



USM

UNIVERSITI
SAINS
MALAYSIA



**Pusat
Pengajian**
Sains Kimia



Pusat Pengajian Sains Kimia
School of Chemical Sciences

School of Chemical Sciences Universiti Sains Malaysia

BACHELOR OF APPLIED SCIENCE IN ANALYTICAL CHEMISTRY WITH HONOURS

Academic Session 2026/2027

<http://chem.usm.my>



WE LEAD

Transforming Higher Education for a Sustainable Tomorrow

PERSONAL DETAILS

STUDENT INFORMATION:

FULL NAME	:	
STUDENT ID	:	
EMAIL ADDRESS	:	
MOBILE NUMBER	:	
ENTRY CGPA	:	
HOME ADDRESS	:	

EMERGENCY CONTACT:

FULL NAME	:	
MOBILE NUMBER	:	

ACADEMIC ADVISOR INFORMATION:

FULL NAME	:	
MOBILE NUMBER	:	
EMAIL	:	

Main Administrative Staff

DEAN



Assoc. Prof. Dr. Mohd. Ruzai Razali

DEPUTY DEANS

(Academic,
Career & International)



Dr. Ng Si Ling

(Research, Innovation & Industry
Community Engagement)



Prof. Dr. Mohamad Nasir
Muhammad Ibrahim

PROGRAMME MANAGERS

(Organic & Inorganic
Chemistry)



Dr. Yani Wan Sani

(Analytical Chemistry)



Assoc. Prof. Dr.
Mazidahulakman Miskam

(Physical Chemistry)



Assoc. Prof. Ts. Dr. Noor
Haida Mohd Kass

(Industrial Chemistry)



Assoc. Prof. Dr. Chao
Yung Shen

ADMINISTRATIVE OFFICERS

Principal Science Officer
(Technical & Laboratory)



Mrs. Nurul Afiqa Kuchiar

Principal Assistant Registrar
(Undergraduates)



Mrs. Renslene Razi Razalingam

Senior Assistant Registrar
(Postgraduates)



Mr. Mohd Zuzri Akimi Mohd Shari

PROGRAMME EDUCATIONAL OBJECTIVES:

- PEO 1 : Analytical chemists who are 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 chemists who voluntarily involve in the community.
- PEO 3 : Analytical chemists who demonstrate leadership skills and communicates effectively in a team to solve chemistry-related problems.
- PEO 4 : Analytical chemists who are competent in digital and numerical skills, and able to respond consistently to the latest analytical chemistry techniques and demonstrate management and entrepreneurial skills.

PROGRAMME LEARNING OUTCOMES:

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

PO1	Knowledge (of the discipline)	Apply theoretical, conceptual, and practical knowledge within the field of chemical sciences.
PO2	Cognitive Skills	Demonstrate scientific, critical, and creative thinking in identifying and solving chemistry-related problems by using appropriate and relevant chemical knowledge and skills toward effective contributions.
PO3	Practical Skills (of the discipline)	Handle chemicals safely and comply with laboratory equipment operating procedures under supervision within a research laboratory, as well as verifying findings.
PO4	Interpersonal Skills	Demonstrate social skills, leadership, and collaboration within a team, remain sensitive to community challenges and demonstrate social responsibility for the well-being of society.
PO5	Communication Skills	Present information and findings clearly and execute effective communication.
PO6	Digital Skills	Demonstrate the ability to use digital skills in creating effective work and assignments.
PO7	Numeracy Skills	Demonstrate the ability to use numeracy skills effectively in calculations involving chemical problems.
PO8	Leadership, Autonomy and Responsibility	Demonstrate the ability to work effectively as a leader.
PO9	Personal Skills	Demonstrate the ability to apply the skills and principles of lifelong learning in academic and career development.
PO10	Entrepreneurial Skills	Practice quality management systems and demonstrate relevant and appropriate entrepreneurial skills.
PO11	Ethics and Professionalism	Comply with safety requirements and regulations, legal and ethical principles, and professional codes of practice within research laboratories to balance and uphold positive values and accountability in professional and community engagement.

PROGRAMME STRUCTURE

(i) Structure of Study Programme

Course Component	Unit Requirements
Core (T)	73
Elective (E)	30
University (U)	17
Total	120

For Bachelor of Applied Science in Analytical Chemistry with Honours, 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 open elective courses.

(ii) Industrial Training

For Bachelor of Applied Science in Analytical Chemistry with Honours, students are highly encouraged to enrol Industrial Training (KIE461/9). This course can be taken after accumulating at least 111 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 credits requirement by registering for other theory courses offered by the School.

(iv) Assessment

Course assessment will be based on:

- Examination
- Coursework

The cognitive, psychomotor and/or affective skills will be assessed in coursework (such as assignments, quizzes, tests, 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

LIST OF COURSES OFFERED

Package 1

Bachelor of Applied Science in Analytical Chemistry with Honours		
(i) Core Courses (T) - 73 credits		Pre-requisites
MAA101/4	Calculus for Science Students 1	
ZCT103/3	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	
KT112/4	Inorganic Chemistry I	
KOT122/4	Organic Chemistry I	
KFT133/4	Physical Chemistry I	
KAT145/4	Analytical Chemistry I	
KUT206/2	Organic Chemistry Practical	KUT102 (s), KOT122 (s)
KT212/3	Inorganic Chemistry II	KT112 (s)
KOT222/3	Organic Chemistry II	KOT122 (s)
KFT234/3	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	KFT234 (s)
KAT442/4	Environmental Pollution Chemistry	KAT344 (s), KAT345 (s)
KUE319/6 or 6 credits	Chemistry Project or Other theory courses from Analytical, Industrial or Pure Chemistry	

(ii) Elective Courses (E) – 30 credits		
(a) Selection of 18 credits or more		Pre-requisites
MAT181/4	Programming for Scientific Applications	KUT102 (s), KFT234 (c)
KUT214/2	Physical Chemistry Practical	
KIT257/3	Materials Chemistry	
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)
KFE441/3	Applied Surface Chemistry	KFT234 (s)
KAE445/3	Bioanalysis	KAT344 (s) or KAT249 (s)
KIE456/3	Food and Palm Oil Chemistry	
KIT458/3	Chemical Processing	KTT112 (s), KOT122 (s)
KIE461/9	Industrial Training	
An additional 12 credits or less to fulfil the elective component must be taken from any other schools not limited to School of Physics, Mathematical Sciences, Biological Sciences, or Centre for Global Archaeological Research.		

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

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

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

Package 2

Bachelor of Applied Science in Analytical Chemistry with Honours		
(i) Core Courses (T) - 73 credits		Pre-requisites
MAA101/4	Calculus for Science Students 1	
ZCT103/3	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	
KAT145/4	Analytical Chemistry I	
KUT206/2	Organic Chemistry Practical	KUT102 (s), KOT122 (s)
KTT212/3	Inorganic Chemistry II	KTT112 (s)
KOT222/3	Organic Chemistry II	KOT122 (s)
KFT234/3	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	KFT234 (s)
KAT442/4	Environmental Pollution Chemistry	KAT344 (s), KAT345 (s)
KUE319/6 or 6 credits	Chemistry Project or Other theory courses from Analytical, Industrial or Pure Chemistry	

(iii) Elective (E) – 30 credits		
Elective (E) Components		Pre-requisites
(a) Selection of 10 credits		
MAT181/4	Programming for Scientific Applications	
KUT214/2	Physical Chemistry Practical	KUT102 (s), KFT 234 (c)
KIT257/3	Materials Chemistry	
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)
KFE441/3	Applied Surface Chemistry	KFT234 (s)
KAE445/3	Bioanalysis	KAT344 (s) or KAT249 (s)
KIE456/3	Food and Palm Oil Chemistry	
KIT458/3	Chemical Processing	KTT112 (s), KOT122 (s)
Open Elective		
(b) Selection of 20 credits		
Select from any offered programme.		
All open elective courses offered by other Schools can be taken by students of School of Chemical Sciences, subject to the requirements imposed by the respective School which offers Open Elective programme.		

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

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

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

BACHELOR OF APPLIED SCIENCE IN ANALYTICAL CHEMISTRY WITH HONOURS

Package 1

YEAR 1					
COMPONENT	SEMESTER 1		SEMESTER 2		CREDIT
	CODE	CREDIT	CODE	CREDIT	
University Courses (U)	¹ WUS101	2	³ WAR122	2	
	² SHE102	2	⁴ LKM400	2	
Core Courses (T)	KTT112	4	KOT122	4	
	KUT102	2	KUT101	2	
	MAA101	4	KAT145	4	
	ZCT103	3	KUT100	2	
TOTAL CREDIT		17		16	33

Note:¹ Local students– WUS101/2; International students– U course.

² Local students– SHE102/2; International students– SHE103E/2.

³ Local students– WAR122/2; International students– WAR123E/2.

⁴ Local students– LKM400/2; International students– LKM100/2

YEAR 2					
COMPONENT	SEMESTER 3		SEMESTER 4		CREDIT
	CODE	CREDIT	CODE	CREDIT	
University Courses (U)	U	1	⁶ HFF226	2	
Core Courses (T)	KUT206	2	KTT212	3	
	KOT222	3	MAA161	4	
	KFT133	4			
Elective (E)	Elective	3	Elective	3	
	Elective	2	Elective	3	
Prerequisite Courses (Z)	⁵ LSP201	2			
TOTAL CREDIT		15		15	30

Note: ⁵ If MUET is 3.5 & below/ TOEFL 40 & below/ IELTS 5.0 & below/ PTE 47 & below.

⁶ Local students– HFF226/2; International students– SHE104E/2.

YEAR 3					
COMPONENT	SEMESTER 5		SEMESTER 6		CREDIT
	CODE	CREDIT	CODE	CREDIT	
University Courses (U)	⁵ LSP301	2	U (ko-k)	2	
Core Courses (T)	KFT234	3	KAT345	4	
	KAT340	2	KAT346	4	
	KAT344	4	KUE319	3	
	KUT306	2			
Elective (E)	Elective	3	Elective	2	
	Elective	2			
TOTAL CREDIT		18		15	33

Note: ⁵ If MUET is 3.5 & below/ TOEFL 40 & below/ IELTS 5.0 & below/ PTE 47 & below.

YEAR 4					
COMPONENT	SEMESTER 7		SEMESTER 8		CREDIT
	CODE	CREDIT	CODE	CREDIT	
University Courses (U)	U	2			
Core Courses (T)	KUE319	3			
	KFT431	3			
	KAT442	4			
Elective (E)	Elective	3	KIE461: Industrial Training for 1 Semester (18 weeks) with Industry/ Government Agency/ Private Company	9	
TOTAL CREDIT		15			24
GRAND TOTAL CREDIT HOURS					120

BACHELOR OF APPLIED SCIENCE IN ANALYTICAL CHEMISTRY WITH HONOURS

Package 2

YEAR 1					
COMPONENT	SEMESTER 1		SEMESTER 2		CREDIT
	CODE	CREDIT	CODE	CREDIT	
University Courses (U)	¹ WUS101	2	³ WAR122	2	
	² SHE102	2	⁴ LKM400	2	
Core Courses (T)	KTT112	4	KOT122	4	
	KUT102	2	KUT101	2	
	MAA101	4	KAT145	4	
	ZCT103	3	KUT100	2	
TOTAL CREDIT		17		16	33

Note: ¹ Local students– WUS101/2; International students– U course.

² Local students– SHE102/2; International students– SHE103E/2.

³ Local students– WAR122/2; International students– WAR123E/2.

⁴ Local students– LKM400/2; International students– LKM100/2.

YEAR 2					
COMPONENT	SEMESTER 3		SEMESTER 4		CREDIT
	CODE	CREDIT	CODE	CREDIT	
University Courses (U)			⁶ HFF226	2	
Core Courses (T)	KUT206	2	KTT212	3	
	KOT222	3	MAA161	4	
	KFT133	4			
Elective (E)	Elective	4	Elective	4	
			Elective	4	
Prerequisite Courses (Z)	⁵ LSP201	2			
TOTAL CREDIT		13		17	30

Note: ⁵ If MUET is 3.5 & below/TOEFL 40 & below/IELTS 5.0 & below/PTE 47 & below.

⁶ Local students– HFF226/2; International students– SHE104E/2.

YEAR 3					
COMPONENT	SEMESTER 5		SEMESTER 6		CREDIT
	CODE	CREDIT	CODE	CREDIT	
University Courses (U)	⁵ LSP301	2	U (ko-k)	2	
Core Courses (T)	KFT234	3	KAT345	4	
	KAT340	2	KAT346	4	
	KAT344	4	KUE319	3	
	KUT306	2			
Elective (E)	Elective	3	Elective	3	
TOTAL CREDIT		16		16	32

Note: ⁵ If MUET is 3.5 & below/ TOEFL 40 & below/ IELTS 5.0 & below/ PTE 47 & below.

YEAR 4					
COMPONENT	SEMESTER 7		SEMESTER 8		CREDIT
	CODE	CREDIT	CODE	CREDIT	
University Courses (U)	U	1	U	2	
Core Courses (T)	KUE319	3			
	KFT431	3			
	KAT442	4			
Elective (E)	Elective	4	Elective	4	
			Elective	4	
TOTAL CREDIT		15		10	25
GRAND TOTAL CREDIT HOURS					120

UNIVERSITY COURSE REQUIREMENTS

Students are required to take 17 credits for the following University courses/options for University needs:

UNIVERSITY COURSE REQUIREMENTS		CREDIT TOTAL	
		Local Students	International Students
General Studies (MPU)			
U1	<u>Local Students</u> - HFF226 (Philosophy and Current Challenges) (2 credits) - SHE102 (Malaysian Nation -State Aspiration (2 credits) - WAR122 (Integrity and Anti-Corruption) (2 credits) <u>International Students of Science and Technology</u> - SHE103E (Malaysian Citra 1) (2 credits) - Malay Language course (2 credits) - WAR123E (Integrity and Anti-Corruption) (2 credits) <u>International Students of Arts</u> <i>(program with Malay Language as the medium of instruction)</i> - SHE103E (Malaysian Citra 1) (2 credits) - LKM100 (Malay Language I) (Z) - LKM200 (Malay Language II) (U) (2 credits) - WAR123E (Integrity and Anti-Corruption) (2 credits) <u>International Students of Arts</u> <i>(program with English Language as the medium of instruction)</i> - SHE103E (Malaysian Citra 1) (2 credits) - LKM100 (Malay Language I) (U) (2 credits) - WAR123E (Integrity and Anti-Corruption) (2 credits) <td>6</td> <td>6</td>	6	6
U2	<u>Local Students</u> - LKM400 (Malay Language IV) (2 credits) - English Language Course (2 credits)* <u>International Students</u> - English Language Course (2 credits)*	4	2
U3	<u>Local Students</u> - WUS101 (Core Entrepreneurship) (2 credits) <u>International Students</u> - SHE104E (Malaysian Citra 2) (2 credits)	2	2
U4	<u>Local Students</u> Co-Curricular Courses* <u>International Students</u> Co-Curricular Courses*	2	2
Options	Students can/have to choose any of the following: - Co-curricular courses - Skill courses/Foreign Language Courses/ Other courses offered by other schools	3	5
CREDIT TOTAL		17	17

OUR VISION

To realise the aspiration of Universiti Sains Malaysia in Transforming Higher Education for a Sustainable Tomorrow.

OUR MISSION

To produce chemistry graduates who are knowledgeable, highly skilled, well mannered and possess excellent work ethics suited for the requirements of the public and industrial sectors.

- To provide quality chemistry students with quality education.
- To instil awareness among chemistry students towards the welfare of society.
- To provide modern facilities for chemistry teaching and research.
- To attract excellent students from Malaysia and overseas to embrace chemistry at USM.

GRADE POINT AVERAGE SYSTEM (GPA)

GRADE	GRADE POINT
A	4.00
A-	3.67
B+	3.33
B	3.00
B-	2.67
C+	2.33
C	2.00
C-	1.67
D+	1.33
D	1.00
D-	0.67
F	0.00

PNG > 2.00: ACTIVE
CREDIT PER SEMESTER:

- Minimum : 9 Units
- Maximum : 20 Units

PNG < 1.99: P1, P2, FO

- Not allowed for e-registration
- P1: Maximum : 12 Units
- P2: Maximum : 10 Units

SCHOOL OF CHEMICAL SCIENCES, UNIVERSITI SAINS MALAYSIA

YEAR	1				2				3				4				TOTAL
SEMESTER	I	Unit	II	Unit	I	Unit	II	Unit	I	Unit	II	Unit	I	Unit	II	Unit	
CORE (T)																	
ELECTIVE (E)																	
UNIVERSITY (U)																	
PREREQUISITE COURSES (Z)																	
TOTAL																	
PNG																	
PNG-AT																	
PNGK																	
STUDENT'S SIGNATURE																	

YEAR 1	SEMESTER I	SEMESTER II
COMMENTS BY ACADEMIC ADVISOR		
ACADEMIC ADVISOR'S SIGNATURE		
STUDENT'S SIGNATURE		
DATE		

YEAR 2	SEMESTER I	SEMESTER II
COMMENTS BY ACADEMIC ADVISOR		
ACADEMIC ADVISOR'S SIGNATURE		
STUDENT'S SIGNATURE		
DATE		

YEAR 3	SEMESTER I	SEMESTER II
COMMENTS BY ACADEMIC ADVISOR		
ACADEMIC ADVISOR'S SIGNITURE		
STUDENT'S SIGNATURE		
DATE		

YEAR 4	SEMESTER I	SEMESTER II
COMMENTS BY ACADEMIC ADVISOR		
ACADEMIC ADVISOR'S SIGNITURE		
STUDENT'S SIGNATURE		
DATE		



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SCHOOL OF CHEMICAL SCIENCES

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