PROGRAMME STRUCTURE

BACHELOR OF CHEMICAL ENGINEERING

Courses	Content	Credit Hours
University Courses	GIG1012: Philosophy and Current Issues* / GLT1049: *Bahasa Melayu Komunikasi***	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	101
	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 30.

ACADEMIC PLANNER

INTAKE SESSION 2024/2025

	YEAR 1					
CODE	**COURSE**	**S1**	**S2**	**SS**	**TOTAL CREDIT**	**PRE-REQUISITE**
UNIVERSITY COURSES						
GIG1012 / GLT1049	Philosophy And Current Issues* / *Bahasa Melayu Komunikasi***	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					
Cluster 2 GDXXXXX	Emotional, Physical and Spiritual Intelligence: Heart, Body & Soul					
Cluster 3 GFXXXXX	Technology/Artificial Intelligence and Data Analytics: I-Techie	2				
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				
KIL2012	Chemical Engineering Computing	2				
KIL2004	Laboratory And Communications I		2			
KIL2008	Separation Processes I		3			
KIL2009	Reaction Engineering I		3			
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				
KIL3007	Separation Processes II	3				
KIL3009	Laboratory And Communication II	2				
KIL3013	Integrated Design Exercise	2				
KIL3004	Process Control		3			
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			
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			KIL3014
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	

UNIVERSITY COURSES

The list of university courses offered for each semester could be found through the following link:

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

A. Student Holistic Empowerment (SHE)

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

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

All students are required to register one (1) course from each cluster.

B. 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

PATH FOR ENGLISH COMMUNICATION PROGRAMME

ENGLISH COMMUNICATION PROGRAMME (UNIVERSITY COURSE) LIST OF COURSES TO BE COMPLETED BY ALL STUDENTS			
PATH 1	**PATH 2**	**PATH 3**	**PATH 4**
• **MUET BAND 2** • **IELTS Band 4.0** • **TOEFL Paper – Based Test (437 – 473)** • **TOEFL Computer – Based Test (123 – 150)** • **TOEFL Internet – Based Test (41 – 52)** • **PTE (Academic) – (10 – 28)**	• **MUET BAND 3** • **IELTS Band 4.5 – 5.0** • **TOEFL Paper – Based Test (477 – 510)** • **TOEFL Computer – Based Test (153 – 180)** • **TOEFL Internet – Based Test (53 – 64)** • **PTE (Academic) – (29 - 41)**	• **MUET BAND 4** • **IELTS Band 5.5 – 6.0** • **TOEFL Paper – Based Test (513 – 547)** • **TOEFL Computer – Based Test (183 – 210)** • **TOEFL Internet – Based Test (65- 78)** • **PTE (Academic) – (42 – 57)** • **FCE (B & C)** • **GCE A Level (English) (Minimum C)** • **IGCSE/GCSE (English) (A, B & C)**	• **MUET BAND 5 & BAND 6** • **IELTS Band 6.5 – 9.0** • **TOEFL Paper – Based Test (550 – 677)** • **TOEFL Computer – Based Test (213 – 300)** • **TOEFL Internet – Based Test (79 – 120)** • **PTE (Academic) (58 – 90)** • **FCE (A)** • **GCE A Level (English) (B & A)**
Students need to complete 2 courses (2 courses x 2 credits each) from this PATH	Students need to complete 2 courses (2 courses x 2 credits each) from this PATH	Students need to complete 2 courses (2 courses x 2 credits each) from this PATH	Students need to complete 2 courses (2 courses x 2 credits each) from this PATH
COMPULSORY GLT1018 – Proficiency in English I	**COMPULSORY** GLT1021 – Proficiency in English II	**COMPULSORY** GLT1024 – Proficiency in English III	**CHOOSE TWO:** • GLT1027 – Advanced Oral Communication* • GLT1028 – Advanced Business Writing* • Alternative courses - Foreign Language *Students can only register for one course per semester
** CHOOSE ONE: • GLT1019 – Let's Speak • GLT1020 – Fundamental Writing	**** CHOOSE ONE:** • GLT1022 – Speak Up • GLT1023 – Effective Workplace Writing	**** CHOOSE ONE:** • GLT1025 – Effective Oral Communication • GLT1026 – Writing at the Workplace	

** These courses have prerequisites and students can only register for them after obtaining a PASS in the compulsory course as stipulated in the respective PATH.

LIST OF FOREIGN LANGUAGE COURSES

Alternative Courses for Path 4

No.	Course Code	Course Name	Credit Hours
1	GLT1029	Bahasa Arab Asas 1 / *Basic Arabic Language 1*	2
2	GLT1030	Bahasa Arab Asas 2 / *Basic Arabic Language 2*	2
3	GLT1031	Bahasa Jepun Asas 1 / *Basic Japanese Language 1*	2
4	GLT1032	Bahasa Jepun Asas 2 / *Basic Japanese Language 2*	2
5	GLT1033	Bahasa Korea Asas 1 / *Basic Korean Language 1*	2
6	GLT1034	Bahasa Korea Asas 2 / *Basic Korean Language 2*	2
7	GLT1035	Bahasa Parsi Asas / *Basic Persian Language*	2
8	GLT1036	Bahasa Portugis Asas 1 / *Basic Portuguese Language 1*	2
9	GLT1037	Bahasa Portugis Asas 2 / *Basic Portuguese Language 2*	2
10	GLT1038	Bahasa Rusia Asas 1 / *Basic Russian Language 1*	2
11	GLT1039	Bahasa Rusia Asas 2 / *Basic Russian Language 2*	2
12	GLT1040	Bahasa Sepanyol Asas 1 / *Basic Spanish Language 1*	2
13	GLT1041	Bahasa Sepanyol Asas 2 / *Basic Spanish Language 2*	2
14	GLT1042	Bahasa Thai Asas 1 / *Basic Thai Language 1*	2
15	GLT1043	Bahasa Thai Asas 2 / *Basic Thai Language 2*	2
16	GLT1044	Bahasa Turki Asas / *Basic Turkish Language*	2