

Programme Structure

Bachelor of Chemical 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	KIL XXXX: Department Core Courses	101
	KIL XXXX: Department Elective Courses	10
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 31.

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				
GIG1013	Appreciation of Ethics and Civilisations		2			
Sub-total Credit Hours		4	2		6	
UNIVERSITY ELECTIVE COURSES (STUDENT HOLISTIC EMPOWERMENT)						
Cluster 1 GBXXXXX	Thinking Matters: Mind and Intellect	2				
Cluster 2 GDXXXXX	Emotional, Physical And Spiritual Intelligence: Heart, Body & Soul					
Cluster 3 GFXXXXX	Technology/Artificial Intelligence And Data Analytics: I-Techie					
Cluster 4 GQXXXXX	Global Issues And Community Sustainability: Making The World A Better Place					
Sub-total Credit Hours		2			2	
FACULTY COURSES						
KIX1001	Engineering Mathematics 1	3				
KIX1002	Engineering Mathematics 2		3			
Sub-total Credit Hours		3	3		6	
DEPARTMENT CORE COURSES						
KIL1002	Chemical Process Principles I	3				
KIL1004	Engineering Drawing	2				
KIL1010	Physical And Analytical Chemistry	3				
KIL1001	Chemical Engineering Thermodynamics I		3			
KIL1005	Numerical Methods For Engineering		3			
KIL1006	Fluid Mechanics I		3			
KIL1009	Physical And Analytical Chemistry Laboratory		2			
KIL3001	Basic Material Science For Chemical Engineering		3			
Sub-total Credit Hours		8	14		22	
TOTAL CREDIT HOURS		17	19		36	

* Compulsory for local students.

** Compulsory for international students.

YEAR 2						
CODE	COURSE	S1	S2	SS	TOTAL CREDIT	PRE-REQUISITE
UNIVERSITY COURSES						
GLTXXXX	English Communication II	2				
GIG1003	Basic Entrepreneurship Enculturation	2				
Sub-total Credit Hours		4			4	
UNIVERSITY ELECTIVE COURSES (STUDENT HOLISTIC EMPOWERMENT)						
Cluster 1 GBXXXXX	Thinking Matters: Mind And Intellect		2			
Cluster 2 GDXXXXX	Emotional, Physical And Spiritual Intelligence: Heart, Body & Soul					
Cluster 3 GFXXXXX	Technology/Artificial Intelligence And Data Analytics: I-Techie					
Cluster 4 GQXXXXX	Global Issues And Community Sustainability: Making The World A Better Place					
Sub-total Credit Hours			2		2	
FACULTY COURSES						
KIX2006	Engineering Economics and Project Management		3			
Sub-total Credit Hours			3		3	
DEPARTMENT CORE COURSES						
KIL2001	Chemical Process Principles II	2				KIL1002
KIL2002	Organic Chemistry	2				
KIL2005	Chemical Engineering Thermodynamics II	3				KIL1001
KIL2006	Heat Transfer	3				
KIL2007	Mass Transfer	2				KIL1006
KIL2012	Chemical Engineering Computing	2				
KIL2004	Laboratory And Communications I		2			
KIL2008	Separation Processes I		3			KIL2005 KIL 1002
KIL2009	Reaction Engineering I		3			KIL1002
KIL2010	Biochemistry		3			
KIL2011	Applied Statistics For Engineering		3			
Sub-total Credit Hours		14	14		28	
TOTAL CREDIT HOURS		18	19		37	

YEAR 3						
CODE	COURSE	S1	S2	SS	TOTAL CREDIT	PRE-REQUISITE
FACULTY COURSES						
KIX2005	Law, Ethics and Sustainability for Engineers	3				
Sub-total Credit Hours		3			3	
DEPARTMENT CORE COURSES						
KIL3002	Fluid Mechanics II	2				KIL1006
KIL3003	Modelling Of Chemical Processes	2				KIL1005
KIL3006	Process Synthesis And Simulation	3				KIL2008
KIL3007	Separation Processes II	3				KIL2001
KIL3009	Laboratory And Communication II	2				KIL2004
KIL3013	Integrated Design Exercise	2				COMPLETE 50 CREDIT HOURS
KIL3004	Process Control		3			KIL3003
KIL3005	Particle Technology		3			
KIL3008	Process Safety And Loss Prevention		3			
KIL3011	Reaction Engineering II		2			KIL2009
KIL3014	Integrated Design		3			
KIL3015	Design Of Process Equipment		3			KIL2008
KIL3010	Industrial Training			5		
Sub-total Credit Hours		14	17	5	36	
TOTAL CREDIT HOURS		17	17	5	39	

YEAR 4						
CODE	COURSE	S1	S2	SS	TOTAL CREDIT	PRE-REQUISITE
UNIVERSITY COURSES						
GKXXXXX	Co-Curriculum		2			
Sub-total Credit Hours			2		2	
UNIVERSITY ELECTIVE COURSES (STUDENT HOLISTIC EMPOWERMENT)						
Cluster 1 GBXXXXX	Thinking Matters: Mind And Intellect	2	2			
Cluster 2 GDXXXXX	Emotional, Physical And Spiritual Intelligence: Heart, Body & Soul					
Cluster 3 GFXXXXX	Technology/Artificial Intelligence And Data Analytics: I-Techie					
Cluster 4 GQXXXXX	Global Issues And Community Sustainability: Making The World A Better Place					
Sub-total Credit Hours		2	2		4	
DEPARTMENT CORE COURSES						
KIL4002	Design Project	3	3			KIL3004,KIL3008, KIL2008, KIL3011
KIL4003	Research Project	3	3			KIL3009
KIL4018	Sustainable Development In Engineering	3				
Sub-total Credit Hours			2		2	
DEPARTMENT ELECTIVE COURSES						
KIL4XXX	ELECTIVE COURSE I	2				
KIL4XXX	ELECTIVE COURSE II	2				
KIL4XXX	ELECTIVE COURSE III	2				
KIL4XXX	ELECTIVE COURSE IV		2			
KIL4XXX	ELECTIVE COURSE V		2			
Sub-total Credit Hours		6	4		10	
TOTAL CREDIT HOURS		17	14		31	

Department Elective Courses

TYPE	CODE	COURSE NAME	CREDIT HOURS	PRE-REQUISITE
GENERAL	KIL4004	AIR POLLUTION FUNDAMENTAL	2	
	KIL4007	SOLID WASTE MANAGEMENT	2	
	KIL4008	WASTE WATER TREATMENT	2	
	KIL4010	PETROLEUM ENGINEERING	2	
	KIL4013	MEMBRANE TECHNOLOGY AND PROCESSES	2	
	KIL4022	NANOTECHNOLOGY FOR ENERGY CONVERSION AND STORAGE	2	
	KIL4023	TECHNOLOGY, GLOBALIZATION AND SUSTAINABLE DEVELOPMENT	2	KIL4018
	KIL4025	CURRENT TECHNOLOGIES IN OLEOCHEMICALS INDUSTRY	2	KIL2008
	KIL4027	NATURAL GAS ENGINEERING	2	
ADVANCE	KIL4005	PROCESS INTEGRATION	2	
	KIL4006	ADVANCED PROCESS CONTROL	2	KIL3004
	KIL4009	ADSORPTION IN POROUS SOLID	2	
	KIL4011	ADVANCED PROCESS SAFETY AND LOSS PREVENTION	2	KIL3008
	KIL4016	REACTION ENGINEERING FOR BIOREACTORS	2	KIL2010
	KIL4019	ADVANCED FLUIDIZATION ENGINEERING	2	KIL3005
	KIL4020	ADVANCED FUNCTIONAL MATERIALS	2	KIL3001
	KIL4021	CHEMICAL DECOMPOSITION PROCESSES	2	KIL2009
	KIL4024	OPTIMAL CONTROL	2	KIL3004
	KIL4026	MATERIALS CHARACTERIZATION	2	

NOTE :

- I) ALL STUDENTS ARE REQUIRED TO REGISTER FOR 2 GENERAL ELECTIVES AND 3 ADVANCE ELECTIVES IN THE PROGRAMME.
- II) IN ANY GIVEN SEMESTER, STUDENTS ARE ONLY ALLOWED TO REGISTER FOR A MAXIMUM OF 2 ADVANCE ELECTIVES AND 1 GENERAL ELECTIVE TO ENSURE SUFFICIENT SEATS FOR ALL STUDENTS.

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
GKU1001	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>