UNIVERSITI SAINS MALAYSIA

Pusat Pengajian Sains Kimia
School of Chemical Sciences
Since 1969

POSTGRADUATE STUDIES
SCHOOL OF CHEMICAL SCIENCES

ACADEMIC SESSION 2025/2026

MIXED-MODE

VISION, MISSION, OBJECTIVES & INTRODUCTION

VISION

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

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 education and chemistry students.
- 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.

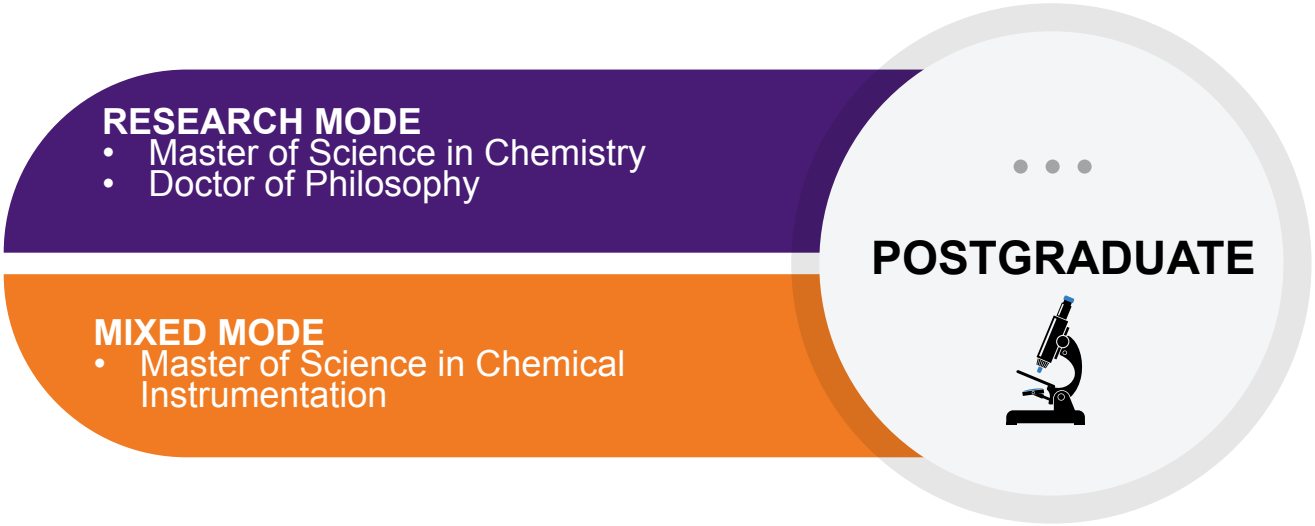
OBJECTIVES

- To provide a broad, balanced and in-depth education in chemistry and related areas at the undergraduate and postgraduate levels.
- To develop students into graduates with theoretical and practical knowledge and the ability to apply knowledge to employment or further studies in chemistry or other related postgraduate programmes.
- To develop students with various skills including practical, social, communication, leadership and entrepreneurship skills.
- To develop students' ability to assess and solve problems critically, logically and creatively.

INTRODUCTION

The School of Chemical Sciences (SCS), established in 1969, is one of the pioneering schools of USM. With an academic staff of more than 30 and over 30 supporting staff, the School has been entrusted to provide professional training in chemistry to meet the demands of academics, industries and society.

PROGRAMMES OFFERED



POSTGRADUATE STUDIES

Students who are interested to pursue postgraduate studies can choose any of the following programmes:

(a) Full-time or part-time programme leading to degrees in Master of Science (MSc.) and Doctor of Philosophy (PhD) by research.

(b) Full-time or part-time mixed mode programme (a combination of coursework and research) leading to a Master of Science (MSc.) degree.

SPECIALISATION

The School has given priority to create a healthy research environment with a total of over 150 postgraduate students engaging in various areas of research including natural products, organic and inorganic syntheses, nanoscience, electrochemistry, liquid crystals, organometallics, environmental chemistry, materials chemistry and chemical education. Our academic staff have been well endowed with research grants and funding from government bodies and industries to support these research activities.

ADMINISTRATOR

DEAN

Assoc. Prof. Dr.
Mohd Rizal Razali

DEPUTY DEANS

Academic, Career & International

Dr. Ng Si Ling

Research, Innovation & Industry-Community Engagement

Prof. Dr. Mohamad Nasir Mohamad Ibrahim

PROGRAMME MANAGERS

Organic & Inorganic Chemistry

Dr. Yam Wan Sinn

Physical Chemistry

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

Analytical Chemistry

Assoc. Prof. Dr. Mazidatulakmam Miskam

Industrial Chemistry

Prof. Dr. Mohd Hazwan Hussin

ADMINISTRATIVE OFFICERS

Senior Assistant Registrar

Mrs. Rasslene Rass Rasalingam

Senior Assistant Registrar

Mr. Mohd Zuaril Akimi Mohd Shaari

POSTGRADUATE SECTION

AMINISTRATIVE ASSISTANT (PhD by Research)

Mrs. Roziana Mohamed Idros

ADMINISTRATIVE ASSISTANT (MSc-Mixed Mode & Research)

Mr. Muhammad Nidhzam Abd. Razak

EXTENSION

TOP ADMINISTRATION	EXTENSION	E-MAIL
DEAN		
Assoc. Prof. Dr. Mohd Rizal Razali	3818 / 3262	mohd.rizal@usm.my
DEPUTY DEANS		
Academic, Career & International		
Dr. Ng Si Ling	3913 / 3576	slng@usm.my
Research, Innovation & Industrial-Community Engagement		
Prof. Dr. Mohamad Nasir Mohamad Ibrahim	4049 / 3576	mnm@usm.my
PROGRAMME MANAGERS **Organic and Inorganic Chemistry**		
Dr. Yam Wan Sinn	6017	wansinn@usm.my
Industrial Chemistry		
Prof. Dr. Mohd. Hazwan Hussin	6378	mhh@usm.my
Physical Chemistry		
Assoc. Prof. Ts Dr. Noor Haida Mohd Kaus	3598	noorhaida@usm.my
Analytical Chemistry		
Assoc. Prof. Dr. Mazidatulakmam Miskam	3569	mazidatul@usm.my
ASSISTANT REGISTRARS		
Senior Assistant Registrar		
Mr. Mohd Zuaril Akimi Mohd Shaari	3541	mzakimi@usm.my
Senior Assistant Registrar		
Mrs. Rasslene Rass Rasalingam	3540	rasslene@usm.my

EXTENSION

ACADEMIC STAFF	TELEPHONE EXTENSION	E-MAIL
PROFESSORS		
Rohana Adnan, PhD	3549	r_adnan@usm.my
Mohamad Nasir Mohamad Ibrahim, PhD	3554	mnm@usm.my
Mohd Hazwan Hussin, PhD	6378	mhh@usm.my
ASSOCIATE PROFESSORS		
Chua Yong Shen, PhD	4022	yschua@usm.my
Faiz Bukhari Mohd Suah, PhD	3686	fsuah@usm.my
Lee Hooi Ling, PhD	3547	hllee@usm.my
Mazidatulakmam Miskam, PhD	3561	mazidatul@usm.my
Mohamad Nurul Azmi Mohamad Taib, PhD	3562	mnazmi@usm.my
Mohammad Anwar Mohamed Iqbal, PhD	3565	anwariqbal@usm.my
Mohd. Rizal Razali, PhD	6021	mohd.rizal@usm.my
Ng Eng Poh, PhD	3550	epng@usm.my
Noor Haida Mohd Kaus, PhD	3598	noorhaida@usm.my
Noor Hana Hanif Abu Bakar, PhD	6022	hana_hanif@usm.my
Oo Chuan Wei, PhD	3680	oocw@usm.my
Oh Wen Da, PhD	3548	ohwenda@usm.my
SENIOR LECTURERS		
Abdul Qaiyum Ramle, PhD	3558	qaiyum@usm.my
Ahmad Faiz Abdul Latip, PhD	3546	afaiz@usm.my
Anis Natasha Shafawi, PhD	3578	anisshafawi@usm.my
Farhatun Najat Maluin, PhD	3563	farhatunnajat@usm.my
Khalid Umar, PhD	3567	khalidumar@usm.my
Lim Gin Keat, PhD	4028	limgk@usm.my
Mardiana Saaid, PhD	3569	mardiana@usm.my
Mohd Ridhwan Adam, PhD	5146	mohd.ridhwan@usm.my
Muhammad Bisyrul Hafi Othman, PhD	4032	bisyrul@usm.my
Ng Si Ling, PhD	6013	slng@usm.my
Norazzizi Nordin, PhD	4030	azzizi@usm.my

EXTENSION

SENIOR LECTURERS	TELEPHONE EXTENSION	E-MAIL
Norfatirah Muhamad Sarih, PhD	4026	fatirahsarih@usm.my
Nur Farhana Jaafar, PhD	3566	nurfarhana@usm.my
Nurul Yani Rahim, PhD	4043	nurulyanirahim@usm.my
P. Bothi Raja, PhD	6015	bothiraja@usm.my
Siti Fatimah Nur Abdul Aziz, PhD	4027	fatimahnuraa@usm.my
Wan Nazwanie Wan Abdullah, PhD	3091	wanazwanie@usm.my
Wong Yong Foo, PhD	4031	wongyongfoo@usm.my
Yam Wan Sinn, PhD	6017	wansinn@usm.my
Yeoh Kar Kheng, PhD	5179	kkyeoh@usm.my
Zubair Ahmed, PhD	4042	zubairahmed025@usm.my

TECHNICAL STAFF

PRINCIPAL SCIENCE OFFICERS

Nurul Arlita Kushiar	4058	arlita@usm.my

SENIOR SCIENCE OFFICERS

Alia Syazana Roslan	5148	aliasyazana@usm.my
Nor Hasniza Zulkepli	2690	hasninazulkepli@usm.my
Nur Ainina Abdollah	6251	aininaabdollah@usm.my

SENIOR ASSISTANT SCIENCE OFFICERS

Analytical Chemistry

Mohd Zamri Rosidi	5176	zamri5083@usm.my

Organic Chemistry

Wan Zulilawati Wan Zulkipli	3865	wanzulilawati@usm.my

Physical Chemistry

Ami Mardiana Othman	5177	amimardiana@usm.my

EXTENSION

SENIOR ASSISTANT SCIENCE OFFICERS	EXTENSION	E-MAIL
Analytical Services and Testing Laboratory (MUPA)		
Megat Hasnul Zamani Ismail	4493	mzhasnul@usm.my
Analytical Chemistry		
Sujayendran Rajagopal	6019	sujayendran@usm.my
Norhayati Abdul Kadir	4041	rozeyanti@usm.my
Muhammad Fauzan Mat Puzi	2060	mfauzanmp@usm.my
Industrial Chemistry		
Mohd Nazri Saed	4037	mnazri_saed@usm.my
Muhamad Nazri Muhammad Isa	5975	m_nazri@usm.my
Organic Chemistry		
Nur Asma Ismail	3574	asma_isma@usm.my
Sobri Aziz	5023	azsobri@usm.my
Inorganic Chemistry		
Azhar Ramli@Harun	3577	azharramli@usm.my
Razly Effendy Khalid@Khalib	3579	razly@usm.my
Physical Chemistry		
Sivaraj Panirselvam	3573	sivaraj@usm.my
Mohd Fahmi Mohd Yusoff	4033	mohdfahmi@usm.my
Mohd Noor Zakaria	3545	mohdnoorz@usm.my

EXTENSION

SUPPORT / TECHNICAL STAFF

Electronic Workshop

Azhari Abdul Aziz	3544	azhari@usm.my

Glass Blowing Workshop / Store

Mohd Nazeef Ahmad	2690 / 3542	mohdnazeef@usm.my

ADMINISTRATIVE STAFF

Senior Administrative Assistant

Kausalya Ramanei	3851	kausi@usm.my

Dean Secretary

Nurul Izzati Md Rashid	3262	nurul_izzati@usm.my

Deputy Dean Secretary

Siti Nor Aishah Abdul Rashid	3576	snaar@usm.my

Administrative Assistants

Ahmad Iqram Hakim Ahmad Tarmizi	3973	iqram@usm.my
Faezah Harun	3543	faezahharun@usm.my
Muhammad Nidhzam Abd. Razak	5455	nidhzam@usm.my
Nur Syakirah Othman	3593	syakirah_othman@usm.my
Nursyazwani Samsul Kamal	3570	sksyazwani@usm.my
Roziana Mohamed Idros	5459	roziana_idros@usm.my
Siti Hajar Abd Malik	4955	hajar_malik@usm.my

Office Assistant

Idzhar Ahmat	3543	idzhar@usm.my

FACILITIES

The School is well equipped with teaching and research laboratories. Existing analytical and characterisation instruments include NMR, ICP-OES, GCMS, LCMS (TOF), TGA/DSC, GPC, TOC and CHN analyser, HPLC, GC, FTIR, FTIR with microscope, UV-Vis, solid state UV-Vis, AAS and fluorescence spectrophotometers, electrochemical systems and nitrogen porosimeter, POM, microwave digester and synthesiser, and other supporting equipments. The School is also equipped with electronics and glass-blowing workshops.

The expertise and facilities available in the School of Chemical Sciences are always tapped by the industries and government agencies in solving their problems. In line with the desire to improve the consultancy services offered by the School, the School of Chemical Sciences has taken a proactive step by setting up an Analytical Services and Testing Laboratory (MUPA) in year 2000 to offer more effective services for the industrial sectors.

INDUSTRY/COMMUNITY ADVISORY PANEL (ICAP) 2025-2026

The creation of Industry/Community Advisory Panels (ICAP) within individual schools and centres of USM is in compliance with the university's overall efforts towards building a lighter working framework with industry, companies and the community. These ICAPs are considered timely and useful for enhancing institutional competitiveness. These panels comprise of selected academic staff, senior executives from the private sector and well-respected leaders from the community.

The ICAP meetings served as forums to discuss issues on curriculum, training solutions for coordinating industry/community expectations and relevance, best practices to be adopted, and practical approaches to address these contemporary issues and other areas of concern to all parties.

The ICAP panel members of the School of Chemical Sciences for year 2025-2026 are:

No	NAME	POSITION & INDUSTRY
1	Dato' Muhtar Hashim	Executive Director, Chemical Industries Council of Malaysia (CICM), Kuala Lumpur.
2	Mr. Mohd Dzahir Jamudin	Executive Chairman, Ekahala Resources Sdn Bhd, Selangor.
3	Dr. Yoga Sugama Salim	Consultant, MATCOR Technology & Services, Singapore.
4	ChM. Dr. Kah Fai Chan	Assistant General Manager, Polymer Research Centre, Texchem Polymers Sdn. Bhd.
5	ChM. Ts. Dr. Muhammad Zamir Othman	Director, SugarBomb Worldwide Sdn. Bhd., Selangor.

MASTER OF SCIENCE IN CHEMICAL INSTRUMENTATION - MIXED MODE PROGRAMME

This programme was first introduced in the 2001/2002 academic session. It offers courses on various chemical instrumentations involving atomic spectroscopy, molecular spectroscopy, surface and thermal analysis, separation methods and environmental pollution and monitoring techniques. These courses will discuss the basic principles of various techniques and include hands-on operation of various instrumentations involved. The topics related to quality systems, intellectual property and research methodology are also offered as core courses. The candidate will undertake a short research project and submit a dissertation based on the project.

ADMISSION REQUIREMENTS

All applications for MSc. who possess a B.Sc. degree in Chemistry or related field from a recognised university; **AND**

i. Equivalent CGPA at least 2.75/4.00; **OR**

ii. CGPA 2.50-2.74/4.00 with

- One (1) year of research experience; **OR**
- One (1) year of professional experience in related field;

OR

- One (1) academic publication in related field; OR
- Grade B for core / elective courses; OR
- Grade B+ for undergraduate final year project; OR

iii. CGPA 2.00-2.49/4.00 (Bachelor degree with honours) with

- Five (5) years of research experience; OR
- Five (5) years of professional experience in related field;

AND

- One (1) academic publication in related field; **OR**
- Grade B for core / elective courses; **OR**
- Grade B+ for undergraduate final year project

Note: *Students of other disciplines with chemistry background should take one (1) to two (2) theory courses if it is deemed necessary by the Postgraduate Study and Research Committee.*

MASTER OF SCIENCE IN CHEMICAL INSTRUMENTATION - MIXED MODE PROGRAMME

Language Requirement

Results must be attached with the application form.

Applicable for International Applicants only

- A minimum score of 40 in Internet-based TOEFL (Test of English as a Foreign Language); **OR**
- A minimum score of 7.5 in TOEFL Essentials (online) (Test of English as a Foreign Language); **OR**
- A minimum of Band 5.0 in IELTS (International English Language Testing System); **OR**
- A minimum score of 154 in Cambridge English: B1/B2/C1/C2/Linguaskill Online **OR**
- A minimum score of 47 in Pearson Test of English (PTE); **OR**
- A minimum of Band 3.5 in MUET (Malaysian University English Test)

Exemption can be given if:

- English is the candidate's mother tongue or national language; **OR**
- The candidate graduated from an Institution of Higher Learning in which the medium of instruction is English.

Duration

Full-time:	Part-time:
Minimum 3 semesters (including 1 short semester (KSCP)): 1 year	Minimum 5 semesters (including 1 short semester (KSCP)): 2 years
Maximum 5 semesters (including 1 short semester (KSCP)): 2 years	Maximum 9 semesters (including 1 short semester (KSCP)): 4 years

Fees:

Malaysian (MYR)	International (USD)
• Registration Fee: 340.00 • Tuition Fee: 450.00 × 40 units = 18,000.00 • Convocation Fee: 200.00	• Registration Fee: 227.50 • Personal Bond: 1000.00 • Tuition Fee: 190.00 × 40 units = 7,600.00 • Convocation Fee: 50.00

MASTER OF SCIENCE IN CHEMICAL INSTRUMENTATION - MIXED MODE PROGRAMME

Course Structure

Total Unit for Graduation – 40 units	
Core Courses (Compulsory) – 24 units	
1. KAA509/20	Dissertation
2. KAA510/2	Quality Systems and Intellectual Property
3. KAA511/2	Research Methodology
Elective Courses – Choose 16 units	
1. KAA502/4	Atomic Spectroscopy
2. KAA503/4	Molecular Spectroscopy
3. KAA504/4	Electrochemical Methods
4. KAA505/4	Separation Methods
5. KAA507/4	Surface and Thermal Analysis

Graduation Requirements

i. Pass Dissertation.

ii. Pass the relevant courses (20 units) with minimum grade C+.

iii. Minimum overall CGPA - 3.00.

iv. All foreign students are required to register & pass LKM111 Malaysian Culture and Malay Language with minimum grade of C.

v. Fulfill minimum period of candidature.

Upon graduation, the Master in Chemical Instrumentation graduates can consider pursuing the following programmes:

- PhD (Research Mode) in USM.

- Co-Tutelle programme between USM and UL. Under this programme
  - The research will be conducted in Malaysia and France.
  - A double PhD degree is awarded by both institutions upon the completion of the programme.
  - The examination committee is comprised of French and Malaysian experts.

- Dual PhD programme between USM and National Tsing Hua University (NTHU), Taiwan. Under this programme
  - The research will be conducted in Malaysia and Taiwan.
  - A double PhD degree is awarded by both institutions upon the completion of the programme.
  - The examination committee is comprised of Malaysian and Taiwanese experts.

MASTER OF SCIENCE IN CHEMICAL INSTRUMENTATION - MIXED MODE PROGRAMME

FULL-TIME STUDENTS:

SEMESTER 1 - COURSES OFFERED

Course Codes	Courses Offered	Core/Elective Courses
KAA502/4	Atomic Spectroscopy	Elective course
KAA503/4	Molecular Spectroscopy	Elective course
KAA507/4	Surface and Thermal Analysis	Elective course
KAA510/2	Quality Systems and Intellectual Property	Core course
KAA511/2	Research Methodology	Core course

SEMESTER 2 - COURSES OFFERED

Course Codes	Courses Offered	Core/Elective Courses
KAA504/4	Electrochemical Methods	Elective course
KAA505/4	Separation Methods	Elective course
KAA509/20	Dissertation	Core course

PART-TIME STUDENTS*:

SEMESTER 1 - COURSES OFFERED

Course Codes	Courses Offered	Core/Elective Courses
KAA502/4	Atomic Spectroscopy	Elective course
KAA503/4	Molecular Spectroscopy	Elective course
KAA507/4	Surface and Thermal Analysis	Elective course
KAA510/2	Quality Systems and Intellectual Property	Core course
KAA511/2	Research Methodology	Core course

*Minimum one (1) course registered

SEMESTER 2 & 3 - COURSES OFFERED

Course Code	Courses Offered	Core/Elective Courses
KAA504/4	Electrochemical Methods	Elective course
KAA505/4	Separation Methods	Elective course
KAA509/20	Dissertation	Core course

*Minimum one (1) course registered

MASTER OF SCIENCE IN CHEMICAL INSTRUMENTATION - MIXED MODE PROGRAMME

SYNOPSIS OF COURSES OFFERED

COURSES	SYNOPSIS
KAA502/4	**ATOMIC SPECTROSCOPY** This course discusses the fundamental principles, instrumentation, and their applications in qualitative and quantitative analyses involving various techniques of atomic spectroscopy.
KAA503/4	**MOLECULAR SPECTROSCOPY** This course deals with molecular spectroscopic techniques to elucidate molecular structures. Basic principles, instrumentations, techniques and applications of nuclear magnetic resonance, ultraviolet-visible and infrared spectroscopies and mass spectrometry are also discussed in terms of molecular structural determination.
KAA504/4	**ELECTROCHEMICAL METHODS** This course gives an overview of electrode processes, potential and current sweep and scanning methods. In addition, the applications of polarisation, electrochemical impedance, and other advanced electrochemical methods in research and industry are also discussed.
KAA505/4	**SEPARATION METHODS** This course discusses various methods and issues in sample preparation. Developments in recent separation methods such as gas chromatography, high-performance liquid chromatography and capillary electrophoresis are also discussed.
KAA507/4	**SURFACE AND THERMAL ANALYSIS** This course discusses the techniques of thermal and surface analyses focusing on solid samples to assist scientists and engineers in selecting the appropriate techniques to obtain the information on surface morphology, chemical composition, interplaner spacing, size and element distributions, porosity and surface adsorption properties. In thermal analysis, thermogravimetry, differential thermal analysis, differential scanning calorimetry, thermomechanical and dynamic mechanical techniques are also discussed.
KAA509/20	**DISSERTATION** Research project on various chemistry topics.
KAA510/2	**QUALITY SYSTEMS AND INTELLECTUAL PROPERTY** The course covers quality systems emphasising on analytical laboratory management based on ISO which includes sampling system, equipment selection and consumables. Discussion focuses on types and sampling framework, preservation and storage of samples besides equipment selection, grade and handling of chemicals. It also includes intellectual property management and its role towards innovation and commercialisation.
KAA511/2	**RESEARCH METHODOLOGY** This course covers research proposal elaborating on key elements of research methodology like problem statement, objectives, philosophy and scientific method. Emphasis is also given on the important courses in scientific writing starting from introduction to strategies of writing good quality proposal. Ethics and technical aspect in research and journal publication is also emphasised.

MASTER OF SCIENCE IN CHEMICAL INSTRUMENTATION - MIXED MODE PROGRAMME

Programme Educational Objectives (PEO)

Master of Science in Chemical Instrumentations (Mixed Mode) programme offers high quality science education with the aim to produce chemists and professionals that are:

Programme Educational Objectives (PEO)		Institutional Educational Goal (IEG)
PEO 1	Knowledgeable and scientifically skilled in dealing with chemistry-related issues.	Thinker, Balanced
PEO 2	Trustworthy in line with international professional codes and ethics.	Balanced
PEO 3	Demonstrate quality leadership, communication and interaction skills in professional careers.	Articulate, Holistic
PEO 4	Proactive, innovative and committed in management and lifelong learning for sustainable career development.	Thinker, Balanced, Holistic

Programme Learning Outcomes (PLO)

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

Programme Learning Outcomes (PLO)		Institutional Educational Goal (IEG)
PLO 1	Demonstrate in-depth and frontier knowledge and understanding in chemical instrumentations.	Thinker
PLO 2	Apply scientific knowledge critically and intergratedly to resolve chemistry related problems.	Thinker, Balanced
PLO 3	Apply practical skills and chemical instrumentations efficiently.	Thinker, Balanced
PLO 4	Demonstrate teamwork and collaboration skills effectively in learning and research.	Articulate
PLO 5	Demonstrate effective communication skills to convey information and knowledge in the field of chemistry.	Articulate
PLO 6	Demonstrate the ability to use wide range of suitable digital technology and software in learning and research related to chemistry fields.	Balanced
PLO 7	Apply numeracy skills to analyse and evaluate chemistry-related data.	Thinker
PLO 8	Demonstrate leadership skills by being responsible in managing teamwork.	Holistic
PLO 9	Demonstrate commitment to lifelong learning dan personal development through integration of information and knowledge.	Holistic
PLO10	Not applicable.	–
PLO11	Demonstrate positive values, ethics, accountability and sustainable practices in assignments and research.	Balanced

UNIVERSITI SAINS MALAYSIA

Pusat Pengajian Sains Kimia
School of Chemical Sciences

SCHOOL OF CHEMICAL SCIENCES
11800, UNIVERSITI SAINS MALAYSIA
PULAU PINANG, MALAYSIA
TEL +604 - 6533262 | FAX +604 - 6574854 |

https://chem.usm.my