



**JSPM UNIVERSITY PUNE**

Recognized by UGC u/s 2 (f) of UGC Act 1956 and enacted by the  
State Government of Maharashtra - JSPM University Act, 2022 (Mah.IV of 2023)

**JSPM University Pune**  
**Faculty of Science and Technology**  
**School of Mechanical & Manufacturing**  
**Sciences**



**NEP aligned Curriculum Structure**

**for**

**B.Tech (Robotics and Artificial Intelligence))**

**(Effective from AY: 2025-26)**



# JSPM University Pune

FACULTY OF SCIENCE AND TECHNOLOGY

SCHOOL OF MECHANICAL AND MANUFACTURING SCIENCES

SECOND YEAR BACHELOR OF TECHNOLOGY (Regular)  
(Robotics and Artificial Intelligence)

COURSE STRUCTURE  
(NEP 2020 Aligned)

W. E. F

2024-2025

RELEASE DATE

01/07/2025

REVISION NO.

1.0 (NEP)

SEMESTER III (Level 5)

TYPE	CODE	COURSE NAME	TEACHING SCHEME				EXAMINATION SCHEME AND MARKS								TOTAL	CREDITS
			Hours / Week				THEORY (Equal Weightage for CIE and ESE)				PRACTICAL (Equal Weightage for CIE and ESE)		ORAL (Equal Weightage for CIE and ESE)			
			L	T	P	EL	CONTINUOUS INSEMESTER EVALUATION (100 Marks)			END SEMESTER EXAMINATION (100 / 50 Marks)	CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)	CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)		
				T1 (30 Marks)	T2 (30 Marks)	Assignments (40 Marks)										
BSC	230GMAB07_03	Ordinary Differential Equations and Multivariate Calculus	2	1	-	-	30	30	40	100	-	-	-	-	100	3
	230GRAB01_03	Foundations of Robotics and AI	2	-	-	2	30	30	40	100	-	-	-	-	100	2.5
PCC	230GRAB03_03	Fundamentals of Material Science and Smart Materials	2	-	-	-	30	30	40	50	-	-	-	-	50	2
	230GETB98_03	Analog and Digital Electronics	2	-	-	-	30	30	40	50	-	-	-	-	50	2
MMC	-	Multidisciplinary Minor Course	1	-	2	-	-	-	-	-	50	50	50	50	100	2
IOC	-	Interdisciplinary Open Course	2	-	-	-	30	30	40	100	-	-	-	-	50	2
VEC (HSMC)	230USYB02_03	Professional Laws, Ethics, Values and Harmony	2	-	-	-	30	30	40	50	-	-	-	-	50	1
LC	230GRAB02_03	Robot Programming Lab	-	-	2	-	-	-	-	-	50	50	-	-	50	1
	230GRAB04_03	Material Science and Smart Materials Lab	-	-	2	-	-	-	-	-	50	50	-	-	50	1
	230GETB99_03	Analog and Digital Electronics Lab	-	-	2	-	-	-	-	-	50	50	-	-	50	1.5
LLC	231UPYB02_03	Mindfulness and Wellbeing	1	-	-	2	-	-	-	-	-	-	50	-	50	1.5
TOTAL			14	1	8	4									750	20



Multidisciplinary Minor Course (MMC)					
III	Course Code	230GMTB01_03	230GCSB116_03	230GCEB43_03	230GCSB131_03
	Course Name	Sensors and Actuators	Data Science and Analytics	Environmental Impact Assessment and Auditing	Basics of AIML
IV	Course Code	230GETB09_04	230GCSB122_04	230GCEB44_04	230GCSB125_04
	Course Name	Wireless Sensor Network	Business Intelligence	Solid Waste Management	Internet and Cloud Computing
V	Course Code	230GETB34_05	230GCSB119_05	240GCEB37_05	230GCSB115_05
	Course Name	Internet of Things and Application	Web Application Development	Smart Transportation System	Machine Learning with Python
VI	Course Code	230GETB31_06	230GCSB123_06	240GCEB38_06	240GCSB112_06
	Course Name	Data Communication	Mobile Application Development	Engineering Geology	Foundations of Artificial Neural Network
VII	Course Code	230GETB41_07	230GCSB130_07	230GCEB40_07	240GCSB113_07
	Course Name	Introduction to Embedded Systems	Basics of Linux Operating System	Sustainable Materials	Foundations of Deep Learning
VII	Course Code	230GETB40_07	230GCSB120	230GCEB45_07	230GCSB136_07
	Course Name	Electronic Instrumentation	Cryptography and Cyber Security	Environmental Quality Monitoring	Multi Model Learning

Interdisciplinary Open Course (IOC)						
III	Course Code	230GCEB29_03	230VBCB04_03	230GCEB31_03	230HFGM25_03	250GBTB01_03
	Course Name	Smart Cities	Basics of Accounting	E-Waste Management	Intellectual Property	Bioengineering
V	Course Code	230GETB33_05	230VBCB14_05	230HFGM29_05	230HFSB15_05	230VMSM09_05
	Course Name	EV Technology	E-Commerce	Hazards and Chemical Safety	Introduction to Microscopy Techniques	Business Ethics and Sustainability
VII	Course Code	230GETB42_07	230VBBB25_07	230GETB35_07	240VBBB06_07	230UPYB34_07
	Course Name	Smart Grid	Economics for Management	Sustainable Energy System	Introduction to Digital Marketing	Psychology at Workplace

285  
Dr. Raghvendra Upadhyay  
Programme Coordinator, BTech-Robotics and  
Artificial Intelligence

Prof. P. M. Ambad  
Director, School of Mechanical and  
Manufacturing Sciences

Dr. R. S. Deshpande  
Dean, Faculty of Science and Technology

Dr. Anuradha S. Deshpande  
Associate Dean (Academics)



Prof. B.B. Ahuja  
Vice Chancellor, JSPM University Pune



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SCHOOL OF MECHANICAL AND MANUFACTURING SCIENCES

## COURSE STRUCTURE (NEP 2020 Aligned)

W. E. F

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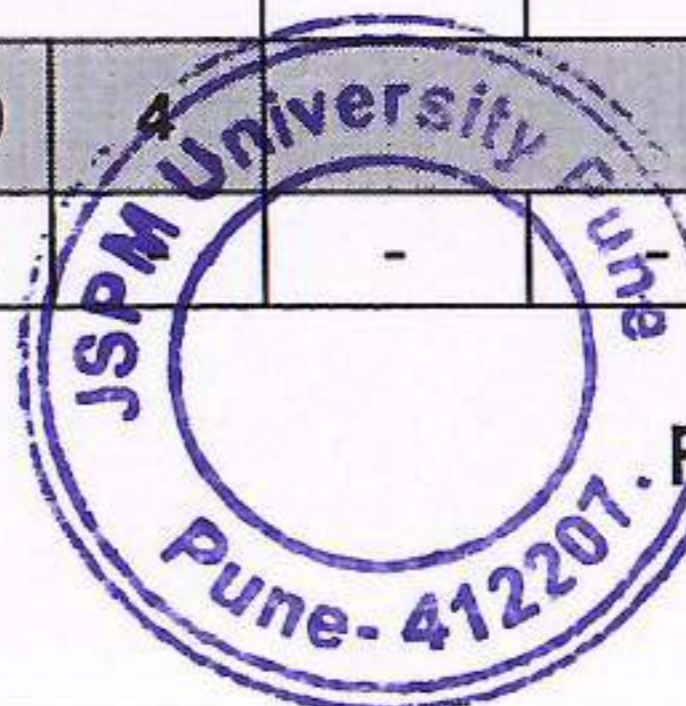
SECOND YEAR BACHELOR OF TECHNOLOGY (Regular)  
(Robotics and Artificial Intelligence)

REVISION NO.

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### SEMESTER IV (Level 5)

COURSE		TEACHING SCHEME	EXAMINATION SCHEME AND MARKS												TOTAL	CREDITS	
TYPE	CODE	COURSE NAME	Hours / Week				THEORY (Equal Weightage for CIE and ESE)				PRACTICAL (Equal Weightage for CIE and ESE)		ORAL (Equal Weightage for CIE and ESE)				
			L	T	P	EL	CONTINUOUS INSEMESTER EVALUATION (100 Marks)			END SEMESTER EXAMINATION (100 / 50 Marks)	CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)	CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)			
							T1 (30 Marks)	T2 (30 Marks)	Assignments (40 Marks)								
BSC	230GMAB08_04	Vector Calculus and Partial Differential Equations	2	1	-	-	30	30	40	100	-	-	-	-	100	3	
PCC	230GETB100_04	Microcontroller and its Application	3	-	-	2	30	30	40	100	-	-	-	-	100	3.5	
	240GETB08_04	Basics of Signals and Systems	2	-	-	2	30	30	40	100	-	-	-	-	100	2.5	
MMC	-	Multidisciplinary Minor Course	1	-	2	-	-	-	-	-	50	50	50	50	100	2	
EEC	231GCEB02_04	Environment and Sustainability	2	-	-	-	30	30	40	50	-	-	-	-	50	2	
SEC	230GMEB11_04	Machine Drawing	2	-	2	-	-	-	-	-	50	50	50	50	100	3	
AEC (HSMC)	230UENB02_04	Communicative Proficiency Skills	1	-	2	-	30	30	40	50	-	-	-	-	50	2	
LC	230GETB101_04	Microcontroller and its Applications Lab	-	-	2	-	-	-	-	-	50	50	-	-	50	1	
	230GETB102_04	Signal and Systems Lab	-	-	2	-	-	-	-	-	-	-	50	50	50	1	
IITP/ FP/ CEP	230GRAB12_04	Internship/Field Project/Community Engagement Programme	4 to 6 Weeks				-	-	-	-	-	-	-	50	50	50	2
TOTAL			11	1	10	4									750	22	
MLC#	-	Audit Course	-	-	2		-	-	-	-	-	-	50	50	50	1	



Multidisciplinary Minor Course (MMC)					
III	Course Code	230GMTB01_03	230GCSB116_03	230GCEB43_03	230GCSB131_03
	Course Name	Sensors and Actuators	Data Science and Analytics	Environmental Impact Assessment and Auditing	Basics of AIML
IV	Course Code	230GETB09_04	230GCSB122_04	230GCEB44_04	230GCSB125_04
	Course Name	Wireless Sensor Network	Business Intelligence	Solid Waste Management	Internet and Cloud Computing
V	Course Code	230GETB34_05	230GCSB119_05	240GCEB37_05	230GCSB115_05
	Course Name	Internet of Things and Application	Web Application Development	Smart Transportation System	Machine Learning with Python
VI	Course Code	230GETB31_06	230GCSB123_06	240GCEB38_06	240GCSB112_06
	Course Name	Data Communication	Mobile Application Development	Engineering Geology	Foundations of Artificial Neural Network
VII	Course Code	230GETB41_07	230GCSB130_07	230GCEB40_07	240GCSB113_07
	Course Name	Introduction to Embedded Systems	Basics of Linux Operating System	Sustainable Materials	Foundations of Deep Learning
VII	Course Code	230GETB40_07	230GCSB120	230GCEB45_07	230GCSB136_07
	Course Name	Electronic Instrumentation	Cryptography and Cyber Security	Environmental Quality Monitoring	Multi Model Learning

Mandatory Learning Course (MLC#) Audit Course		
IV	Course Code	230GMEB98_04
	Course Name	Advanced Excel
V	Course Code	230GMEB97_05
	Course Name	Data Analytics with Tableau and Power BI
VI	Course Code	230GMEB99_06
	Course Name	Structured Query Language
VII	Course Code	230UPOB02_07
	Course Name	Introduction to Indian Constitution



**Note:** A **Diploma** will be awarded if a student exits after second year.

For "Exit" at the end of Second Year the student must complete: (Total credits = 8).

a) An internship / OJT of 8 - 10 weeks (4 credits) over and above semester 2 internship of minimum 4 weeks.

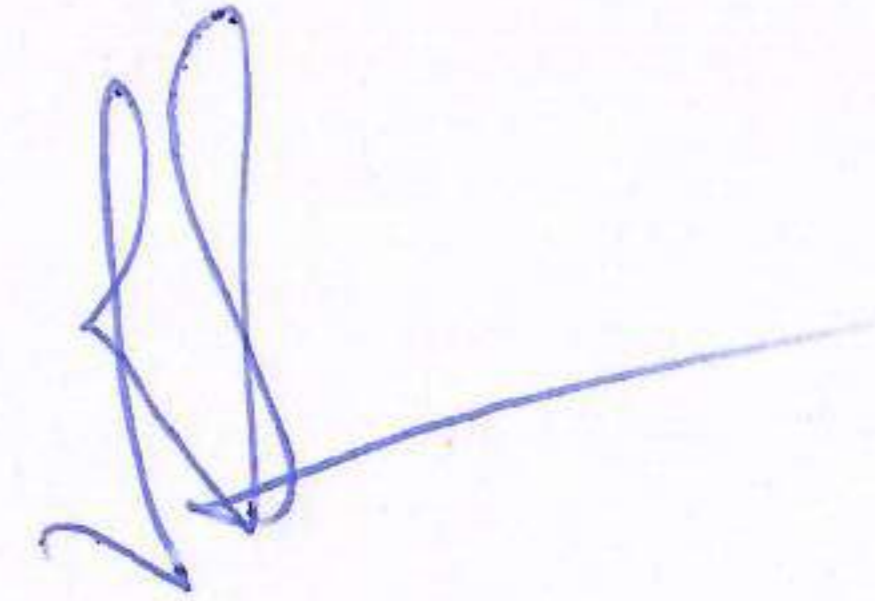
b) Additional Course 1 (4 credits) (Vocational Skill Course (VSC) or Skill Enhancement Course (SEC).



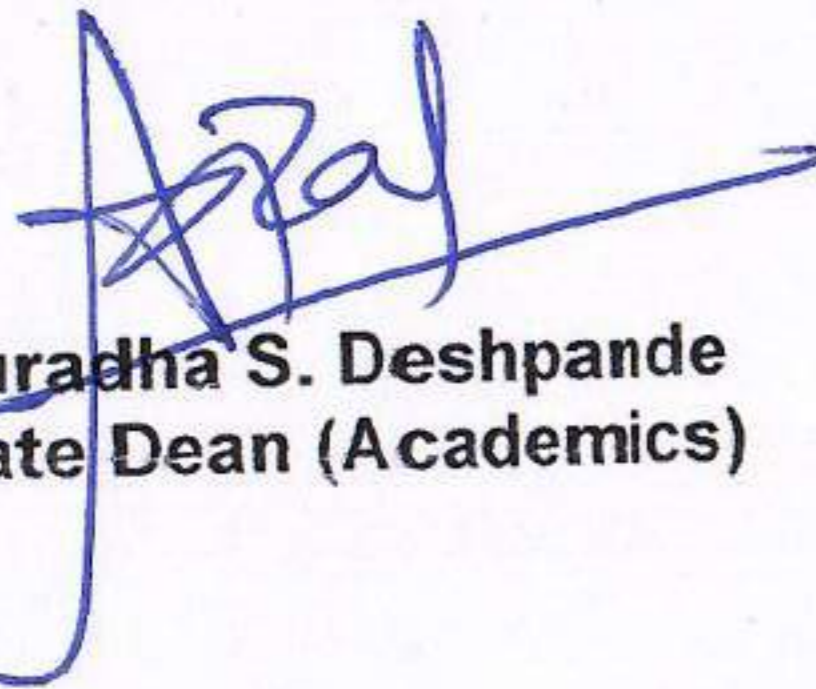
**Dr. Raghendra Upadhyay**  
Programme Coordinator, BTech- Robotics and  
Artificial Intelligence



**Prof. P. M. Ambad**  
Director, School of Mechanical and  
Manufacturing Sciences



**Dr. R. S. Deshpande**  
Dean, Faculty of Science and Technology



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### SEMESTER III (Level 5)


TYPE	CODE	COURSE NAME	TEACHING SCHEME				EXAMINATION SCHEME AND MARKS										CREDITS
			Hours / Week				THEORY (Equal Weightage for CIE and ESE)				PRACTICAL (Equal Weightage for CIE and ESE)		ORAL (Equal Weightage for CIE and ESE)		TOTAL		
			L	T	P	EL	CONTINUOUS INSEMESTER EVALUATION (100 Marks)			END SEMESTER EXAMINATION (100 / 50 Marks)	CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)	CONTINUOUS INSEMESTER EVALUATION (50 Marks)	END SEMESTER EXAMINATION (50 Marks)			
							T1 (30 Marks)	T2 (30 Marks)	Assignments (40 Marks)								
BSC	230GMAL01_03	Linear Algebra and Univariate Calculus	3	1	-	-	30	30	40	100	-	-	-	-	100	4	
PCC	230GRAB01_03	Foundations of Robotics and AI	2	-	-	2	30	30	40	100	-	-	-	-	100	2.5	
	230GRAB03_03	Fundamentals of Material Science and Smart Materials	2	-	-	-	30	30	40	50	-	-	-	-	50	2	
	230GETB98_03	Analog and Digital Electronics	2	-	-	-	30	30	40	50	-	-	-	-	50	2	
MMC	-	Multidisciplinary Minor Course	1	-	2	-	-	-	-	50	50	50	50	100	2		
IOC	-	Interdisciplinary Open Course	2	-	-	-	30	30	40	100	-	-	-	100	2		
VSC	230IDCB01_03	Design Thinking and Creativity	1	-	-	2	-	-	-	-	-	-	50	50	50	1.5	
AEC (HSMC)	230UENB01_03	Effective Communication Skills	1	-	2	-	30	30	40	50	-	-	-	-	50	2	
LC	230GRAB02_03	Robot Programming Lab	-	-	2	-	-	-	-	-	50	50	-	-	50	1	
	230GRAB04_03	Fundamentals of Material Science and Smart Materials Lab	-	-	2	-	-	-	-	-	50	50	-	-	50	1	
	230GETB99_03	Analog and Digital Electronics Lab	-	-	2	-	-	-	-	-	50	50	-	-	50	1	
<b>TOTAL</b>			<b>14</b>	<b>1</b>	<b>10</b>	<b>4</b>									<b>750</b>	<b>21</b>	




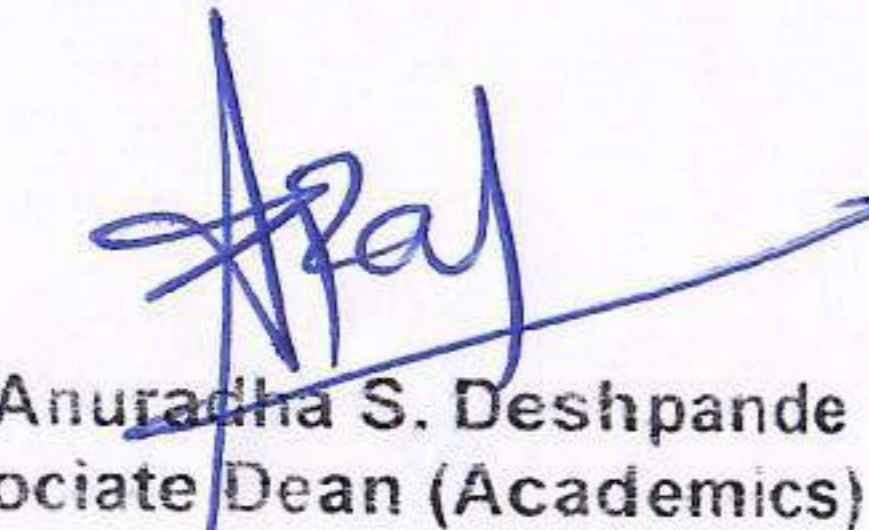
Sem.	Multidisciplinary Minor Course (MMC)				
III	Course Code	230GMTB01_03	230GCSB116_03	230GCEB43_03	230GCSB131_03
	Course Name	Sensors and Actuators	Data Science and Analytics	Environmental Impact Assessment and Auditing	Basics of AIML
IV	Course Code	230GETB09_04	230GCSB122_04	230GCEB44_04	230GCSB125_04
	Course Name	Wireless Sensor Network	Business Intelligence	Solid Waste Management	Internet and Cloud Computing
V	Course Code	230GETB34_05	230GCSB119_05	240GCEB37_05	230GCSB115_05
	Course Name	Internet of Things and Application	Web Application Development	Smart Transportation System	Machine Learning with Python
VI	Course Code	230GETB31_06	230GCSB123_06	240GCEB38_06	240GCSB112_06
	Course Name	Data Communication	Mobile Application Development	Engineering Geology	Foundations of Artificial Neural Network
VII	Course Code	230GETB41_07	230GCSB130_07	230GCEB40_07	240GCSB113_07
	Course Name	Introduction to Embedded Systems	Basics of Linux Operating System	Sustainable Materials	Foundations of Deep Learning
VII	Course Code	230GETB40_07	230GCSB120	230GCEB45_07	230GCSB136_07
	Course Name	Electronic Instrumentation	Cryptography and Cyber Security	Environmental Quality Monitoring	Multi Model Learning

Sem.	Interdisciplinary Open Course (IOC)					
III	Course Code	230GCEB29_03	230VBCB04_03	230GCEB31_03	230HFGM25_03	250GBTB01_03
	Course Name	Smart Cities	Basics of Accounting	E-Waste Management	Intellectual Property	Bioengineering
V	Course Code	230GETB33_05	230VBCB14_05	230HFGM29_05	230HFSB15_05	230VMSM09_05
	Course Name	EV Technology	E-Commerce	Hazards and Chemical Safety	Introduction to Microscopy Techniques	Business Ethics and Sustainability
VII	Course Code	230GETB42_07	230VBBB25_07	230GETB35_07	240VBBB06_07	230UPYB34_07
	Course Name	Smart Grid	Economics for Management	Sustainable Energy System	Introduction to Digital Marketing	Psychology at Workplace


  
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### SEMESTER IV (Level 5)

COURSE			TEACHING SCHEME				EXAMINATION SCHEME AND MARKS								TOTAL	CREDITS	
TYPE	CODE	COURSE NAME	Hours / Week				THEORY (Equal Weightage for CIE and ESE)				PRACTICAL (Equal Weightage for CIE and ESE)		ORAL (Equal Weightage for CIE and ESE)				
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							T1 (30 Marks)	T2 (30 Marks)	Assignments (40 Marks)								
BSC	230GMAL02_04	Multivariate Calculus and Differential Equations	3	1	-	-	30	30	40	100	-	-	-	-	100	4	
PCC	230GETB100_04	Microcontroller and its Application	3	-	-	2	30	30	40	100	-	-	-	-	100	3.5	
	240GETB08_04	Basics of Signals and Systems	2	-	-	2	30	30	40	100	-	-	-	-	100	2.5	
MMC	-	Multidisciplinary Minor Course	1	-	2	-	-	-	-	-	50	50	50	50	100	2	
EEC	231GCEB02_04	Environment and Sustainability	2	-	-	-	30	30	40	50	-	-	-	-	50	2	
SEC	230GMEB11_04	Machine Drawing	2	-	2	-	-	-	-	-	50	50	-	50	100	3	
AEC (HSMC)	230UENB02_04	Communicative Proficiency Skills	1	-	2	-	30	30	40	50	-	-	-	-	50	2	
LC	230GETB101_04	Microcontroller and its Application Lab	-	-	2	-	-	-	-	-	50	50	-	-	50	1	
	230GETB102_04	Signal and Systems Lab	-	-	2	-	-	-	-	-	-	-	50	50	50	1	
IITP/ FP/ CEP	230GRAB12_04	Internship/Field Project/Community Engagement Programme	4 to 6 Weeks				-	-	-	-	-	-	-	50	50	50	2
<b>TOTAL</b>			<b>14</b>	<b>1</b>	<b>10</b>	<b>4</b>									<b>750</b>	<b>23</b>	
MLC#	-	Audit Course	-	-	2	-	-	-	-	-	-	-	-	50	50	50	1



Sem.	Multidisciplinary Minor Course (MMC)				
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	Course Name	Sensors and Actuators	Data Science and Analytics	Environmental Impact Assessment and Auditing	Basics of AIML
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VII	Course Code	230GETB40_07	230GCSB120	230GCEB45_07	230GCSB136_07
	Course Name	Electronic Instrumentation	Cryptography and Cyber Security	Environmental Quality Monitoring	Multi Model Learning

Sem.	Mandatory Learning Course (MLC#) Audit Course	
IV	Course Code	230GMEB98_04
	Course Name	Advanced Excel
V	Course Code	230GMEB97_05
	Course Name	Data Analytics with Tableau and Power BI
VI	Course Code	230GMEB99_06
	Course Name	Structured Query Language
VII	Course Code	230UPOB02_07
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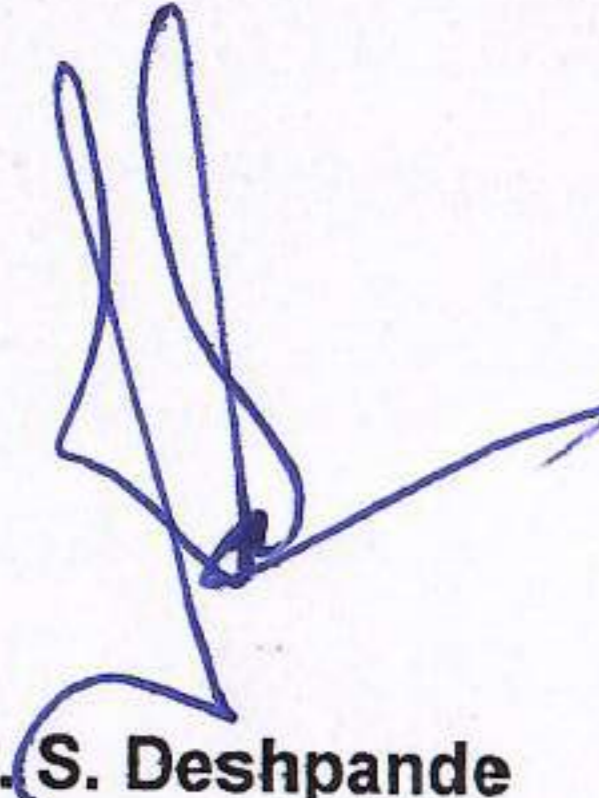
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