



B.App.Sc.(Hons.)

(Analytical Chemistry)
School of Chemical Sciences
2022/2023

MAIN ADMINISTRATIVE STAFF

DEAN



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DEPUTY DEANS



Assoc. Prof. Dr. Mohd Rizal Razali
(Academic, Career & International)



Assoc. Prof. Dr. Ng Eng Poh
(Research, Innovation & Industry-Community Engagement)

PROGRAMME MANAGERS



Dr. Ng Si Ling
(Physical Chemistry)



Assoc. Prof. Dr. Oo Chuan Wei
(Organic & Inorganic Chemistry)



Dr. Mardiana Saaid
(Analytical Chemistry)



Assoc. Prof. Dr. Noor Hana Hanif Abu Bakar
(Industrial Chemistry)

ADMINISTRATIVE OFFICERS



Mr. Muhamad Tarmizi Rahim
Deputy Registrar
(HR & Postgraduates)



Mr. Mohd Zuaril Akimi Mohd Shaari
Senior Assistant Registrar
(Academic)

B. App. Sc. (Hons.) (Analytical Chemistry)

PROGRAMME STRUCTURE

(i) Structure of Study Programme

Course Component	Unit Requirement B.App.Sc. (Hons.)
Core (T)	73
Elective (E) or Minor (M)	30
University (U)	17
Total	120

For Bachelor of Applied Science (Hons.) (Analytical Chemistry), students are allowed to choose between **two (2)** packages offered by the School of Chemical Sciences. **Package 1** is designed to allow the students to register for Industrial Training in the final semester (Semester 8) while **Package 2** is for the students who prefer to take Minor programme.

(ii) Industrial Training

Industrial Training (KIE461/9) is **compulsory** for all Bachelor of Applied Science (Hons.) (Industrial Chemistry) students. Students for Bachelor of Applied Science (Hons.) (Analytical Chemistry) are highly encouraged to take this course. This course can be taken after accumulating at least 95 units.

(iii) Chemistry Project

Students are encouraged to register for Chemistry Project (KUE319/6) during their third year of studies. This involves conducting research work for 2 semesters and submitting a Chemistry Project report.

Students who do not wish to register for the Chemistry Project (KUE319/6) may fulfil the 6 units requirement by registering for other Elective courses offered by the School.

(iv) Assessments

The cognitive, psychomotor and/or affective skills will be assessed in coursework (assignments, quizzes, test, presentations, laboratory reports and practical tests) and examination.

SCHOOL OF CHEMICAL SCIENCES

Course Code

Each course has a course code which is made up of 3 alphabets and 3 numbers.

A B C x y z

→ Course Serial Number

→ Course Level :

1 = Level 100 courses

2 = Level 200 courses

3 = Level 300 courses

4 = Level 400 courses

→ Type of Course :

T = Core courses

E = Elective courses

→ Course Categories:

A = Analytical Chemistry

T = Inorganic Chemistry

O = Organic Chemistry

F = Physical Chemistry

U = Practical/General

I = Industrial Chemistry

School/Centre :

K = School of Chemical Sciences

Z = School of Physics

B = School of Biological Sciences

M = School of Mathematical Sciences

L = School of Languages, Literacies & Translation

W = Centre for Co-Curricular Programme

Analytical Chemistry

LIST OF COURSES OFFERED

Package 1

B.App.Sc. (Hons.) – Applied Science (Analytical Chemistry)		
(i) Core Courses (T) - 73 units	Pre-requisites	
MAA101/4	Calculus for Science Students 1	
ZCT103/3	Physics III (Vibrations, Waves and Optics)	
MAA161/4	Statistics	
KUT100/2	Safety and Security for Chemical Sustainability	
KUT101/2	General Chemistry Practical I	
KUT102/2	General Chemistry Practical II	
KTT112/4	Inorganic Chemistry I	
KOT122/4	Organic Chemistry I	
KFT133/4	Physical Chemistry I	KTT112 (s) or KOT122 (s)
KAT145/4	Analytical Chemistry I	KTT112 (s) or KOT122 (s)
KUT206/2	Organic Chemistry Practical	KUT102 (s), KOT122 (s)
KTT212/3	Inorganic Chemistry II	KTT112 (s)
KOT222/3	Organic Chemistry II	KOT122 (s)
KFT231/3	Physical Chemistry II	KFT133 (s)
KUT306/2	Research Methodology in Chemistry	
KAT340/2	Analytical Practical II	
KAT344/4	Separation Methods	KAT145 (s)
KAT345/4	Spectroscopic Methods	KAT145 (s)
KAT346/4	Electroanalytical Methods	KAT145 (s)
KFT431/3	Physical Chemistry III	KFT231 (s)
KAT442/4	Environmental Pollution Chemistry	KAT344 (s), KAT345 (s)
KUE319/6	Chemistry Project	
or	or	
6 units	Other theory courses from Analytical, Industrial or Pure Chemistry	

(ii) Elective Courses (E) - 30 units

(a) Selection of 18 units or more

Pre-requisites

KIE461/9	Industrial Training	
KIT257/3	Materials Chemistry	
KTE411/3	Selected Topics in Inorganic Chemistry	KTT212 (s)
KOE423/3	Selected Topics in Organic Chemistry	KOT222 (s)
KFE441/3	Applied Surface Chemistry	KFT231 (s)
KAE445/3	Bioanalysis	KAT344 (s)
KIE456/3	Food and Palm Oil Chemistry	
KIE359/3	Green Chemistry and Technology	
KIT458/3	Chemical Processing	KTT112 (s), KOT122 (s)
KAE348/2	Analytical Chemistry Practical III	KAT345 (s)
KIT358/3	Polymer Chemistry	KOT122 (s)
KUT214/2	Physical Chemistry Practical	KUT102 (s), KFT 231 (c)
MAT181/4	Programming for Scientific Applications	

An additional **12 units or less** to fulfil the elective component must be taken from any other schools not limited to School of Physics, Mathematical Sciences, Biological Sciences, Industrial Technology, or Centre for Global Archaeological Research.

*All the courses offered are subjected to changes when the need arises.

(s) = sequential (Course must be taken earlier)

(c) = concurrent (Course must be taken concurrently)

Analytical Chemistry

LIST OF COURSES OFFERED

Package 2

B.App.Sc. (Hons.) – Applied Science (Analytical Chemistry)

(i) Core Courses (T) - 73 units		Pre-requisites
MAA101/4	Calculus for Science Students 1	
ZCT103/	Physics III (Vibrations, Waves and Optics)	
MAA161/4	Statistics	
KUT100/2	Safety and Security for Chemical Sustainability	
KUT101/2	General Chemistry Practical I	
KUT102/2	General Chemistry Practical II	
KTT112/4	Inorganic Chemistry I	
KOT122/4	Organic Chemistry I	
KFT133/4	Physical Chemistry I	KTT112 (s) or KOT122 (s)
KAT145/4	Analytical Chemistry I	KTT112 (s) or KOT122 (s)
KUT206/2	Organic Chemistry Practical	KUT102 (s), KOT122 (s)
KTT212/3	Inorganic Chemistry II	KTT112 (s)
KOT222/3	Organic Chemistry II	KOT122 (s)
KFT231/3	Physical Chemistry II	KFT133 (s)
KAT340/2	Analytical Practical II	
KAT344/4	Separation Methods	KAT145 (s)
KAT345/4	Spectroscopic Methods	KAT145 (s)
KAT346/4	Electroanalytical Methods	KAT145 (s)
KUT306/2	Research Methodology in Chemistry	
KFT431/3	Physical Chemistry III	KFT231 (s)
KAT442/4	Environmental Pollution Chemistry	KAT344 (s), KAT345 (s)
KUE319/6	Chemistry Project	
or	or	
6 units	Other theory courses from Analytical, Industrial or Pure Chemistry	

(iii) Minor (M) & Elective (E) Programmes – 30 credits

Elective (E) Components

Pre-requisites

(a) Selection of 10 units

MAT181/4	Programming for Scientific Applications	
KIT257/3	Materials Chemistry	
KUT214/2	Physical Chemistry Practical	KUT102 (s), KFT 231 (c)
KAE348/2	Analytical Chemistry Practical III	KAT345 (s)
KIT358/3	Polymer Chemistry	KOT122 (s)
KIE359/3	Green Chemistry and Technology	
KTE411/3	Selected Topics in Inorganic Chemistry	KTT212 (s)
KOE423/3	Selected Topics in Organic Chemistry	KOT222 (s)
KAE445/3	Bioanalysis	KAT344 (s)
KIE456/3	Food and Palm Oil Chemistry	
KIT458/3	Chemical Processing	KTT112 (s), KOT122 (s)

Minor (M) Components

(b) Selection of 20 units

Select from any minor programme. Please refer to the book of Minor Programme Guideline

All Minor Programmes offered by other Schools can be taken by students of School of Chemical Sciences, subject to the requirements imposed by the School which offers the Minor Programmes such as Management, Computer Science, Communication, Psychology, English or other Sciences

*All the courses offered are subjected to changes when the need arises.

(s) = sequential (Course must be taken earlier)

(c) = concurrent (Course must be taken concurrently)

Proposed Schedule by Semester

B.App.Sc. (Hons.) – Applied Science (Analytical Chemistry)

Package 1

YEAR 1					
COMPONENT	SEMESTER 1		SEMESTER 2		UNITS
	CODE	UNITS	CODE	UNITS	
University Courses (U)	WUS101	2	LKM 400	2	
Core Courses (T)	KTT112	4	KOT122	4	
	KUT102	2	KUT101	2	
	ZCT103	3	KUT100	2	
	MAA 101	4	KAT145	4	
Elective (E)					
TOTAL UNITS		15		14	29

YEAR 2					
COMPONENT	SEMESTER 3		SEMESTER 4		UNITS
	CODE	UNITS	CODE	UNITS	
University Courses (U)	*HFF225	2	*HFE224	2	
			U	2	
Core Courses (T)	KUT206	2	KTT212	3	
	KOT222	3	MAA161	4	
	KFT133	4			
Elective (E)	Elective	5	Elective	6	
TOTAL UNITS		16		17	33

Note: *HFF225/2 (Falsafah dan Isu Semasa) and HFE224/2 (Penghayatan Etika dan Peradaban)

YEAR 3					
COMPONENT	SEMESTER 5		SEMESTER 6		UNITS
	CODE	UNITS	CODE	UNITS	
University Courses (U)	LSP300	2	LSP402	2	
	KFT231	3	KAT345	4	
Core Courses (T)	KAT340	2	KAT346	4	
	KAT344	4	KUE319	3	
	KUT306	2			
Elective (E)	Elective	5	Elective	2	
TOTAL UNITS			18	15	33

YEAR 4					
COMPONENT	SEMESTER 7		SEMESTER 8		UNITS
	CODE	UNITS	CODE	UNITS	
University Courses (U)	U	3	KIE461 : Industrial Training for 1 Semester (18 weeks) in Industry/ Government Agency/ Private Company	9	
Core Courses (T)	KUE319	3			
	KFT431	3			
	KAT442	4			
Elective (E)	Elective	3			
TOTAL UNITS		16		9	25
GRAND TOTAL UNITS					120

Package 2

YEAR 1					
COMPONENT	SEMESTER 1		SEMESTER 2		UNITS
	CODE	UNITS	CODE	UNITS	
University Courses (U)	WUS101	2	LKM 400	2	
Core Courses (T)	KTT112	4	KOT122	4	
	KUT102	2	KUT101	2	
	MAA 101	4	KAT145	4	
	ZCT103	3	KUT100	2	
Elective (E) or Minor (M) Courses					
TOTAL UNITS		15		14	29

YEAR 2					
COMPONENT	SEMESTER 3		SEMESTER 4		UNITS
	CODE	UNITS	CODE	UNITS	
University Courses (U)	*HFF225	2	*HFE224	2	
Core Courses (T)	KUT206	2	KTT212	3	
	KOT222	3	MAA161	4	
	KFT133	4			
Elective (E) or Minor (M) Courses	Minor	4	Elective	4	
			Minor	4	
TOTAL UNITS		15		17	32

Note: *HFF225/2 (Falsafah dan Isu Semasa) and HFE224/2 (Penghayatan Etika dan Peradaban)

YEAR 3					
COMPONENT	SEMESTER 5		SEMESTER 6		UNITS
	CODE	UNITS	CODE	UNITS	
University Courses (U)	LSP300	2	LSP402	2	
Core Courses (T)	KFT231	3	KAT345	4	
	KAT340	2	KAT346	4	
	KAT344	4	KUE319	3	
	KUT306	2			
Elective (E) or Minor (M) Courses	Elective	2	Minor	4	
TOTAL UNITS		15		17	32

YEAR 4					
COMPONENT	SEMESTER 7		SEMESTER 8		UNITS
	CODE	UNITS	CODE	UNITS	
University Courses (U)	U	3	U	2	
Core Courses (T)	KUE319	3			
	KFT431	3			
	KAT442	4			
Elective (E) or Minor (M) Courses	Minor	4	Minor	4	
			Elective	4	
TOTAL UNITS		17		10	27
GRAND TOTAL UNITS					120

LANGUAGE REQUIREMENT:

ENGLISH LANGUAGE :

- All Bachelor's degree students must take four (4) units from the English Language courses and pass with a minimum Grade 'C' to fulfil the University requirement for graduation.
 - LSP300/2 : Academic English
 - LSP402/2 : Scientific and Medical English
- Students with MUET Bands 2 & 3 / IELTS 5.0 & 5.5 need to take LMT100/2 (Code Z) : Preparatory English.
 - Pass with minimum Grade 'C' in order to register for LSP300.
 - LMT100 is a pre-requisite course. The unit is not counted for graduation.

MALAY LANGUAGE :

- All Bachelor's degree students must take LKM400/2 – Malay Language IV and pass with minimum Grade 'C' to fulfil the University requirement for graduation.
- LKM400/2 is compulsory for local students.

Programme Educational Objectives:

In line with the mission of the School of Chemical Sciences, Bachelor of Applied Science (Honours) (Analytical Chemistry) offers high quality science education with the aim to produce:

PEO 1 : Analytical chemist who is able to apply the basic principles and practical skills of analytical chemistry based on conventional and modern chemical techniques.

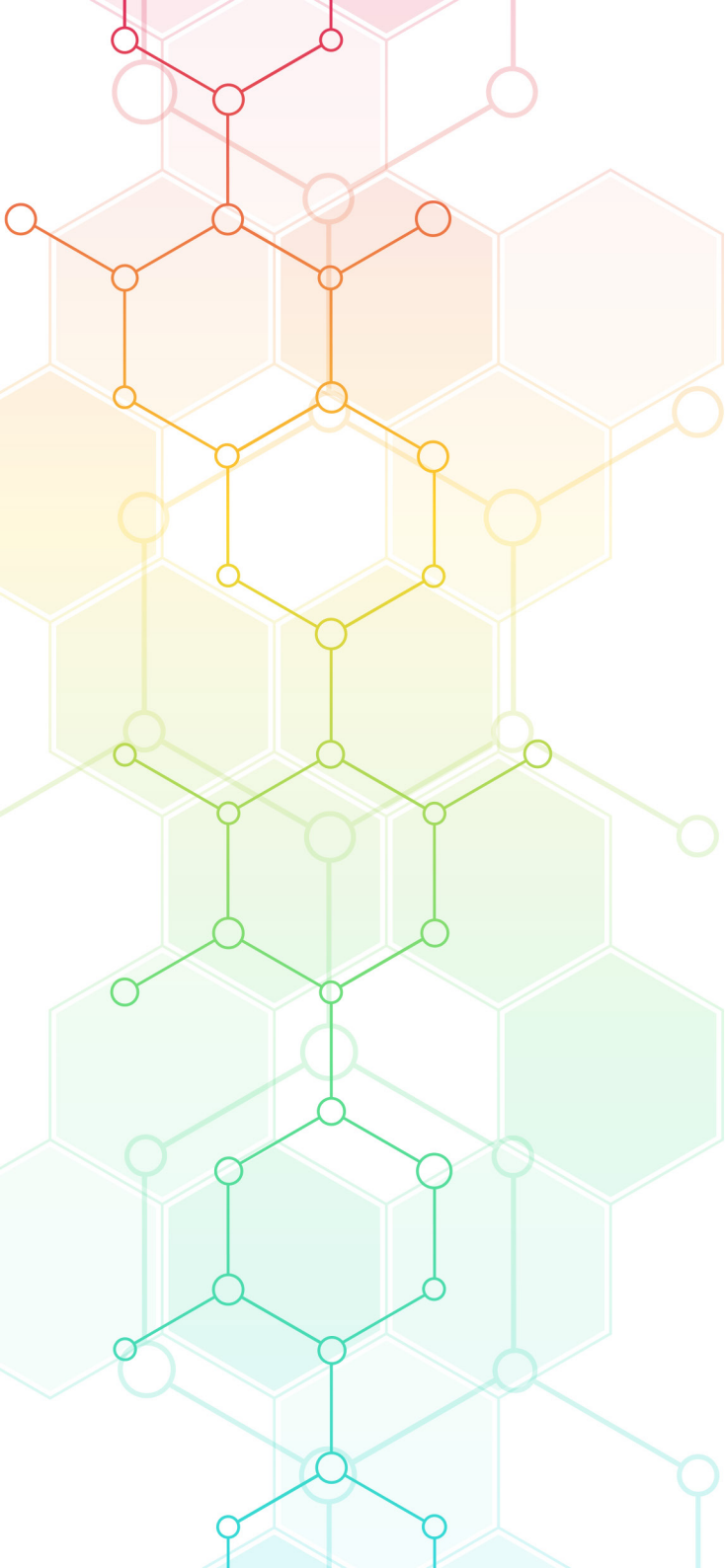
PEO 2 : Ethical, pure-hearted, resilient analytical chemist who voluntarily involve in the community.

PEO 3 : Analytical chemist who demonstrates leadership skills and communicates effectively in a team to solve chemistry-related problems.

PEO 4 : Analytical chemists who respond consistently to the latest analytical chemistry techniques and demonstrate management and entrepreneurial skills.

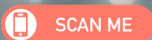
Program Learning Outcomes: Upon completion of this programme, students will be able to:

PLO 1	Knowledge (of the discipline)	Apply fundamental knowledge of chemistry to chemistry-related practices.
PLO 2	Practical Skills (of the discipline)	Perform safe handling of chemicals and proficient manipulation of laboratory apparatus and analytical instruments.
PLO 3	Cognitive Skills	Demonstrate critical thinking and provide practical solutions to chemistry-related issues by employing appropriate and relevant chemistry knowledge and skills.
PLO 4	Communication Skills	Demonstrate effective communication.
PLO 5	Interpersonal Skills	Lead and collaborate with diverse team members and demonstrate social responsibility for the well-being of society.
PLO 6	Ethics and Professionalism	Balance and uphold positive values, ethics and accountability in societal and professional engagement.
PLO 7	Personal Skills	Manage information and seek new knowledge and skills independently.
PLO 8	Entrepreneurial Skills	Display relevant and appropriate managerial and entrepreneurial skills.
PLO 9	Leadership, Autonomy and Responsibility	Demonstrate the ability to work effectively as a leader.
PLO 10	Digital Skills	Demonstrate the ability to use digital effectively.
PLO 11	Numeracy Skills	Demonstrate the ability to use numerical effectively





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