM-III	3	0	2	3	50		50	100	3
9	AEC	25HS05TH0104	Business Communication	1	2	1	2	50	50	-	100	-
			TOTAL	**17**	**12**	**11**	**24**	**400**	**300**	**300**	**1000**	**15**

Program Specific Elective I

S.N.	Course Code	Course Name
1	25ES03TH0504-1	Robot Drives and Actuators
2	25ES03TH0504-2	Automated Manufacturing Systems

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Semester VI												
SN	Course Type	Course Code	Course Name	Hours/Week			Credits	Maximum Marks			Total	ESE Duration (Hrs.)
				L	P	S		Cont. Evaluation		End Sem Exam		
								TH	PR			
1	PCC	25ES03TP0601	Robotic Vision System	3	2	1	4	50	50	50	150	3
2	PCC	25ES03TP0602	Reinforcement Learning	3	2	1	4	50	50	50	150	3
3	PCC	25ES03TP0603	Mobile Robotics	2	2	2	3	50	50	50	150	2
4	PSE	25ES03TH0604	Program Specific Elective -II	3	0	2	3	50		50	100	3
5	AEC	25ES03PR0605	Product Innovation and Entrepreneurship Lab	0	4	1	2	-	50	-	50	-
6	AEC	CDPC	Advanced Competitive Coding	0	2	1	1	-	50	-	50	-
7	Project	25ES03PR0606	Project- II	0	4	1	2		50	-	50	
8	MDM	25ES03TH0607	MDM- IV	3	0	1	3	50		50	100	3
			TOTAL	**14**	**16**	**0**	**22**	**250**	**300**	**250**	**800**	**14**

Program Specific Elective - II

S.N.	Course Code	Course Name
1	25ES03TH0604-1	Automotive Electronics
2	25ES03TH0604-2	Flexible Manufacturing System

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Semester VII

SN	Course Type	Course Code	Course Name	Hours/Week			Credits	Maximum Marks			Total	ESE Duration (Hrs.)
				L	P	S		Cont. Evaluation		End Sem Exam		
								TH	PR			
1	PSE	25ES03TH0701	Program Specific Elective - III	3	0	2	3	50	-	50	100	3
2	PSE	25ES03TH0702	Program Specific Elective - IV	3	0	1	3	50	-	50	100	3
3	PSE	25ES03TH0703	Robot Safety and Maintenance	3	0	1	3	50	-	50	100	3
4	Project	25ES03PR0704	Major Project - I	0	8	2	4	-	50	50	100	-
5	Audit Course	25ES03PR0705	Internship Evaluation (Min 6 weeks)			2	SF/ USF	-		-		-
6	AEC	University Policy	Participative Learning	-	-	15	1*	-		-		-
			TOTAL	**9**	**8**	**8**	**14**	**150**	**50**	**200**	**400**	**9**

Program Specific Elective III and IV

S.N.	Course Code	Course Name	S.N.	Course Code	Course Name
1	25ES03TH0701-1	Fuzzy Logic and Neural Network	**1**	25ES03TH0702-1	Advanced Optimization Techniques
2	25ES03TH0701-2	Rapid Prototyping	**2**	25ES03TH0702-2	Enterprise Resource Planning.
3	25ES03TH0701-3	Process Instrumentation and Control	**3**	25ES03TH0702-3	Product Life Cycle Engineering

- Student will earn 1 credit against participative learning till VI semester.

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Semester VIII												
SN	**Course Type**	**Course Code**	**Course Name**	**Hours/Week**			**Credits**	**Maximum Marks**			**Total**	**ESE Duration (Hrs.)**
				L	**P**	**S**		**Cont. Evaluation**		**End Sem Exam**		
								TH	**PR**			
1	PCC	25ES03TH0801	Project Management	3	0	2	3	50		50	100	3
2	PCC	25ES03TH0802	Research Methodology	2	0	1	2	50		50	100	2
3	IKS	25HS02TH0205	Foundational Literature of Indian Civilization	1	0	1	1	50	-	-	50	-
4	Project	25ES03PR0803	Major Project II	0	12	2	6	-	50	50	100	-
			TOTAL	**6**	**12**	**6**	**12**	**150**	**50**	**150**	**350**	**5**
OR												
1	Project	25ES03PR0804	Full Semester Industry/ Research/TBI Internship	0	24	2	12		150	100	250	-
			TOTAL	**0**	**24**	**2**	**12**		**150**	**100**	**250**	-

Honors scheme Track-I: Robotics & AI (B. Tech Program)

Sr. No.	Sem	Course Code	Course Title	Hours/week			Credits	Maximum marks			ESE Duration (Hrs)
				L	P	S		Continuous Evaluation	End Sem Exam	Total	
1	III	25ES03HT0301	Field and Service Robot	3	0	1	3	50	50	100	3
2	IV	25ES03HT0401	Advanced sensors and Actuators	3	0	1	3	50	50	100	3
3	V	25ES03HT0501	Mobile and Micro Robotics	4	0	1	4	50	50	100	3
4	VI	25ES03HT0601	Multi-Robot Systems and Swarm Intelligence	4	0	1	4	50	50	100	3
5	VII	25ES03HP0701	Project	0	8	2	4	50	50	100	3
			TOTAL	**14**	**8**	**6**	**18**	**250**	**250**	**500**	**15**

Honors scheme Track-II: Product Design & CAM (Mechanical Engg., B.Tech. Program)

Sr. No.	Sem	Course Code	Course Title	Hours/week			Credits	Maximum marks			ESE Duration (Hrs)
				L	P	S		Continuous Evaluation	End Sem Exam	Total	
1	III	25ES04HT0301	Geometric Dimensioning and Tolerances	3	0	1	3	50	50	100	3
2	IV	25ES04HT0401	Advanced Solid Modelling and Assembly	3	0	1	3	50	50	100	3
3	V	25ES04HT0501	Additive Manufacturing Techniques	4	0	1	4	50	50	100	3
4	VI	25ES04HT0601	Design for Manufacturing	4	0	1	4	50	50	100	3
5	VII	25ES04HP0701	Project	0	8	2	4	50	50	100	3
			TOTAL	**14**	**8**	**6**	**18**	**250**	**250**	**500**	**15**

Minors scheme Track- I : Robotics & AI (B.Tech. Program)

Sr. No.	Sem	Course Code	Course Title	Hours/week			Credits	Maximum marks			ESE Duration (Hrs)
				L	P	S		Continuous Evaluation	End Sem Exam	Total	
1	III	25ES03MT0301	Introduction to Robotics	3	0	1	3	50	50	100	3
2	IV	25ES03MT0401	Mechatronics and Automation	3	0	1	3	50	50	100	3
3	V	25ES03MT0501	Modelling and Simulation of Robotic Systems	4	0	1	4	50	50	100	3
4	VI	25ES03MT0601	Robot Safety and Maintenance	4	0	1	4	50	50	100	3
5	VII	25ES03MP0701	Project	0	8	2	4	50	50	100	3
			TOTAL	**14**	**8**	**6**	**18**	**250**	**250**	**500**	**15**

Minors scheme Track- II: Mechanical Engg. (B.Tech. Programs)

Sr. No.	Sem	Course Code	Course Title	Hours/week			Credits	Maximum marks			ESE Duration (Hrs)
				L	P	S		Continuous Evaluation	End Sem Exam	Total	
1	III	25ES04MT0301	Basics of Mechanical Engineering	3	0	1	3	50	50	100	3
2	IV	25ES04MT0401	Energy System and Technologies	3	0	1	3	50	50	100	3
3	V	25ES04MT0501	Product Design and Digital Manufacturing	4	0	1	4	50	50	100	3
4	VI	25ES04MT0601	Automotive Technology	4	0	1	4	50	50	100	3
5	VII	25ES04MP0701	Project	0	8	2	4	50	50	100	3
			TOTAL	**14**	**8**	**6**	**18**	**250**	**250**	**500**	**15**

MDM: Track: Defence Technology

Sr. No.	Sem	Course Code	Course Title	Hours/week			Credits	Maximum marks			ESE Duration (Hrs)
				L	P	S		Continuous Evaluation	End Sem Exam	Total	
1	III	25ES03TH0307	Defence Platforms	3	0	0	3	50	50	100	3
2	IV	25ES03TH0407	Warfare Systems	3	0	0	3	50	50	100	3
3	V	25ES03TH0507	Weapon Systems	3	0	0	3	50	50	100	3
4	VI	25ES03TH0607	Self-Defence and Protection Systems	3	0	0	3	50	50	100	3
			TOTAL	**12**	**0**	**0**	**12**	**200**	**200**	**400**	**12**

SS Pund

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22/8/25

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