CHEM3201

Advanced Analysis

Session 1, Weekday attendance, North Ryde 2020

Department of Molecular Sciences

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General Information

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Credit points
10

Prerequisites
(CHEM2201 or CBMS200 or CBMS208) and (CHEM2401 or CHEM2601 or CBMS204 or CBMS207 or CBMS203)

Corequisites

Co-badged status
CHEM6231

Unit description
This PACE unit covers advanced aspects of chemical analysis, building on the foundations laid in Analysis and Measurement. Modern chemical principles and practice of identifying substances and of determining their composition are discussed. Topics include many analytical techniques commonly employed in both industrial and academic research laboratories. Examples of applications to environmental and biological samples include: analysis of heavy metals by atomic absorption spectroscopy; inductively coupled plasma atomic emission spectroscopy; electrochemical detection of biochemicals and environmental pollutants. The unit emphasises hands-on experience in analysing real life samples, using many of these techniques. Each student also devotes a proportion of the session to gain relevant work experience in off-campus laboratories in chemical industry and research organisations, such as CSIRO.

Important Academic Dates

Information about important academic dates including deadlines for withdrawing from units are available at https://www.mq.edu.au/study/calendar-of-dates

Learning Outcomes

On successful completion of this unit, you will be able to:

ULO1: Describe the scope of analytical chemistry.

ULO2: Demonstrate competency in the use of important analytical techniques commonly used in industrial and academic research.

ULO3: Analyse and interpret experimental data and present them in a structured report using appropriate scientific referencing.

ULO4: Analyse and critique experimental data and present them in oral format.

ULO6: Work effectively in off-campus laboratories as well as in teams in the university laboratory environment.

ULO5: Process and analyse chemical experimental data to draw scientifically sound conclusions, particularly the significance and validity of analytical results involving real-life samples.

ULO7: Communicate analytical chemical knowledge by appropriately documenting the essential details of procedures undertaken, key observations, results and conclusions.

Assessment Tasks

Coronavirus (COVID-19) Update

Assessment details are no longer provided here as a result of changes due to the Coronavirus (COVID-19) pandemic.

Students should consult iLearn for revised unit information.

Find out more about the Coronavirus (COVID-19) and potential impacts on staff and students

General Assessment Information

In order to complete this unit satisfactorily students must

(a) attend and participate satisfactorily in **ALL** laboratory sessions;

(b) submit satisfactory efforts at two (2) assignments;

(c) perform satisfactorily in a final examination of three hours duration.

Delivery and Resources

Coronavirus (COVID-19) Update

Any references to on-campus delivery below may no longer be relevant due to COVID-19.

Please check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

Lecture notes, laboratory notes, assignments can all be downloaded from iLearn.

Prescribed text:

D.C.Harris, Quantitative Chemical Analysis, 9th Edition, W.H.Freeman and Company (2016).

Recommended references (all available in University Library)

D.A.Skoog, D.M.West, F.J.Holler, S.R.Crouch, Fundamentals of Analytical Chemistry, 9th Edition, Brooks/Cole, Thomson Learning, Inc (2014).

D.S.Hage, J.D.Carr, Analytical Chemistry and Quantitative Analysis, International Edition, Prentice Hall (2011).

D.A.Skoog, F.J.Holler and S.R.Crouch, Principles of Instrumental Analysis, 6th Edition, Saunders College Publishing (2007).

Unit Schedule

Coronavirus (COVID-19) Update

The unit schedule/topics and any references to on-campus delivery below may no longer be relevant due to COVID-19. Please consult iLearn for latest details, and check here for updated delivery information: https://ask.mq.edu.au/account/pub/display/unit_status

Date	Time	Activity
February 24	9:00 - 10:30	Outline of Unit Calibration Methods
	11:00 - 12:30	Electroanalytical Chemistry
	4:00 - 6:00	Scientific Report Writing
March 2	9:00 - 10:30	Electroanalytical Chemistry
	11:00 - 12:30	Electroanalytical Chemistry
	1:30 - 5:30	Laboratory Session
March 9	9:00 - 10:30	Electroanalytical Chemistry
	11:00 - 12:30	Electroanalytical Chemistry
	1:30 - 5:30	Laboratory Session

March 16	9:00 - 10:30	Flow Injection Analysis
	11:00 - 12:30	Flow Injection Analysis
	1:30 - 5:30	Laboratory Session
March 23	9:00 - 10:30	Flow Injection Analysis
	11:00 - 12:30	Spectroscopic Techniques
	1:30 - 5:30	Laboratory Session
March 30	9:00 - 10:30	Spectroscopic Techniques
	11:00 - 12:30	Spectroscopic Techniques
	1:30 - 5:30	Laboratory Session
April 6	9:00 - 10:30	Spectroscopic Techniques
	11:00 - 12:30	Spectroscopic Techniques
	1:30 - 5:30	Laboratory Session
April 27	9:00 - 10:30	Spectroscopic Techniques
	11:00 - 12:30	Spectroscopic Techniques
	1:30 - 5:30	Laboratory Session
June 1	9:00 - 10:30	Sensing Technologies
	11:00 - 12:30	Sensing Technologies
	1:30 - 5:30	Presentation of project work (MOLS8251)
May 4		Off-campus laboratory visit
May 11		Off-campus laboratory visit
May 18		Off-campus laboratory visit
May 25		Off-campus laboratory visit

Policies and Procedures

Macquarie University policies and procedures are accessible from Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central). Students should be aware of the following policies in particular with regard to Learning and

Teaching:

- Academic Appeals Policy
- Academic Integrity Policy
- Academic Progression Policy
- Assessment Policy
- Fitness to Practice Procedure
- Grade Appeal Policy
- Complaint Management Procedure for Students and Members of the Public
- Special Consideration Policy *(**Note:** The Special Consideration Policy is effective from 4 December 2017 and replaces the Disruption to Studies Policy.)*

Students seeking more policy resources can visit the Student Policy Gateway (https://students.mq.edu.au/support/study/student-policy-gateway). It is your one-stop-shop for the key policies you need to know about throughout your undergraduate student journey.

If you would like to see all the policies relevant to Learning and Teaching visit Policy Central (https://staff.mq.edu.au/work/strategy-planning-and-governance/university-policies-and-procedures/policy-central).

Student Code of Conduct

Macquarie University students have a responsibility to be familiar with the Student Code of Conduct: https://students.mq.edu.au/study/getting-started/student-conduct

Results

Results published on platform other than eStudent, (eg. iLearn, Coursera etc.) or released directly by your Unit Convenor, are not confirmed as they are subject to final approval by the University. Once approved, final results will be sent to your student email address and will be made available in eStudent. For more information visit ask.mq.edu.au or if you are a Global MBA student contact globalmba.support@mq.edu.au

Student Support

Macquarie University provides a range of support services for students. For details, visit http://students.mq.edu.au/support/

Learning Skills

Learning Skills (mq.edu.au/learningskills) provides academic writing resources and study strategies to help you improve your marks and take control of your study.

- Getting help with your assignment
- Workshops
- StudyWise
- Academic Integrity Module

The Library provides online and face to face support to help you find and use relevant information resources.

- Subject and Research Guides
- Ask a Librarian

Student Services and Support

Students with a disability are encouraged to contact the Disability Service who can provide appropriate help with any issues that arise during their studies.

Student Enquiries

For all student enquiries, visit Student Connect at ask.mq.edu.au

If you are a Global MBA student contact globalmba.support@mq.edu.au

IT Help

For help with University computer systems and technology, visit http://www.mq.edu.au/about_us/offices_and_units/information_technology/help/.

When using the University's IT, you must adhere to the Acceptable Use of IT Resources Policy. The policy applies to all who connect to the MQ network including students.