

Semester wise plan for B.Sc. Mechatronics and Control Engineering (Session 2024 & Onwards)

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-102	Islamic Studies/Ethics for Non-Muslims	3	0	3	0	
5	ME-100L	Workshop Practice	0	1	0	3	
6	CSC-106 & CSC-106L	Application of Information and Communication Technology	2	1	2	3	
Total			12	5	12	15	
Semester Credits			17		27		
2nd Semester Courses							
7	MCT-142L	Computer Programming-I	0	2	0	6	
8	MA-225	Differential Equations and Transforms	3	0	3	0	
9	MCT-113 & MCT-113L	Manufacturing Processes	3	1	3	3	
10	MCT-117 & MCT-117L	Engineering Mechanics	3	1	3	3	
11	MCT-122 & MCT-122L	Electronic Devices and Circuits	3	1	3	3	
12	QT-101	Translation of Holy Quran-I	1	0	1	0	
Total			13	5	13	15	
Semester Credits			18		28		
3rd Semester Courses							
13	EE-204 & EE-204L	Electrical Machinery	2	1	2	3	
14	MCT-213 & MCT-213L	Mechanisms	2	1	2	3	
15	MCT-243L	Computer Programming II	0	2	0	6	MCT-142L
16	MA-129	Vector and Complex Analysis	3	0	3	0	
17	MCT-241 & MCT-241L	Digital Logic Design	3	1	3	3	
18	HU-111L	Communication Skills	0	1	0	3	
Total			10	6	10	18	
Semester Credits			16		28		
4th Semester Courses							
19	MCT-216 & MCT-216L	Machine Design and Elements	3	1	3	3	
20	MCT-244 & MCT-244L	Signal Processing	2	1	2	3	
21	MCT-236 & MCT-236L	Embedded Systems- I	3	1	3	3	MCT-142L
22	MA-234	Linear Algebra	3	0	3	0	
23	IS-202	Ideology and Constitution of Pakistan	3	0	3	0	
24	QT-201	Translation of Holy Quran-II	1	0	1	0	
Total			15	3	15	9	
Semester Credits			18		24		
5th Semester Courses							
25	MCT-316 & MCT-316L	Hydraulics and Pneumatics	2	1	2	3	
26	MCT-336 & MCT-336L	Embedded Systems- II	2	1	2	3	MCT-236 & MCT-236L
27	MCT-331 & MCT-331L	Modeling and Simulation	3	1	3	3	MA-225
28	MCT-343	Applied Probability and Statistics	3	0	3	0	
29	MCT-335 & MCT-335L	Instrumentation and Measurements	2	1	2	3	
30	MGT-318	Entrepreneurship and Management	2	0	2	0	
Total			14	4	14	12	
Semester Credits			18		26		
6th Semester Courses							
31	MCT-xxx	Elective I	2	1	2	3	
32	MCT-333 & MCT-333L	Control Systems – I	3	1	3	3	
33	MCT-307	Product Design	2	0	2	0	
34	MCT-352 & MCT-352L	Robotics	3	1	3	3	MA-234
35	MCT-341L	Data Sciences and Analytics	3	1	3	3	MCT-142L
36	QT-301	Translation of The Holy Quran-III	1	0	1	0	
37	MCT-309	Internship	0	0	0	0	
Total			14	4	14	12	
Semester Credits			18		26		
7th Semester Courses							
38	HU-221	Technical Writing & Presentation Skills	3	0	3	0	
39	MGT-xxx	Social Science Elective	2	0	2	0	
40	MCT-434 & MCT-434L	Industrial Automation	2	1	2	3	
41	MCT-435	Control Systems – II	3	0	3	0	MCT-331 & MCT-331L
42	MCT-xxx	Elective II	2	1	2	3	
43	MCT-498	Final Project- I	0	3	0	9	
Total			12	5	12	15	

Semester Credits	17	27
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8th Semester Courses

44	MGT-110	Social Responsibility	2	0	2	0	
45	MCT-400L	Occupational Health and Safety	0	1	0	3	
46	MCT-4xx	Elective III	3	0	3	0	
47	QT-401	Translation of The Holy Quran-IV	1	0	1	0	
48	MGT-320	Project Management in Engineering	2	0	2	0	
49	MCT-499	Final Project- II	0	3	0	9	MCT-498
Total			8	4	8	12	
Semester Credits			12		20		
Total			98	36	98	108	
Total Credits			134		206		

List of Elective Subjects

E1	MCT-416 & MCT-416L	Condition Monitoring	3	0	3	0	
E2	MCT-411	Mechanical Vibrations	3	0	3	0	
E3	MCT-421 & MCT-421L	Digital Signal Processing	2	1	2	3	MCT-244
E4	MCT-422 & MCT-422L	Power Electronics	2	1	2	3	MCT-122
E5	MCT-436	Digital Control Systems	3	0	3	0	MCT-333
E6	MCT-433 & MCT-433L	Estimation and Filtering	2	1	2	3	MCT-333
E7	MCT-452 & MCT-452L	Intelligent Systems	2	1	2	3	MCT-142
E8	MCT-453 & MCT-453L	Machine Vision	2	1	2	3	MCT-243L
E9	MCT-454 & MCT-454L	Mobile Robotics	2	1	2	3	MCT-351
E10	MCT-471	Wearable Robotics	3	0	3	0	
E11	MCT-456 & MCT-456L	Internet of Things	2	1	2	3	
E12	MCT-457 & MCT-457L	Biomedical Devices	2	1	2	3	
E13	MCT-472	Human Centered Robotics	3	0	3	0	
E14	MCT-473	Aerial Robotics	3	0	3	0	
E15	MCT-461 & MCT-461L	Smart Electric Vehicles	2	1	2	3	
E16	MCT-492	Special Topics in Mechatronics	3	0	3	0	

List of Social Science Elective Subjects

SCE1	MGT-103	Sociology for Engineering	2	0	2	0	
SCE2	MGT-104	World Today	2	0	2	0	
SCE3	MGT-105	Introduction to Economics	2	0	2	0	
SCE4	MGT-106	Economy of Pakistan	2	0	2	0	
SCE5	MGT-107	Business and Society	2	0	2	0	