Advanced Analytical Chemistry 3102NSC - Tri 2 2021 - Nathan Campus - Blended

1. General Course Information

1.1 Course Details

Course code	3102NSC
Course title	Advanced Analytical Chemistry
Academic organisation	ESC School of Environment and Science
Trimester	Trimester 2 2021
Mode	Blended
Level	Undergraduate
Location	Nathan, On Campus
Credit point value	10

Course Description:

This course covers the principles of quantitative chemical analysis, including, mass spectrometry, chromatography, spectroscopic techniques and classical methods of analysis. Method development, database searching and contemporary applications in the Chemical, Biological and Environmental sciences will be highlighted Pre-requisites: 1021SCG Chemistry 1A, 1022SCG Chemistry 1B, 2103NSC Organic Chemistry, 2102NSC Spectroscopic and Molecular Analysis, 2106NSC Physical and Analytical Chemistry Incompatible: 3138SCE Applications of Mass Spec, 3154SCE Food & Drug Analysis

Assumed Background:

First year chemistry and statistics are essential knowledge. Second year chemistry and first year mathematics are recommended knowledge.

1.2 Course Introduction

Advanced Analytical Chemistry will enable you to develop your knowledge of chemistry in an applied professional situation. You will undertake a practical series of analytical chemistry laboratory exercises while studying the theory of mass spectrometry and chromatography.

Previous Student Feedback

Student satisfaction with this course is very high and comments from previous year's students:

"The lab tasks were very interesting and similar to real-world experience. The lab videos were of great quality and were a good tool to watch before labs to prepare. Modules 2 and 3 were well organized and engaging.."

"The convenor was very knowledgable and passionate and I loved learning from them. They delivered content in a clean, concise, and interesting way. They were very easy to get in contact with and designed this course well to be taught online."

Students also noted that some aspects of the theory were difficult and there was a lot of material covered in the classes.

1.3 Course Staff

Primary Convenor **Prof Sally-Ann Poulsen**

Email	s.poulsen@griffith.edu.au
Campus	Nathan Campus
Building	GRIDD 2 (N75)
Consultation	Details of consultation will be provided on commencement of this course.

Lecturer **Dr Yi Jia**

Email	y.jia@griffith.edu.au
Campus	Nathan Campus
Building	Technology (N44)
Room	3.08
Consultation	Details of consultation will be provided on commencement of this course.

Lecturer **Dr Miaomiao Liu**

Email	miaomiao.liu@griffith.edu.au
Campus	Nathan Campus
Building	GRIDD 2 (N75)
Consultation	Details of consultation will be provided on commencement of this course.

1.4 Timetable

Timetables are available on *the Programs and Courses website*.

NB: Details contained in this Section of the course profile and Section 4.1 Learning Activities are to be read in conjunction with the official class timetable. The published class timetable which is the authoritative source for timetabling information for all campuses can be located by clicking on the above link.

Additional Timetable Information

This course will be offered in a blended mode in Trimester 2, 2021. This means that it will be offered online but there may be opportunities for students to return to campus for some course components during the Trimester, depending on Government regulations. If practical laboratory classes are offered on campus the laboratory classes are scheduled to commence approximately week 7. Ensure you check the Learning@Griffith course site for specific details of classes.

When you study at university you are required to act in an honest way, be responsible for your actions, and show fairness in every part of your work. **This is academic integrity**. For more information: https://www.griffith.edu.au/library/study/preparing-for-your-assignment/academic-integrity

1.5 Lecture Capture

It is standard practice at Griffith University that lectures timetabled in lecture capture-enabled venues are recorded and made available to students on the relevant course site, in accordance with the University's Lecture Capture Policy.

The lecture series delivered as part of this course will be recorded and accessible via the Learning@Griffith course site.

1.6 Technical Specifications

See https://www.griffith.edu.au/about-griffith/campuses-facilities/digital/it-requirements

2. Aims, Outcomes & Graduate Attributes

2.1 Course Aims

- Introduction to the basic concepts of quantitative chemical analysis.
- Development of experimental knowledge of the analysis of a wide variety of samples: eg. chemical, water
- To provide knowledge of the principles and operation of chromatographic and mass spectrometric techniques.
- To undertake the systematic analysis of samples in a laboratory environment OR systematic analysis of analytical data provided for samples.

2.2 Learning Outcomes

After successfully completing this course you should be able to:

1 Have knowledge to operate analytical, chromatographic and mass spectrometry instruments

2 Interpret the accuracy and precision of analytical results

3 Devise and implement appropriate analytical procedures in a laboratory situation

4 Prepare technical reports to present the findings and interpretation of analytical sample analysis

2.3. Graduate Attributes

For further details on the Griffith Graduate please click here

Griffith University prepares influential graduates to be:

- Knowledgeable and skilled, with critical judgement
- Effective communicators and collaborators
- Innovative, creative and entrepreneurial
- Socially responsible and engaged in their communities
- Culturally capable when working with First Australians
- Effective in culturally diverse and international environments

This table demonstrates where each of the Griffith Graduate Attributes is taught, practised and assessed in this course.

For further details on the Griffith Graduate Attributes please refer to The Griffith Graduate policy.

University wide attributes

Graduate Attribute	Taught	Practised	Assessed
Knowledgeable and skilled, with critical judgement	•	•	•
Effective communicators and collaborators	•	•	•

Additional Course Information on Graduate Attributes

Graduates of this course will have experience in the instrumental and chemical analysis of practical samples relevant to government and industrial chemical laboratories.

3. Learning Resources

3.1 Required Resources

Details of your Required Learning Resources are available from the Reading List.

3.2 Recommended Resources

Details of your Recommended Learning Resources are available from the Reading List.

3.3 University Learning Resources

The University provides many facilities and support services to assist students in their studies. Links to information about University support resources that are available to students are included below for easy reference.

Readings - New online service enabling students to access Required and Recommended Learning resources. It connects to the library catalogue to assist with quickly locating material held in Griffith libraries and enables students to manage and prioritise their readings, add personal study notes and export citations.

Learning@Griffith - there is a dedicated website for this course via the Learning@Griffith at myGriffith.

Academic Integrity Tutorial - this tutorial helps students to understand what academic integrity is and why it matters. You will be able to identify types of academic misconduct, understand what skills you will need in order to maintain academic integrity, and learn about the processes of referencing styles.

Student Support - provides a range of services to support students throughout their studies including personal support such as Counselling and Health Services; Academic support; and Financial and Welfare support.

The Careers and Employment Team provides: Career Wellbeing, Career Planning and Decision Making, Finding Jobs, Skills Identification and Development, Graduate Employment Information, LinkedIn Profile Review, Interview Preparation, Online Psychometric and Aptitude Test Preparation, International Student Support, Disability Disclosure Strategies and Higher Degree Research (HDR) Career Consultations.

Library and Learning Services: Library and Learning Services provides a wide range of quality client-focused services and programs to students, researchers and staff of the University. Library and Learning Services works in collaboration with the academic community to achieve academic and research outcomes.

Support for learning - the University provides access to common use computing facilities for educational purposes.

Code of Practice - Griffith Information Technology Resources.

3.5 Other Learning Resources & Information

1. Students are expected to review videos for each of the laboratory experiments prior to completing the laboratory activity.

2. Students are expected to refer to journal papers and reference books where relevant for preparation of their laboratory reports.

4. Teaching & Learning Activities

4.1 Learning Activities

Week Commencing	Activity	Learning Outcomes
19 Jul 21	**Analytical procedures (Lecture Series):** Approach and methodology to solving analytical problems in the laboratory. Lecture notes available on Learning@Griffith, past exams and other support is provided.	1, 2, 3
16 Aug 21	**Chromatographic techniques (Lecture Series):** Theoretical and practical basis of chromatographic separation techniques. Lecture notes available on Learning@Griffith	1, 2, 3
23 Aug 21	**Mid-Trimester Exam (Assessment):** This exam will cover the analytical procedures material presented by Dr Yi (Alec) Jia. A revision session will be held one week before the mid-trimester exam.	2
6 Sep 21	**Experiment (Experiment):** The experiments are a compulsory skills based assessment module that runs weekly for 4 weeks: from week 7 until week 10. Students will either undertake a 4 hour laboratory based experiment or complete an equivalent online alternative. The experiments will take the form of exercises, calculations and interpretation of data. Analytical skills will be developed and samples of unknown analyte composition will be characterised.	1, 2, 3, 4
13 Sep 21	**Mass Spectrometry (Lecture Series):** Theoretical and practical basis of mass spectrometry instrumentation and results interpretation of mass spectra with particular reference to hybrid techniques. Lecture notes available on Learning@Griffith	1, 2, 3
25 Oct 21	**End Trimester Exam (Exam):** End Trimester Exam. The exam will comprise responses and calculations assessing student comprehension and understanding of material presented and used in the Chromatographic Techniques module (presented by Dr Miaomiao Liu) and Mass Spectrometry module (presented by Professor Sally-Ann Poulsen).	2

4.2 Other Teaching and Learning Activities Information

Disability. If any student has a disability and/or health condition that may impact on their ability to successfully undertake required learning activities in this course, they are encouraged to complete the Griffith University Disclosure Statement and advise their Course Convenor.

Students repeating a course: Normally students repeating a course should not "carry forward" marks from a previous attempt. Assessment items are usually offered to provide formative experience as well as a summative assessment. Therefore, NO MARK for any assessment item from a previous attempt will be carried forward.

If a class is usually scheduled on a day that falls on a public holiday, or is cancelled for any reason, the content will be delivered online or integrated across other classes, as appropriate. (Alternatively, you can include advice specific to re-scheduling of your labs, etc.)