UNIVERSITI SAINS MALAYSIA

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

School of Chemical Sciences

MAIN ADMINISTRATIVE STAFF

DEAN

Prof. Dr. Afidah Abdul Rahim

DEPUTY DEANS

Prof. Dr. Rohana Adnan

Prof. Dr. Yeap Guan Yeow

PROGRAMME MANAGERS

Assoc. Prof. Dr. Ng Eng Poh
(Physical Chemistry)

Assoc. Prof. Dr. Melati Khairuddean
(Organic & Inorganic Chemistry)

Dr. Faiz Bukhari Mohd. Suah
(Analytical Chemistry)

Dr. Noor Hana Hanif Abu Bakar
(Industrial Chemistry)

ASSISTANT REGISTRARS

Mr. Subramaniam A/L Govindan
Principal Assistant Registrar
(HR & Postgraduates)

Ms. Fauziah Rastam
Senior Assistant Registrar
(Academic)

COURSE STRUCTURE

(i) Structure of Study Programme

Course Component	Credit Unit Requirement B.App.Sc. (Hons.)
Core **(T)**	72
Elective **(E)** or Elective **(E)** & Minor **(M)**	30
University **(U)**	18
Total	**120**

(ii) Industrial Training

Students are encouraged to apply for undergoing Industrial Training (KIE361/4) after the 6th semester.

(iii) Final Year Project

Students are encouraged to register for Chemistry Project (KUE409/6) during their final year of studies. This involves conducting research work for 2 semesters and submitting a Final Year Project Report.

Students who do not wish to register for the Chemistry Project (KUE409/6) may fulfill the 6 units requirement by registering other theory courses offered by the School.

(iv) Assessment

Course assessment will be based on:

(i) Examination
(ii) Course Work

The assessment will cover knowledge, applications, analytical and writing skills. Skills will be assessed through the course work in the form of assignments, quizzes, tests, presentations or laboratory reports.

LIST OF COURSES OFFERED

(a) B.App.Sc. (Hons.) (Analytical Chemistry)		
(i) Core Courses (T) - 72 units		**Pre-requisites**
MAA101/4	Calculus for Science Student 1	
MAA102/4	Calculus for Science Student 2	
ZCT103/3	Physics III (Vibrations, Waves and Optics)	
ZCT104/3	Physics IV (Modern Physics)	
KUT101/2	General Chemistry Practical I	
KUT102/2	General Chemistry Practical II	
KTT112/4	Inorganic Chemistry I	
KOT122/4	Organic 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)
KFT233/4	Physical Chemistry I	KTT112 (s) or KOT122 (s)
KAT245/4	Analytical Chemistry I	KTT112 (s) or KOT122 (s)
KFT332/3	Physical Chemistry II	KFT233 (s), KUT304 (c)
KAT340/2	Analytical Practical II	
KAT344/4	Separation Methods	KAT245 (s)
KAT345/4	Spectroscopic Methods	KAT245 (s)
KAT346/4	Electroanalytical Methods	KAT345 (s)
KFT431/3	Physical Chemistry III	KFT332 (s)
KAT442/4	Environmental Pollution Chemistry	KAT344 (s), KAT345 (s)
KUE409/6 or 6 units	Chemistry Project or Other theory courses from Analytical Chemistry, Industrial Chemistry or Pure Chemistry	

(ii) Elective Courses (E) - 30		
(a) Compulsory Components - 16 units		**Pre-requisites**
MAT181/4	Programming for Scientific Applications	
KUT304/2	Physical Chemistry Practical	KUT102 (s), KFT332 (c)
KUE306/2	Research Methodology in Chemistry	
KAE348/2	Analytical Chemistry Practical III	KAT345 (s) or KAT349 (s)
KIT358/3	Polymer Chemistry	KOT122 (s)
KAE445/3	Bioanalysis	KAT344 (s) or KAT349 (s)
(b) Selection of 14 units		
KIE361/4	Industrial Training	
Additional **10** or **14 units** to fulfill the elective component must be taken from Analytical Chemistry, Industrial Chemistry and other courses from the Schools of Physics, Mathematical Sciences, Biological Sciences, Industrial Technology and 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)

(iii) Minor (M) & Elective (E) Programmes – 30 units		
Elective (E) Components		**Pre-requisites**
(a) Selection of 10 units or more		
MAT181/4	Programming for Scientific Applications – (*Compulsory*)	
KIT257/3	Materials Chemistry	
KUT304/2	Physical Chemistry Practical – (*Compulsory*)	KUT102 (s), KFT332 (c)
KUE306/2	Research Methodology in Chemistry – (*Compulsory*)	
KIT358/3	Polymer Chemistry	KOT122 (s)
KAE348/2	Analytical Chemistry Practical III	KAT345 (s) or KAT349 (s)
KIE361/4	Industrial Training	
KAE445/3	Bioanalysis	KAT344 (s) or KAT349 (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 the Chemistry Students subject to the requirements imposed by the School which offers the Minor Programmes such as Management, Computer, 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.) (Analytical Chemistry)

YEAR 1					
COMPONENT	SEMESTER 1		SEMESTER 2		UNIT
	CODE	CREDIT HOURS	CODE	CREDIT HOURS	
University Courses (U)	WUS101	2	HTU223	2	
			LKM 400	2	
Core Courses (T)	KTT112	4	KAT245	4	
	KUT102	2	KUT101	2	
	KOT122	4	MAA102	4	
	MAA 101	4			
Elective (E) or Minor (M) Courses					
TOTAL CREDIT HOURS		16		14	30

YEAR 2					
COMPONENT	SEMESTER 3		SEMESTER 4		UNIT
	CODE	CREDIT HOURS	CODE	CREDIT HOURS	
University Courses (U)	SHE101	2	Refer to page 26 - 35	2	
Core Courses (T)	ZCT103	3	ZCT104	3	
	KUT206	2	KTT212	3	
	KOT222	3	KAT345	4	
	KFT233	4			
Elective (E) or Minor (M) Courses	Elective/ Minor	2	MAT181	4	
TOTAL CREDIT HOURS		16		16	32

YEAR 3					
COMPONENT	SEMESTER 5		SEMESTER 6		UNIT
	CODE	CREDIT HOURS	CODE	CREDIT HOURS	
University Courses (U)	LSP300	2			
	Refer to page 26 - 35	2			
Core Courses (T)	KFT332	3	KAT346	4	
	KAT340	2			
	KAT344	4			
Elective (E) or Minor (M) Courses	KUT304	2	KUE306	2	
			KAE348/ Minor	2	
			KIT358/ Minor	3	
			Elective/ Minor	4	
TOTAL CREDIT HOURS		15		15	30

YEAR 4					
COMPONENT	SEMESTER 7		SEMESTER 8		UNIT
	CODE	CREDIT HOURS	CODE	CREDIT HOURS	
University Courses (U)	Refer to page 26 - 35	2	LSP402	2	
Core Courses (T)	KUE409	3	KUE409	3	
	KFT431	3	KAT442	4	
Elective (E) or Minor (M) Courses	KIE361/ Elective/ Minor	4	KAE445/ Minor	3	
			Elective/ Minor	4	
TOTAL CREDIT HOURS		12		16	28
GRAND TOTAL CREDIT HOURS					120

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

PLO1	**Knowledge (of the discipline)**	• Apply the analytical chemistry principles appropriate to address chemistry related problems.
PLO2	**Practical Skills (of the discipline)**	• Able to perform laboratory techniques and use modern instrumentations safely and record the results accurately.
PLO3	**Social Skills and Responsibilities**	• Demonstrate interpersonal and social skills and integrate voluntarily with the society.
PLO4	**Values, Attitudes and Professionalism**	• Demonstrate professionalism and good ethics in their field of works.
PLO5	**Communication, Leadership and Teamwork Skills**	• Demonstrate the ability to work efficiently in team and execute the task responsibly in interpreting data and communicate the results of their works to chemists and non-chemists.
PLO6	**Problem Solving and Scientific Skills**	• Identify, analyse and solve problems in analytical chemistry using systematic methods.
PLO7	**Information Management and Life-long Learning Skills**	• Demonstrate the ability to update, maintain and enhance knowledge in analytical chemistry through life-long learning.
PLO8	**Managerial & Entrepreneurial Skills**	• Apply basic knowledge and principles of managerial and entrepreneurial related to analytical sciences.

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