

Semester wise plan for B.Sc. Mechatronics and Control Engineering (Session 2023)

Sr.	Code	Course Title	Credit Hours		Contact Hours		Pre-Requisites
			Theory	Practical	Theory	Practical	
1st Semester Courses							
1	MA-113	Calculus and Analytic Geometry	3	0	3	0	
2	MCT-111 & MCT-111L	Engineering Graphics and Drawing	1	2	1	6	
3	MCT-121 & MCT-121L	Electric Circuits	3	1	3	3	
4	IS-101/ HU-101	Islamic and Pak Studies –I/ Ethics and Pak Studies - I	3	0	3	0	
5	PHY-118 & PHY-118L	Applied Physics	2	1	2	3	
6	ME-100L	Workshop Practice	0	1	0	3	
7	QT-101	Translation of Holy Quran-I	1	0	1	0	
Total			13	5	13	15	
Semester Credits			18		28		
2nd Semester Courses							
8	MCT-142L	Computer Programming-I	0	2	0	6	
9	HU-111L	Communication Skills	0	1	0	3	
10	MA-225	Differential Equations and Transforms	3	0	3	0	
11	MCT-113 & MCT-113L	Manufacturing Processes	3	1	3	3	
12	MCT-117 & MCT-117L	Engineering Mechanics	3	1	3	3	
13	MCT-122 & MCT-122L	Electronic Devices and Circuits	3	1	3	3	
14	MCT-100	Community Service	0	0	0	0	
Total			12	6	12	18	
Semester Credits			18		30		
3rd Semester Courses							
15	MCT-223 & MCT-223L	Electrical Machinery	2	1	2	3	
16	MCT-217 & MCT-217L	Mechanisms	3	1	3	3	
17	MCT-243L	Computer Programming II	0	2	0	6	MCT-142L
18	MA-129	Vector and Complex Analysis	3	0	3	0	
19	MCT-241 & MCT-241L	Digital Logic Design	3	1	3	3	
20	MCT-206	Entrepreneurship-I	1	0	1	0	
21	QT-201	Translation of The Holy Quran-II	1	0	1	0	
Total			13	5	13	15	
Semester Credits			18		28		
4th Semester Courses							
22	MCT-216 & MCT-216L	Machine Design and Elements	3	1	3	3	
23	MCT-244 & MCT-244L	Signal Processing	2	1	2	3	
24	MCT-236 & MCT-236L	Embedded Systems- I	3	1	3	3	MCT-142L
25	IS-201/ HU-201	Islamic and Pak Studies –II/ Ethics and Pak Studies - II	3	0	3	0	
26	HU-003	International Language	0	0	0	0	
27	MA-234	Linear Algebra	3	0	3	0	
Total			14	3	14	9	
Semester Credits			17		23		
5th Semester Courses							
28	MCT-316 & MCT-316L	Hydraulics and Pneumatics	2	1	2	3	
29	MCT-306	Entrepreneurship-II	1	0	1	0	
30	MA-240 & MA-240L	Numerical Analysis	2	1	2	3	
31	MCT-336 & MCT-336L	Embedded Systems- II	2	1	2	3	MCT-236 & MCT-236L
32	MCT-331 & MCT-331L	Modeling and Simulation	3	1	3	3	MA-225
33	MCT-305	Probability and Statistics	3	0	3	0	
34	QT-301	Translation of The Holy Quran-III	1	0	1	0	
Total			14	4	14	12	
Semester Credits			18		26		
6th Semester Courses							
35	MCT-xxx	Elective I	2	1	2	3	
36	MCT-333 & MCT-333L	Control Systems – I	3	1	3	3	
37	MCT-335 & MCT-335L	Instrumentation and Measurements	2	1	2	3	
38	MCT-352 & MCT-352L	Robotics	3	1	3	3	MA-234
39	MCT-341L	Data Sciences and Analytics	0	1	0	3	MCT-142L
40	HU-221	Technical Writing & Presentation Skills	3	0	3	0	
Total			13	5	13	15	
Semester Credits			18		28		
7th Semester Courses							
41	MCT-406	Entrepreneurship-III	1	0	1	0	
42	MCT-403 & MCT-403L	Product Design	2	1	2	3	

43	MCT-434 & MCT-434L	Industrial Automation	2	1	2	3	
44	MCT-435	Control Systems – II	3	0	3	0	MCT-331 & MCT-331L
45	MCT-xxx	Elective II	2	1	2	3	
46	QT-401	Translation of The Holy Quran-IV	1	0	1	0	
47	MCT-498	Final Project- I	0	3	0	9	
Total			11	6	11	18	
Semester Credits			17		29		

8th Semester Courses

45	MCT-404	Professional Ethics	2	0	2	0	
46	MCT-499	Final Project- II	0	3	0	9	MCT-498
47	MCT-4xx	Elective III	2	1	2	3	
49	MGT-211	Principles of Management	3	0	3	0	
Total			7	4	7	12	
Semester Credits			11		19		
Total			97	38	97	114	
Total Credits			135		211		

List of Elective Subjects

E1	MCT-412 & MCT-412L	Condition Monitoring	2	1			
E2	MCT-415 & MCT-415L	Mechanical Vibrations	2	1			
E3	MCT-421 & MCT-421L	Digital Signal Processing	2	1			MCT-244
E4	MCT-422 & MCT-422L	Power Electronics	2	1			MCT-122
E5	MCT-432 & MCT-432L	Digital Control Systems	2	1			MCT-333
E6	MCT-433	Estimation and Filtering	3	0			MCT-333
E7	MCT-452 & MCT-452L	Intelligent Systems	2	1			MCT-142
E8	MCT-453 & MCT-453L	Machine Vision	2	1			MCT-243L
E9	MCT-454 & MCT-454L	Mobile Robotics	2	1			MCT-351
E10	MCT-455 & MCT-455L	Wearable Robotics	2	1			
E11	MCT-456 & MCT-456L	Internet of Things	2	1			
E12	MCT-457 & MCT-457L	Biomedical Devices	2	1			
E13	MCT-458 & MCT-458L	Human Centered Robotics	2	1			
E14	MCT-459 & MCT-459L	Aerial Robotics	2	1			
E15	MCT-461 & MCT-461L	Smart Electric Vehicles	2	1			
E16	MCT-491 & MCT-491L	Special Topics in Mechatronics	2	1			