

Programme Structure

Bachelor of Mechanical Engineering

Courses	Content	Credit Hours
University Courses	GIG1012: Philosophy and Current Issues* / GLT1017: Basic Malay Language**	2
	GIG1013: Appreciation of Ethics and Civilization	2
	GIG1003: Basic Entrepreneurship Enculturation	2
	GLTXXXX: English Communication Programme †	4
	University Elective Courses (Student Holistic Empowerment)	8
	Co-Curriculum	2
Sub-total Credit Hours		20
Faculty Courses	Faculty Core Courses	12
Sub-total Credit Hours		12
Department Courses	Department Core Courses	93
	Department Elective Courses	18
Sub-total Credit Hours		111
Total Credit Hours		143

* Compulsory for local students.

** Compulsory for international students.

† Students are required to complete the courses based on their English Proficiency qualification (MUET/IELTS/TOEFL), as stipulated in the respective PATH on page 33.

Academic Planner

Intake Session 2023/2024

YEAR 1						
CODE	COURSE	S1	S2	SS	TOTAL CREDIT	PRE-REQUISITE
UNIVERSITY COURSES						
GIG1012 / GLT1017	Philosophy And Current Issues* / Basic Malay Language**	2				
GLTXXXX	English Communication I	2				
GLTXXXX	English Communication II		2			
Sub-total Credit Hours		4	2		6	
FACULTY COURSES						
KIX1001	Engineering Mathematics 1	3				
KIX1002	Engineering Mathematics 2		3			
Sub-total Credit Hours		3	3		6	
DEPARTMENT CORE COURSES						
KIG1009	Statics	3				
KIG1010	Fluid Mechanics 1	3				
KIG1011	Engineering Materials 1	3				
KIG1012	Engineering Design And Modelling	3				
KIG1013	Engineering Thermodynamics 1		3			
KIG1014	Mechanics Of Materials 1		3			
KIG1015	Dynamics		3			
KIG1016	Machining And Manufacturing Processes		4			
Sub-total Credit Hours		12	13		25	
TOTAL CREDIT HOURS		19	18		37	

* Compulsory for local students.

** Compulsory for international students.

YEAR 2						
CODE	COURSE	S1	S2	SS	TOTAL CREDIT	PRE-REQUISITE
UNIVERSITY COURSES						
GIG1003	Basic Entrepreneurship Enculturation	2				
GIG1013	Appreciation Of Ethics And Civilisations		2			
Sub-total Credit Hours		2	2		4	
FACULTY COURSES						
KIX2006	Engineering Economics and Project Management		3			
Sub-total Credit Hours			3		3	
DEPARTMENT CORE COURSES						
KIG2012	Mechatronics 1	3				
KIG2013	Computer Programming	3				
KIG2014	Fluid Mechanics 2	3				
KIG2015	Mechanics Of Materials 2	3				
KIG2016	Product Design And Innovation	3				
KIG2017	Design Of Machine Elements		3			
KIG2018	Engineering Thermodynamics 2		3			
KIG2019	Numerical And Statistical Methods In Engineering		3			
KIG2020	Mechatronics 2		3			
Sub-total Credit Hours		15	12		27	
TOTAL CREDIT HOURS		17	17		34	

YEAR 3						
CODE	COURSE	S1	S2	SS	TOTAL CREDIT	PRE-REQUISITE
UNIVERSITY ELECTIVE COURSES (STUDENT HOLISTIC EMPOWERMENT)						
Cluster 1	Thinking Matters: Mind And Intellect	4				
Cluster 2	Emotional, Physical And Spiritual Intelligence: Heart, Body & Soul					
Cluster 3	Technology/Artificial Intelligence And Data Analytics: I-Techie					
Cluster 4	Global Issues and Community Sustainability: Making the World a Better Place					
Sub-total Credit Hours		4			4	
UNIVERSITY COURSES						
	Co-Curriculum		2			
Sub-Total Credit Hours			2		2	
FACULTY COURSES						
KIX2005	Law, Ethics and Sustainability for Engineers		3			
Sub-total Credit Hours			3		3	
DEPARTMENT CORE COURSES						
KIG3007	Integrated Design 1	3				
KIG3008	Instrumentation And Measurement Techniques	3				
KIG3009	Mechanical Vibrations	3				
KIG3010	Engineering Materials 2	3				
KIG3011	Integrated Design 2		3			
KIG3012	Control Engineering		3			
KIG3013	Heat Transfer		3			
KIG3014	Finite Element Analysis		3			
KIG3015	Industrial Training			5		
Sub-total Credit Hours		12	12	5	29	
TOTAL CREDIT HOURS		16	17	5	38	

YEAR 4						
CODE	COURSE	S1	S2	SS	TOTAL CREDIT	PRE-REQUISITE
UNIVERSITY ELECTIVE COURSES (STUDENT HOLISTIC EMPOWERMENT)						
Cluster 1	Thinking Matters: Mind And Intellect	2	2			
Cluster 2	Emotional, Physical And Spiritual Intelligence: Heart, Body & Soul					
Cluster 3	Technology/Artificial Intelligence And Data Analytics: I-Techie					
Cluster 4	Global Issues And Community Sustainability: Making The World A Better Place					
Sub-total Credit Hours		2	2		4	
DEPARTMENT CORE COURSES						
KIG4052	Materials Selection In Mechanical Design	3				
KIG4053	Production And Operations Management	3				
KIG4054	Final Year Project 1	3				
KIG4055	Final Year Project 2		3			
Sub-total Credit Hours		9	3		12	
DEPARTMENT ELECTIVE COURSES						
	Elective Course I	3				
	Elective Course II	3				
	Elective Course III		3			
	Elective Course IV		3			
	Elective Course V		3			
	Elective Course VI		3			
Sub-total Credit Hours		6	12		18	
TOTAL CREDIT HOURS		17	17		34	

Department Elective Courses

CODE	COURSE	CREDIT HOURS	PRE-REQUISITE
KIG4056	Tribology	3	
KIG4057	Machinery Vibration And Condition Monitoring	3	
KIG4058	Engineering Acoustics And Noise Control	3	
KIG4059	Internal Combustion Engine	3	
KIG4060	Heat Exchanger Equipments	3	
KIG4061	Pump Characteristics And Application	3	
KIG4062	Computational Fluid Dynamics	3	
KIG4063	Heating, Ventilation, Air Conditioning And Refrigeration	3	KIG2018, KIG3013
KIG4064	Human Factors Design	3	
KIG4065	Sustainable Design	3	
KIG4066	Rapid Manufacturing Technology	3	
KIG4067	Manufacturing Strategy	3	
KIG4068	Machine Learning	3	
KIG4069	Ceramic Engineering	3	
KIG4070	Constitutive Modeling Of Materials	3	
KIG4071	Electronic Packaging	3	
KIG4072	Failure Analysis And Prevention	3	
KIG4073	Metals And Alloys Engineering	3	
KIG4074	Nanomaterials	3	
KIG4075	Polymer And Rubber Engineering	3	
KIG4076	Semiconductor Manufacturing Process And Technology	3	

Co-curricular Courses

The list of co-curricular courses available is as follows:

CODE	COURSE
GKA1001	Attach@Industry
GKI1001	Independent Research
GKK1001	Community Services
GKP1001	Talent Development
GKS1001	Volunteerism
GPU1001	Entrepreneurship

Student Holistic Empowerment Courses

The Student Holistic Empowerment (SHE) courses are categorized into four (4) clusters:

CLUSTER	COURSE
CLUSTER 1:	Thinking Matters: Mind and Intellect
CLUSTER 2	Emotional, Physical and Spiritual Intelligence: Heart, Body & Soul
CLUSTER 3	Technology/Artificial Intelligence and Data Analytics: I-Techie
CLUSTER 4	Global Issues And Community Sustainability: Making The World A Better Place

Note:

ALL STUDENTS ARE REQUIRED TO REGISTER ONE (1) COURSE FROM EACH CLUSTER

The list of Co-Curricular and SHE courses offered for each semester could be found through the following link:

<https://citra.um.edu.my/list-of-university-courses>