

**MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WB**  
(Formerly West Bengal University of Technology)

**Syllabus for B. Sc. In Robotics& 3D Printing (In-house)**  
(Effective for Students Admitted in Academic Session 2019-2020)

**CURRICULUM STRUCTURE**

**1<sup>ST</sup> YEAR**

SL No	CODE	Paper	Contact Periods per week			Total Contact Hours	Credits
			L	T	P		
<b>SEMESTER I</b>							
<b>Theory</b>							
1	RB-M 101	Engineering Mathematics I	3	1	0	4	3
2	RB-MS 101	Engineering Mechanics	3	1	0	4	3
3	RB-PH 101	Engineering Physics	3	1	0	4	2
4	RB-CH 101	Engineering Chemistry	3	0	0	3	2
5	RB-EE 101	Basic Electrical & Electronics Engineering	3	1	0	4	3
6	RB-HS 101	Communicative English	3	0	0	3	2
<b>Practical</b>							
1	RB-CS 191	Problem Solving with Python	1	0	3	4	1.5
2	RB-MS 191	Engineering Graphics	0	0	3	3	1.5
3	RB-EE 191	Basic Electrical & Electronics Lab	0	0	3	4	2
<b>Total Credits</b>			<b>20</b>				
<b>SEMESTER II</b>							
<b>Theory</b>							
1	RB-M 201	Engineering Mathematics - II	3	1	0	4	3
2	RB-EE 201	Electrical Machines	3	1	0	4	3
3	RB-CS 201	Object Oriented Programming and Data Structures	3	1	0	4	2
4	RB-EC 201	Digital Electronics	3	1	0	4	3
5	RB-EC 202	Sensors and Instrumentation	3	1	0	4	2

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6	RB-MS 201	Strength of Materials for Mechanical Engineers	3	1	0	4	2
<b>Practical</b>							
1	RB-EE 291	Electrical Machines Lab	0	0	3	3	2
2	RB-EC 291	Digital Electronics Lab	0	0	0	3	1.5
3	RB-EC 292	Sensors & Instrumentation Lab	0	0	0	3	1.5
<b>Total</b>							<b>20</b>

**2<sup>ND</sup> YEAR**

SL No	CODE	Paper	Contact Periods per week			Total Contact Hours	Credits
			L	T	P		
<b>SEMESTER III</b>							
<b>Theory</b>							
1	RB-EE 301	Power Electronics and Drives	3	1	0	4	3
2	RB-EC 301	Microprocessors, Embedded Controllers and Real time Operating Systems	3	1	0	4	3
3	RB-MS 301	Hydraulics and Pneumatics	3	1	0	4	2
4	RB-PE 301	Professional Elective I	3	1	0	4	3
5	RB-EE 302	Control System	3	1	0	4	3
6	RB-M 301	Engineering Mathematics III	3	1	0	4	3
<b>Practical</b>							
1	RB-EE 391	Power Electronics & Drives Lab	0	0	3	3	2
2	RB-EC 391	Embedded System Lab	0	0	3	3	2
<b>Total Credits</b>							<b>21</b>
<b>SEMESTER IV</b>							
<b>Theory</b>							

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1	RB-MS 401	Kinematics & Dynamics of Machines	3	1	0	4	3
2	RB-PE 401	Professional Elective II	3	1	0	4	3
3	RB-MS 402	Materials Science	3	1	0	4	2
4	RB-PR 401	Principles of Robotics I	3	1	0	4	3
5	RB-CS 401	Artificial Intelligence	3	1	0	4	3
6	RB-CS 402	Computer Architecture	3	0	0	3	2
<b>Practical</b>							
1	RB-MS 491	Kinematics & Dynamics Lab	0	0	3	3	1.5
2	RB-PR 491	Robotics Lab I	0	0	3	3	1.5
3							
<b>Total</b>			<b>19</b>				

**3<sup>RD</sup> YEAR**

SL No	CODE	Paper	Contact Periods per week			Total Contact Hours	Credits
			L	T	P		
<b>SEMESTER V</b>							
<b>Theory</b>							
1	RB-PR 501	Introduction to Robotics II	3	1	0	4	3
2	RB-PR 502	Industrial Design & Applied Ergonomics	3	1	0	4	2
3	RB-PR 503	3D Printing	3	1	0	4	2
4	RB-CS 501	Machine Vision	3	1	0	4	3
6	RB-PE 501	Professional Elective III	3	1	0	4	3
<b>Practical</b>							

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1	RB-PR 591	Robotics Lab II	0	0	3	3	2
2	RB-PR 581	PROJECT I	0	0	3		5
3							
<b>Total</b>			<b>20</b>				
<b>SEMESTER VI</b>							
<b>Theory</b>							
1	RB-PR 601	Environmental Science and Engineering	3	0	0	3	2
2	RB-PR 602	Virtual Instrumentation	3	1	0	3	2
3	RB-EC 601	Digital Signal Processing	3	1	0	4	2
4	RB-HU 601	Values & Ethics	3	0	0	3	2
5	RB-PE 601	Professional Elective IV	3	1	0	4	3
	RB- MG 601	Principles of Management	3	0	0	3	2
<b>Practical</b>							
1	RB-PR 681	PROJECT II					5
2	RB- EC691	DSP Lab					2
<b>Total</b>			<b>20</b>				
<b>GRAND TOTAL Credits</b>			<b>120</b>				

**Elective I**

1. ADVANCED MICROPROCESSORS AND MICROCONTROLLERS
2. System Software
3. Automobile Engineering
4. Human Rights

**Elective II**

1. Special Machines & Controllers
2. Advanced Control System
3. Lean Manufacturing

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4. PROCESS PLANNING AND COST ESTIMATION
5. INTELLECTUAL PROPERTY RIGHTS

**Elective III**

1. VLSI DESIGN
2. COMPUTER INTEGRATED MANUFACTURING SYSTEMS
3. DISASTER MANAGEMENT
4. RENEWABLE ENERGY
5. AR/VR

**Elective IV**

1. TOTALLY INTEGRATED AUTOMATION
2. INDUSTRIAL ROBOTICS AND MATERIAL HANDLING SYSTEMS
3. NEURAL NETWORKS AND FUZZY SYSTEMS
4. MAINTENANCE AND SAFETY ENGINEERING
5. MANAGEMENT OF QUALITY