

Structure of Bachelor of Mechatronics Engineering with Honours Programme

Year 1					
SEMESTER 1 (17.0 CH)					
No	Course Code	Course Title	17	Pre-requisite	Co-requisite
			CH		
1	EECE 1311	Electric Circuits	3		
2	MECH 1340	Engineering Mechanics	3		
3	MFGA 1201	Computer Aided Drawing	2		
4	EECE 1313	Programming for Engineers	3		
5	MATH 1310	Engineering Mathematics 1	3		
6	UNGS 1201	Sustainable Development Issues, Policies and Practices	2		
7	TQTD 1002	Tilawah Al-Qur'an I	0.5		
8	LQAD 1003	Arabic for <i>Ibadah</i> 1	0.5		
SEMESTER 2 (17.5 CH)					
No.	Course Code	Course Title	17.5	Pre-requisite	Co-requisite
			CH		
1	MCTA 1101	Mechatronics Workshop	1		
2	EECE 1102	Electrical Engineering Lab 1	1	EECE 1311	EECE 1312
3	EECE 1312	Electronics	3	EECE 1311	
4	MFGA 1141	Introduction to Workshop	1	MFGA 1201	
5	MCTA 1231	Fundamentals of Fluid Mechanics	2	MECH 1340	
6	MECH 1240	Thermal Science	2		
7	MATH 1321	Engineering Mathematics 2	3	MATH 1310	
8	UNGS 1301	Basic Philosophy and Islamic Worldview	3		
9	CCUB 1061	Usrah 1	0.5		
10	CCLM 2051	Leadership	0.5		
11	CCSS 1010/ 2010/3010	Skill 1	0.5		

Year 2					
SEMESTER 3 (17.5 CH)					
No	Course Code	Course Title	17.5	Pre-requisite	Co-requisite
			CH		
1	MCTA 2311	Electrical Machines	3	EECE 1311	
2	MCTA 2231	System Dynamics	2	MATH 1321	
3	MCTA 2332	Mechanisms and Machine Design	3	MECH 1340	
4	MCTA 2312	Digital Systems Design and Microprocessor	3	EECE 1312	
5	MATH 2311	Differential Equations	3	MATH 1310	
6	LEED 1301	English for Academic Writing	3		
7	TQTD 2002	Tilawah Al-Qur'an 2	0.5	TQTD 1002	
SEMESTER 4 (16.0 CH)					
No	Course Code	Course Title	16	Pre-requisite	Co-requisite
			CH		
1	MCTA 2102	Mechatronics Systems Lab	1	MCTA 1231 MECH 1240 MCTA 2332	
2	MCTA 2313	Power Electronics and Drives	3	EECE 1312 MCTA 2311	
3	MCTA 2314	Signal and System Analysis	3	MATH 2311 EECE 1312	
4	MCTA 2315	Instrumentation and Measurement	3	EECE 1312	
5	MATH 2330	Computational Methods and Statistics	3	MATH 1310	
6	UNGS 2290	Knowledge and Civilization in Islam	2	UNGS 1301	
7	CCUB 1062	Usrah 2	0.5	CCUB 1061	
8	CCSS 1010 /2010/3010	Skill 2	0.5		

Year 3					
SEMESTER 5 (18.0 CH)					
No	Course Code	Course Title	18	Pre- requisite	Co- requisite
			CH		
1	MCTA 3203	Mechatronics System Integration	2	MCTA 1101 MCTA 2312	
2	MCTA 3351	Control Systems 1	3	MCTA 2231	
3	MCTA 3331	Engineering Design and Reliability	3	MATH 2330	
4	MCTA 3352	Industrial Automation	3		
5	MCTA 3371	Computational Intelligence	3		
6	CCUB 2163	Usrah in Action 1 (SD: Community Profiling)	1	CCUB 1062	
7	UNGS 2380	Ethics and Fiqh of Contemporary Issues	3	UNGS 2290	
SEMESTER 6 (17.0 CH)					
No	Course Code	Course Title	17	Pre- requisite	Co- requisite
			CH		
1	MCTA 3104	Mechatronics Control and Automation Lab	1	MCTA 2315 MCTA 3351	
2	MFGA 2305	Project and Operations Management	3	MATH 1321	
3	MCTA 3353	Control Systems 2	3	MCTA 3351	
4	MCTA 3300	Integrated Design Project	3	MCTA 3203 MCTA 3331	MFGA 2305
5	MCTA 3332	Fundamentals of Robotics	3	MCTA 2231	
6	XXXX XXXX	Free Elective - 1	3		
7	CCUB 3164	Usrah in Action 2	1	CCUB 2163	

SHORT SEMESTER					
No.	Course Code	Course Title	5	Pre-requisite	Co-requisite
			CH		
1	MCTA 3500	Engineering Industrial Training	5	Minimum 90 credit hours completed	

Year 4					
SEMESTER 7 (15.5 CH)					
No	Course Code	Course Title	15.5	Pre-requisite	Co-requisite
			CH		
1	MCTA 4105	Mechatronics Robotics Lab	1	MCTA 3332	
2	MCTA 4200	Final Year Project 1	2	MCTA 3352	
3	MFGA 3309	Engineering Economics and Management	3	MFGA 2305	
4	GENE 4301	Engineering Ethics, Safety and Sustainability	3	UNGS 2380	
5	MCTA XXXX	Engineering Elective-1	3		
6	XXXX XXXX	Free Elective - 2	3		
7	LQAD 2003	Arabic for Ibadah 2	0.5	LQAD 1003	
SEMESTER 8 (15.5 CH)					
No	Course Code	Course Title	15.5	Pre-requisite	Co-requisite
			CH		
1	MCTA 4400	Final Year Project 2	4	MCTA 3500 MCTA 4200	
2	MCTA XXXX	Engineering Elective - 2	3		
3	MCTA XXXX	Engineering Elective - 3	3		
4	MCTA XXXX	Engineering Elective - 4	3		
5	MFGA 4210	Technology Entrepreneurship	2	MCTA 3300	
6	CCFM 2061	Family Management	0.5		

Engineering Elective Courses (Specialisation)

1. Specialisation: Control and Instrumentation

No	Course Code	Course Title	Pre- requisite	Co-requisite	CH
1	MCTA 4351	Electronic Instrumentation and Design			3
2	MCTA 4352	Industrial Instrumentation			3
3	MCTA 4353	Modern Control Design			3
4	MCTA 4354	System Modeling and Identification			3

2. Specialisation: Artificial Intelligence

No	Course Code	Course Title	Pre- requisite	Co-requisite	CH
1	MCTA 4361	Natural Language Processing			3
2	MCTA 4362	Machine Learning			3
3	MCTA 4363	Deep Learning			3
4	MCTA 4364	Machine Vision			3

3. Specialisation: Robotics and Automation

No	Course Code	Course Title	Pre- requisite	Co-requisite	CH
1	MCTA 4371	Autonomous Robotic Systems			3
2	MCTA 4372	Underwater and Aerial Robotics			3
3	MCTA 4373	Manufacturing Mechatronics			3
4	MCTA 4374	Smart Infrastructure			3

Engineering Elective Courses (General)

No	Course Code	Course Title	Pre- requisite	Co- requisite	CH
1	MCTA 4380	Special topics in Mechatronics			3
2	MCTA 4381	Electrical Power System Analysis			3
3	MCTA 4382	Microelectronics			3
4	MCTA 4383	Robotic Operating System			3
5	MCTA 4384	Thermal and Fluid Machineries			3
6	MCTA 4385	Biomechatronics			3
7	MCTA 4386	Random and Nonlinear Vibrations			3
8	MCTA 4387	Fluid Power Systems			3
9	MCTA 4388	Remote Sensing			3
10	MCTA 4389	Microelectromechanical Systems			3
11	MCTA 4391	Real Time Systems			3
12	MCTA 4392	Embedded Systems			3
13	MCTA 4393	Vibration Analysis and Control			3
14	MCTA 4394	Big Data Analytics			3
15	MCTA 4395	Industrial Robotics			3
16	MCTA 4396	Biomedical Instrumentation			3