

BACHELOR OF MECHATRONICS ENGINEERING WITH HONOURS

TYPE OF COURSES	CREDIT HOURS	ELEMENT
A. University Required Course (UNICORE)	20	UNGS, ENGLISH, BAHASA MELAYU, TILAWAH, USRAH, ARABIC LANGUAGE, CO CURRICULUM
B. Kulliyah Required Courses (KRC)	14	MATHS, ENTREP
C. Engineering Core Courses	87	ENGG, GENE, MANAGEMENT
D. Engineering Elective Courses	12	ENGINEERING ELECTIVE
E. Free Elective Courses	6	
TOTAL	139	

A. UNIVERSITY REQUIRED COURSES (UNICORE)

No.	Course Code	Course Title	Credit Hours	Pre-requisite	Requirement
1	CCUB 1061	Usrah 1	0.5		Year 1
2	CCUB 1062	Usrah 2	0.5	CCUB 1061	Year 2
3	CCUB 2163	Usrah in Action 1 (Community Profiling)	1.0	UNGS 1201	Year 3
4	CCUB 3164	Usrah in Action 2	1.0	CCUB 2163	Year 3
5	LEED 1301	English for Academic Writing	3.0		Year 2
6	*LMBD 1131	Bahasa Melayu 1 (Non-Malay Speakers)	1.0		(Required only for non- Malay speakers)
7	*LMBD 1132 / LM 2026	Bahasa Melayu 2 (Non-Malay Speakers)	1.0	LMBD 1131	(Required only for non-Malay speakers)
8	TQTD 1002	Tilawah Al- Quran 1	0.5		Year 1
9	TQTD 2002	Tilawah Al Quran 2	0.5	TQTD 1002	Year 2
10	UNGS 1201	Sustainable Development: Issues, Policies and Practices	2.0		Year 1
11	UNGS 1301	Basic Philosophy in Islamic Worldview	3.0		Year 1
12	UNGS 2290	Knowledge and Civilization in Islam	2.0	UNGS 1301	Year 2
13	UNGS 2380	Ethics and Fiqh of Contemporary Issues	3.0		Year 3
14	CCLM 2051	Leadership	0.5		Year 1
15	CCFM 2061	Family Management	0.5		Year 4
16	CCSS 1010/ 2010/3010	Skill 1	0.5		Year 1
17	CCSS 1010/ 2010/3010	Skill 2	0.5		Year 2

18	LQAD 1003	Arabic for <i>Ibadah</i> 1	0.5		Year 1
19	LQAD 2003	Arabic for <i>Ibadah</i> 2	0.5	LQAD 1003	Year 4

* **Credit Hours Not counted**

B. KULLIYAH REQUIRED COURSES (KRC)

No.	Course Code	Course Title	Credit Hours	Pre-requisite	Co-requisite	Requirement	Cross-listed Course
1	MATH 1310	Engineering Mathematics 1	3			Year 1	MATH 1310
2	MATH 1321	Engineering Mathematics 2	3	MATH 1310		Year 1	MATH 1320
3	MATH 2311	Differential Equations	3	MATH 1321		Year 2	MATH 2310
4	MATH 2330	Computational Methods and Statistics	3	MATH 2311		Year 2	MATH 2330
5	MFGA 4210	Technology Entrepreneurship	2	MCTA 3300		Year 4	MANU 4211

C. ENGINEERING CORE COURSES

No.	Course Code	Course Title	Credit Hours	Pre-requisite	Co-requisite	Requirement	Cross-listed Course
1	EECE 1311	Electric Circuits	3			Year 1	EECE 1311
2	MECH 1340	Engineering Mechanics	3			Year 1	
3	MFGA 1201	Computer Aided Drawing	2			Year 1	MANU 1201
4	EECE 1313	Programming for Engineers	3			Year 1	EECE 1313
5	MCTA 1101	Mechatronics Workshop	1			Year 1	MCTE 2101
6	EECE 1102	Electrical Engineering Lab 1	1	EECE 1311	EECE 1312	Year 1	EECE 1101
7	EECE 1312	Electronics	3	EECE 1311		Year 1	EECE 1312
8	MFGA 1141	Introduction to Workshop	1	MFGA 1201		Year 1	
9	MCTA 1231	Fundamentals of Fluid Mechanics	2	MECH 1340		Year 1	
10	MECH 1240	Thermal Science	2			Year 1	
11	MCTA 2311	Electrical Machines	3	EECE 1311		Year 2	MCTE 2331
12	MCTA 2231	System Dynamics	2	MATH 1321		Year 2	
13	MCTA 2332	Mechanisms and Machine Design	3	MECH 1340		Year 2	
14	MCTA 2312	Digital Systems Design and Microprocessor	3	EECE 1312		Year 2	MCTE 2332
15	MCTA 2102	Mechatronics Systems Lab	1	MCTA 1231, MECH 1240, MCTA 2332		Year 2	MCTE 2102
16	MCTA 2313	Power Electronics and Drives	3	EECE 1312, MCTA 2311		Year 2	MCTE 4334

17	MCTA 2314	Signal and System Analysis	3	MATH 1320, EECE 1312		Year 2	MCTE 2311
18	MCTA 2315	Instrumentation and Measurements	3	EECE 1312		Year 2	MCTE 2333
19	MCTA 3203	Mechatronics System Integration	2	MCTA 1101, MCTA 2312		Year 3	
20	MCTA 3351	Control Systems 1	3	MCTA 2231, MATH 2310		Year 3	MCTE 3312
21	MCTA 3331	Engineering Design and Reliability	3	MCTA 2102, MATH 2330		Year 3	MCTE 3271
22	MCTA 3352	Industrial Automation	3	MCTA 2315		Year 3	MCTE 3373
23	MCTA 3371	Computational Intelligence	3			Year 3	
24	MCTA 3104	Mechatronics Control and Automation Lab	1	MCTA 2315, MCTA 3351, MCTA 3352		Year 3	MCTE 3103
25	MFGA 2305	Project and Operations Management	3	MATH 1321		Year 3	MANU 3314
26	MCTA 3353	Control Systems 2	3	MCTA 3351		Year 3	MCTE 3313
27	MCTA 3300	Integrated Design Project	3	MCTA 3203, MCTA 3331	MFGA 2305	Year 3	MCTE 3300
28	MCTA 3332	Fundamentals of Robotics	3	MCTA 2231		Year 3	MCTE 4352
29	MCTA 3500	Engineering Industrial Training	5	MCTA 3104 and Minimum 90 credit hours completed		Year 3	EITR 3561
30	MCTA 4105	Mechatronics Robotics Lab	1	MCTA 3332		Year 4	
31	MCTA 4200	Final Year Project 1	2	MCTA 3300		Year 4	MCTE 4398
32	MFGA 3309	Engineering Economics and Management	3	MFGA 2305		Year 4	MANU 3318
33	GENE 4301	Engineering Ethics, Safety and Sustainability	3	UNGS 2380		Year 4	GENE 4300
34	MCTA 4400	Final Year Project 2	4	MCTA 3500, MCTA 4200		Year 4	MCTE 4399

D. ENGINEERING ELECTIVES COURSES

D.1 SPECIALISATION

“SPECIALISATION” WILL APPEAR ON STUDENT’S TRANSCRIPT IF ALL 4 COURSES ARE CHOSEN FROM THE CHOSEN SPECIALISATION)

1. Specialisation: Control and Instrumentation

No.	Course Code	Course Title	Credit Hours	Pre-requisite	Co-requisite	Requirement	Cross-listed Course
1	MCTA 4351	Electronic Instrumentation and Design	3				MCTE 4341
2	MCTA 4352	Industrial Instrumentation	3	MCTA 2315			
3	MCTA 4353	Modern Control Design	3	MCTA 3351			MCTE 4321
4	MCTA 4354	System Modeling and Identification	3	MCTA 3351			MCTE 4325

2. Specialisation: Artificial Intelligence

No.	Course Code	Course Title	Credit Hours	Pre-requisite	Co-requisite	Requirement	Cross-listed Course
1	MCTA 4361	Natural Language Processing	3				
2	MCTA 4362	Machine Learning	3	MATH 2331			
3	MCTA 4363	Deep Learning	3	MCTA 3371			
4	MCTA 4364	Machine Vision	3	MCTA 3371			MCTE 4323

3. Specialisation: Robotics and Automation

No.	Course Code	Course Title	Credit Hours	Pre-requisite	Co-requisite	Requirement	Cross-listed Course
1	MCTA 4371	Autonomous Robotic Systems	3				MCTE 4361
2	MCTA 4372	Underwater and Aerial Robotics	3				
3	MCTA 4373	Manufacturing Mechatronics	3				MCTE 4366
4	MCTA 4374	Smart Infrastructure	3				

D.2 GENERAL

STUDENTS WHO DO NOT WISH TO HAVE SPECIALISATION ARE ALLOWED TO TAKE ELECTIVE COURSES FROM THIS LIST OR COMBINE WITH ANY ELECTIVE COURSES FROM THE DIFFERENT SPECIALISATION IN D.1

List of Engineering Elective Course (General)

No.	Course Code	Course Title	Credit Hours	Pre-requisite	Co-requisite	Requirement	Cross-listed Course
1	MCTA 4380	Special topics in Mechatronics	3				
2	MCTA 4381	Electrical Power System Analysis	3				MCTE 4346
3	MCTA 4382	Microelectronics	3				MCTE 4347
4	MCTA 4383	Robotic Operating System	3				
5	MCTA 4384	Thermal and Fluid Machineries	3	MCTA 1231 MECH 1240			MCTE 4365
6	MCTA 4385	Biomechatronics	3				
7	MCTA 4386	Random and Nonlinear Vibrations	3				MCTE 4367
8	MCTA 4387	Fluid Power Systems	3				MCTE 4363
9	MCTA 4388	Remote Sensing	3				MCTE 4344
10	MCTA 4389	Microelectromechanical Systems	3				MCTE 4345
11	MCTA 4391	Real Time Systems	3				MCTE 4324
12	MCTA 4392	Embedded Systems	3				MCTE 4342
13	MCTA 4393	Vibration Analysis and Control	3				MCTE 4328
14	MCTA 4394	Big Data Analytics	3	MCTA 3371			
15	MCTA 4395	Industrial Robotics	3				MCTE 4364
16	MCTA 4396	Biomedical Instrumentation	3	MCTA 2315			MCTE 4343