JOY UNIVERSITY
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School of Computational Intelligence

Department of Mechanical Engineering

B. Tech Mechatronics - Programme Structure

Semester I

Sl. No.	Course Code	Course Title	L	T	P	Contact Hrs / Wk	Credits
1.	BTME1111	Mathematics - I	3	1	0	4	4
2.	BTME1112	Fundamentals of Computational Physics	3	1	0	4	4
3.	AEEN1111	Effective Communication	2	0	0	2	2
4.	BTME1113	Fundamentals of Computing	3	0	0	3	3
5.	BTME1114	Engineering Mechanics	2	1	0	3	3
6.	BTME1115	Fundamentals of Electrical & Electronics Engineering	3	0	0	3	3
7.	BTME1116	Engineering Drawing	1	1	2	4	3
8.	BTME2111	Fundamentals of Computing Lab	0	0	2	2	1
9.	BTME2112	Computer Hardware Lab	0	0	2	2	1
		TOTAL	**16**	**5**	**6**	**27**	**24**

Semester II

Sl. No.	Course Code	Course Title	L	T	P	Contact Hrs/ Wk	Credits
1.	BTME1121	Mathematics - II	3	1	0	4	4
2.	AEEV1121	Environmental Science	2	0	0	2	2
3.	BTME1122	Fundamentals of Instrumentation & Process Control	3	1	0	4	4
4.	BTME1123	Introduction to Programming	3	0	0	3	3
5.	BTME1124	Fundamentals of Mechanical and Civil Engineering	3	1	0	4	4
6.	BTME1125	Principles of Management and Engineering Economics	3	0	0	3	3
7.	BTME2121	Engineering Realization	0	1	2	3	2
8.	BTME2122	Programming Lab	0	0	2	2	1
9.	BTME2123	Engineering Visualization	0	0	2	2	1
		TOTAL	**16**	**5**	**6**	**27**	**24**

Semester III

Sl. No.	Course Code	Course Title	L	T	P	Contact Hrs/ Wk	Credits
1.	BTMT1211	Mathematics - III	2	1	0	3	3
2.	BTMT1212	Materials Engineering And Metallurgy	3	0	0	3	3
3.	BTMT1213	Fluid Mechanics & Thermodynamics	2	1	0	3	3
4.	BTMT1214	Heat & Mass Transport Analysis	2	1	0	3	3
5.	BTMT1215	Manufacturing Processes	3	0	0	3	3
6.	BTMT1216	Electrical Actuators and Drives	3	0	0	3	3
7.	BTMT2211	Material Testing Laboratory	0	0	3	3	1.5
8.	BTMT2212	Fluid Mechanics Laboratory	0	0	3	3	1.5
9.	BTMT2213	Electrical Drives & Actuators Laboratory	0	0	2	2	1
10.	BTMT2214	Entrepreneurship Development	0	0	2	2	1
		TOTAL	**15**	**3**	**10**	**28**	**23**

Semester IV

Sl. No.	Course Code	Course Title	L	T	P	Contact Hrs/ Wk	Credits
1.	BTMT1221	Kinematics and Dynamics of Mechanisms	2	1	0	3	3
2.	BTMT1222	Data Structure and Algorithm for Engineers	2	1	0	3	3
3.	BTMT1223	Digital Signals, System and Its Processing	2	1	0	3	3
4.	BTMT1224	Design of Machine Elements	2	1	0	3	3
5.	BTMT1225	Elements of Digital Electronics & Microprocessors	3	0	0	3	3
6.	BTMT1226	Sensors and Transducers in Engineering	3	0	0	3	3
7.	BTMT2221	Kinematics and Dynamics Laboratory	0	0	3	3	1.5
8.	BTMT2222	Data Structure and Algorithm Lab	0	0	2	2	1
9.	BTMT2223	Sensors and Control Systems Laboratory	0	0	2	2	1
10.	BTMT2224	Heat & Mass Transfer Laboratory	0	0	3	3	1.5
		TOTAL	**14**	**4**	**10**	**28**	**23**

Semester V

Sl. No.	Course Code	Course Title	L	T	P	Contact Hrs/ Wk	Credits
1.	BTMT1311	Microcontroller & Embedded Systems for Mechatronics	3	0	0	3	3
2.	BTMT1312	Measurements and Instrumentation	3	0	0	3	3
3.	BTMT1313	Power Electronics and Drives	3	0	0	3	3
4.	BTMT1314	PLC & Circuit Design	2	1	0	3	3
5.	PEMT131#	Elective-I *(Programme Specific Elective)*	3	0	0	3	3
6.	PEMT131#	Elective-II *(Programme Specific Elective)*	3	0	0	3	3
7.	BTMT2311	Power Electronics and Drives Laboratory	0	0	3	3	1.5
8.	BTMT2312	Embedded Systems & Microcontroller Laboratory	0	0	2	2	1
9.	BTMT2313	Measurements and Instrumentation Laboratory	0	0	2	2	1
10.	BTMT2314	PLC & Circuit Design Laboratory	0	0	3	3	1.5
		TOTAL	**17**	**1**	**10**	**28**	**23**

Semester VI

Sl. No.	Course Code	Course Title	L	T	P	Contact Hrs / Wk	Credits
1.	BTMT1321	Robotics and Automation	3	0	0	3	3
2.	BTMT1322	Mechatronics System Design & Integration	3	0	0	3	3
3.	BTMT1323	Machine Learning and Image Processing in Mechatronics Systems	2	1	0	3	3
4.	BTMT1324	Computer Integrated Manufacturing	2	1	0	3	3
5.	PEMT132#	Elective-III *(Programme Specific Elective)*	3	0	0	3	3
6.	PEMT132#	Elective-IV *(Programme Specific Elective)*	3	0	0	3	3
7.	BTMT2321	CIM Laboratory	0	0	2	2	1
8.	BTMT2322	Mechatronics System Design & Integration Laboratory	0	0	2	2	1
9.	BTMT2323	Machine Learning and Image Processing Lab	0	0	3	3	1.5
10.	BTMT2324	Robotics and Automation Lab	0	0	3	3	1.5
		TOTAL	**16**	**2**	**10**	**28**	**23**

Semester VII

Sl. No.	Course Code	Course Title	L	T	P	Contact Hrs / Wk	Credits
1.	BTMT1411	Soft Computing	2	1	0	3	3
2.	BTMT1412	Industrial Engineering & Operation Research	2	1	0	3	3
3.	GEME141#	Elective-V *(Global Elective)*	3	0	0	3	3
4.	GEME141#	Elective-VI *(Global Elective)*	3	0	0	3	3
5.	BTMT3411	Project- Phase I	-	-	-	-	4
6.	BTMT3412	Industrial/ Research Internship	-	-	-	-	3
7.	BTMT3413	Seminar	-	-	-	-	3
		TOTAL	**10**	**2**	**0**	**12**	**22**

Semester VIII

Sl. No.	Course Code	Course Title	L	T	P	Contact Hrs / Wk	Credits
1.	BTMT1421	Professional Ethics	3	0	0	3	3
2.	GEME142#	Elective-VII *(Global Elective)*	3	0	0	3	3
3.	GEME142#	Elective-VIII *(Global Elective)*	3	0	0	3	3
4.	GEME142#	Elective-IX *(Global Elective)*	3	0	0	3	3
5.	BTMT3421	Project- Phase II	-	-	-	-	8
		TOTAL	**12**	**0**	**0**	**12**	**20**

#Out of the 9 electives in the programme, 4 are programme specific electives and 2 should be Global Electives offered by Department of Mechanical Engineering.

B. Tech Mechatronics – Programme Specific Electives							
Sl. No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/Wk**	**Credits**
1	PEMT1311	Mechanical Vibrations and Noise Control	2	1	0	3	3
2	PEMT1312	Additive Manufacturing	2	1	0	3	3
3	PEMT1313	Vision Systems and Intelligence	2	1	0	3	3
4	PEMT1314	Motion Control Technologies	2	1	0	3	3
5	PEMT1321	Cyber Security for Automation Systems	2	1	0	3	3
6	PEMT1322	Micro Electro Mechanical System	2	1	0	3	3
7	PEMT1323	Advanced Control Systems	2	1	0	3	3
8	PEMT1324	Smart and Intelligent Vehicles Mobility	2	1	0	3	3

Global Electives – Department of Mechanical Engineering							
Sl. No.	**Course Code**	**Course Title**	**L**	**T**	**P**	**Contact Hrs/Wk**	**Credits**
1	GEME1411	Electric and Hybrid Vehicles	3	0	0	3	3
2	GEME1412	Digital and Smart Manufacturing	3	0	0	3	3
3	GEME1413	Digital Image Processing	2	1	0	3	3
4	GEME1414	Engineering System Modeling & Simulation	2	1	0	3	3
5	GEME1421	Reliability Engineering	2	1	0	3	3
6	GEME1422	Project Management	2	1	0	3	3
7	GEME1423	Industrial Engineering	2	1	0	3	3
8	GEME1424	Artificial Intelligence in Robotics & Automation	2	1	0	3	3
9	GEME1425	Human Computer Interaction	2	1	0	3	3
10	GEME1426	Operations Research	2	1	0	3	3

Credit Summary

Semesters	**Credits**
Semester- I	24
Semester- II	24
Semester- III	23
Semester- IV	23
Semester- V	23
Semester- VI	23
Semester- VII	22
Semester VIII	20
Total	**182**