

# BACHELOR OF MECHANICAL ENGINEERING WITH HONOURS

## CURRICULUM STRUCTURE

### SEMESTER 1 (16 CH)

No.	Course Code	Course Title	Cr Hrs	Pre-requisite	Co-requisite
1	MECH 1301	Statics	3		
2	MFGA 1201	Computer Aided Drawing	2		
3	EECE 1316	Fundamental of Electrical and Electronics	3		
4	MATH 1310	Engineering Mathematics 1	3		
5	UNGS 1201	Sustainable Development: Issues, Policies and Practices	2		
6	UNGS 1301	Basic Philosophy and Islamic Worldview	3		

### SEMESTER 2 (17 CH)

No.	Course Code	Course Title	Cr Hrs	Pre-requisite	Co-requisite
1	MECH 1302	Dynamics	3	MECH 1301	
2	EECE 1317	Engineering Programming	3		
3	MFGA 1141	Introduction to Workshop	1		
4	EECE 1102	Electrical Engineering Lab 1	1	EECE 1316	
5	MATH 1321	Engineering Mathematics 2	3	MATH 1310	
6	TQTD 1002	Tilawah Al-Quran 1	0.5		
7	LQAD 1003	Arabic for Ibadah 1	0.5		
8	UNGS 2290	Knowledge & Civilisation in Islam	2	UNGS 1301	
9	LEED 1301	English for Academic Writing	3		

### SEMESTER 3 (16.5 CH)

No.	Course Code	Course Title	Cr Hrs	Pre-requisite	Co-requisite
1	MECH 2100	Introduction to Mechanical Engineering	1		
2	MECH 2310	Thermodynamics	3		
3	MECH 2342	Mechanics of Materials	3	MECH 1301	
4	MATH 2311	Differential Equations	3	MATH 1321	
5	MECH 2241	Instrumentation and Measurement	3	EECE 1316	
6	MTRE 2381	Materials Science and Engineering	3	MFGA 1141	
7	CCUB 1061	Usrah 1	0.5		

**SEMESTER 4 (16.5 CH)**

No.	Course Code	Course Title	Cr Hrs	Pre-requisite	Co-requisite
1	MECH 2340	Fluid Mechanics	3	MATH 2311	
2	MECH 2312	Dynamics of Machinery	3	MECH 1302	
3	MFGA 2307	Manufacturing Processes	3	MFGA 1141	
4	MATH 2330	Computational Methods and Statistics	3	MATH 2311	
5	FREE XXXX	Free Elective 1	3		
6	TQTD 2002	Tilawah Al-Quran 2	0.5	TQTD 1002	
7	LQAD 2003	Arabic for Ibadah 2	0.5	LQAD 1003	
8	CCUB 1062	Usrah 2	0.5	CCUB 1061	

**SEMESTER 5 (17.5 CH)**

No.	Course Code	Course Title	Cr Hrs	Pre-requisite	Co-requisite
1	MECH 3310	Heat Transfer	3	MECH 2310 MECH 2340	
2	MECH 3111	Mechanical Engineering Lab 1	1	MECH 2312 MECH 2342	
3	MECH 3340	Control Systems	3	MATH 2330	
4	MECH 3312	Machine Design	3	MECH 2342	
5	MFGA 2305	Project and Operations Management	3	MATH 2330	
6	MFGA 3313	CAD/CAM/CAE	3	MFGA 1201	
7	CCSS 1010/2010	Skill 1	0.5		
8	CCLM 2051	Leadership	0.5		
9	CCFM 2061	Family Management	0.5		

**SEMESTER 6 (17.5 CH)**

No.	Course Code	Course Title	Cr Hrs	Pre-requisite	Co-requisite
1	MECH 3241	Introduction to IoT and Applications	2	MECH 2241	
2	MECH 3140	Engineering Design Ideation	1	3rd Year Standing	
3	MECH 43XX/ MFGA XXXX	Technical Elective 1	3		
4	MECH 3112	Mechanical Engineering Lab 2	1	MECH 2340, MECH 3310	
5	MECH 3311	Mechanical Vibration	3	MECH 2312	
6	MECH 3342	Computational Mechanics	3	MATH 2330	
7	MFGA 3309	Engineering Economics and Management	3	MFGA 2307	
8	CCSS 1010/2010	Skill 2	0.5		
9	CCUB 2163	Usrah in Action 1 (SD: Community Profiling)	1	CCUB 1062	

**SHORT SEMESTER (5 CH)**

No.	Course Code	Course Title	Cr Hrs	Pre-requisite	Co-requisite
1	MECH 3500	Engineering Industrial Training	5	90 CHs	

**SEMESTER 7 (18 CH)**

No.	Course Code	Course Title	Cr Hrs	Pre-requisite	Co-requisite
1	MECH 4200	Final Year Project 1	2	4th Year Standing	
2	MECH 4300	Integrated Design Project (IDP)	3	MECH 3140	
3	MECH 4129	Mechanical Engineering Lab 3	1	MECH 3340	
4	MECH 43XX/ MFGA XXXX	Technical Elective 2	3		
5	MECH 43XX/ MFGA XXXX	Technical Elective 3	3		
6	FREE XXXX	Free Elective 2	3		
7	UNGS 2380	Ethics and Fiqh of Contemporary Issues	3	UNGS 2290	

**SEMESTER 8 (16 CH)**

No.	Course Code	Course Title	Cr Hrs	Pre-requisite	Co-requisite
1	MECH 4400	Final Year Project 2	4	MECH 4200	
2	GENE 4301	Engineering Ethics, Safety and Environment	3	UNGS 2380	
3	MECH 43XX/ MFGA XXXX	Technical Elective 4	3		
4	MECH 43XX/ MFGA XXXX	Technical Elective 5	3		
5	MECH 4211	Technology Entrepreneurship	2	MFGA 3309 MECH 4300	
6	CCUB 3164	Usrah in Action 2	1	CCUB 2163	

**TECHNICAL ELECTIVE (AUTOMOTIVE)**

No.	Course Code	Course Title	Cr Hrs	Pre-requisite	Co-requisite
1	MECH 4331	Automotive Transmission System	3	MECH 2312	
2	MECH 4332	Vehicle Electrical and Electronics	3	MECH 2241	
3	MECH 4333	Hybrid and Electric Vehicle	3	MECH 3340	
4	MECH 4334	Vehicle Dynamics and Chassis System	3	MECH 2312	
5	MECH 4335	Vehicle Systems Design	3	MECH 2342	

<b>TECHNICAL ELECTIVE (MANUFACTURING)</b>					
<b>No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Cr Hrs</b>	<b>Pre-requisite</b>	<b>Co-requisite</b>
1	MFGA 3312	Quality Control and Improvement	3	MATH 2330	
2	MFGA 3311	Industrial Tools and Machines	3	MFGA 2307	
3	MFGA 4316	Production Planning and Control	3	MFGA 2305	
4	MFGA 4319	Agile Manufacturing Systems	3	MFGA 3309	
5	MFGA 3314	Additive Manufacturing	3	MFGA 2307	

<b>TECHNICAL ELECTIVE (ENERGY)</b>					
<b>No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Cr Hrs</b>	<b>Pre-requisite</b>	<b>Co-requisite</b>
1	MECH 4321	Building Energy Engineering	3	MECH 2310	
2	MECH 43xx	Energy Management System	3	MFGA 3309	
3	MECH 4323	Energy Conversion Technology	3	MECH 2310	
4	MECH 43xx	Energy and the Environment	3	MECH 2310	
5	MECH 4325	Oil and Gas Industries	3	MECH 2340	

<b>TECHNICAL ELECTIVE (GENERAL)</b>					
<b>No.</b>	<b>Course Code</b>	<b>Course Title</b>	<b>Cr Hrs</b>	<b>Pre-requisite</b>	<b>Co-requisite</b>
	<b>Compulsory</b>				
1	MECH 4311	Applied Thermodynamics	3	MECH 2310	
	<b>Elective</b>				
2	MECH 4331	Automotive Transmission System	3	MECH 2312	
3	MECH 4332	Vehicle Electrical and Electronics Systems	3	MECH 2241	
4	MECH 4333	Hybrid and Electric Vehicle	3	MECH 2241	
5	MECH 4334	Vehicle Dynamics and Chassis System	3	MECH 2312	
6	MFGA 3312	Quality Control and Improvement	3	MATH 2330	
7	MFGA 3311	Industrial Tools and Machines	3	MFGA 2307	
8	MFGA 4316	Production Planning and Control	3	MFGA 2305	
9	MFGA 3314	Additive Manufacturing	3	MFGA 2307	
10	MECH 4321	Building Energy Engineering	3	MECH 2310	
11	MECH 43xx	Energy Management System	3	MFGA 3309	
12	MECH 43xx	Energy and the Environment	3	MECH 2310	
13	MECH 4325	Oil and Gas Industries	3	MECH 2340	
14	MECH 4386	Non-destructive Evaluation Testing	3	MECH 2342	
15	MECH 4315	Tribology	3	MECH 2340	