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. Kulliyyah Required Courses (KRC)	14	MATHS, ENTREP
C. Engineering Core Courses	93	ENGG, GENE, MANAGEMENT
D. Engineering Elective Courses	6	TECHNICAL 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	1.0		(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	Ethic and Fiqh of Contemporary issues	3.0		Year 3
14	CCLM 2051	Leadership	0.5		Year 1
15	CCFM 2052	Famaly 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	Introduction to Arabic for Quranic Understanding 1	0.5		Year 1
19	LQAD 2003	Introduction to Arabic for Quranic Understanding 2	0.5	LQAD 1003	Year 4

*** Credit Hours Not counted**

B. KULLIYYAH REQUIRED COURSES (KRC)

No.	Course Code	Course Title	Credit Hours	Pre-requisite	Co-requisite	Requirement
1	MATH 1310	Engineering Mathematics 1	3.0			
2	MATH 1321	Engineering Mathematics 2	3.0	MATH 1310		
3	MATH 2311	Differential Equations	3.0	MATH 1321		
4	MATH 2330	Computational Methods and Statistics	3.0	MATH 2311		
5	MFGA 4210	Technology Entrepreneurship	2.0	MCTA 3300		

C. ENGINEERING CORE COURSES

No.	Course Code	Course Title	Credit Hours	Pre-requisite	Co-requisite	Requirement
1	EECE 1311	Electric Circuits	3			Year 1
2	MECH 1340	Engineering Mechanics	3			Year 1

3	MFGA 1201	Computer Aided Drawing	2			Year 1
4	EECE 1313	Programming for Engineers	3			Year 1
5	MCTA 1101	Mechatronics Workshop	1			Year 1
6	EECE 1102	Electrical and Electronic Engineering Lab 1	1	EECE 1311	EECE 1312	Year 1
7	EECE 1312	Electronics	3	EECE 1311		Year 1
8	MFGA 1141	Introduction to Workshop	1	MFGA 1201		Year 1
9	MECH 2440	Thermofluid Engineering	4	MECH 1340		Year 2
10	MCTA 2311	Electrical Machines	3	EECE 1311		Year 2
11	MCTA 2231	System Dynamics	2	MATH 1321		Year 2
12	MCTA 2332	Mechanisms and Machine Design	3	MECH 1340		Year 2
13	MCTA 2312	Digital Systems Design and Microprocessor	3	EECE 1312		Year 2
14	MCTA 2102	Mechatronics Systems Lab	1	MECH 2440 MCTA 2332		Year 2
15	MCTA 2313	Power Electroics and Drives	3	EECE 1312 MCTA 2311		Year 2
16	MCTA 2314	Signal and System Analysis	3	MATH 2311 EECE 1312		Year 2
17	MCTA 2315	Instrumentation and Measurement	3	EECE 1312		Year 2
18	MCTA 3203	Mechatronics System Integration	2	MCTA 1101 MCTA 2312		Year 3
19	MCTA 3351	Control Systems 1	3	MCTA 2231		Year 3
20	MCTA 3331	Integrated Design Project 1	3	MCTA 2102 MATH 2330		Year 3
21	MCTA 3352	Industrial Automation	3			Year 3

22	MCTA 3371	Computational Intelligence	3			Year 3
23	MCTA 3104	Mechatronics Control and Automation Lab	1	MCTA 2315 MCTA 3351 MCTA 3352		Year 3
24	MFGA 2305	Project and Operations Management	3	MATH 1321		Year 3
25	MCTA 3353	Control Systems 2	3	MCTA 3351		Year 3
26	MCTA 3300	Integrated Design Project 2	3	MCTA 3203 MCTA 3331	MFGA 2305	Year 3
27	MCTA 3332	Fundamentals of Robotics	3	MCTA 2332		Year 3
28	MCTA 3500	Engineering Industrial Training	5	MCTA 3104 and Minimum 90 credit hours completed		Year 3
29	MCTA 4105	Mechatronics Robotics Lab	1	MCTA 3203 MCTA 3332		Year 4
30	MCTA 4200	Final Year Project 1	2	MCTA 3300		Year 4
31	MFGA 3309	Engineering Economics and Management	3			Year 4
32	GENE 4301	Engineering Ethics, Safety and Sustainability	3			Year 4
33	MCTA XXXX	Technical Elective-1	3			Year 4
34	MCTA 4400	Final Year Project 2	4	MCTA 3500 MCTA 4200		Year 4
35	MCTA XXXX	Technical Elective - 2	3			Year 4
36	MCTA XXXX	Technical Elective -3	3			Year 4
37	MCTA XXXX	Technical Elective - 4	3			Year 4

D. ENGINEERING ELECTIVES COURSES (SPECIALISATION WILL APPEAR ON STUDENT'S TRANSCRIPT IF ALL 4 COURSES ARE CHOSEN FROM ANY OF THE 3 SPECIALISATIONS)

1. **Specialisation: Control and Instrumentation**

No.	Course Code	Course Title	Credit Hours	Pre-requisite	Co-requisite	Requirement
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 Modelling and Identification	3			

2. **Specialisation: Artificial Intelligence**

No.	Course Code	Course Title	Credit Hours	Pre-requisite	Co-requisite	Requirement
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: Artificial Intelligence**

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

Open Elective Courses

(Students who do not want to have specialisation are allowed to take Elective courses from this list or combine with elective courses from the technical elective courses under the different specialisations)

No.	Course Code	Course Title	Credit Hours	Pre-requisite	Co-requisite	Requirement
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 System Design	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			