COURSE OUTLINE

SCI302 Analytical Sciences

School: School of Science, Technology and Engineering

2026 | Trimester 1

UniSC Sunshine Coast
UniSC Moreton Bay

BLENDED LEARNING

Most of your course is on campus but you may be able to do some components of this course online.

Please go to unisc.edu.au for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1. Description

This course prepares you for your first laboratory job or the start of Honours research. You develop advanced laboratory skills, including competency in executing analyses of chemical and environmental samples with specific emphasis on valid sampling, data integrity, instrument operation and laboratory safety. You learn sample preparation, possible interferences, instrument requirements, maintenance and troubleshooting. Techniques and instrumentation include Atomic Absorption Spectroscopy, Gas Chromatography, High Performance Liquid Chromatography, Mass Spectroscopy, Vibrational Spectroscopy, Fluorescence Spectroscopy, and NMR.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – One hour learning materials on-line	1hr	Week 1	12 times
Laboratory 1 – Fortnightly three hours on campus	3hrs	Week 1	6 times
Tutorial/Workshop 1 – Fortnightly two hour on campus.	2hrs	Week 2	6 times

1.3. Course Topics

- Sampling of chemical sources
- Laboratory safety and standard operation procedures
- Chromatography and spectroscopy instrumentation, instrument calibration and maintenance
- Compound identification.

2. What level is this course?

300 Level (Graduate)

Demonstrating coherence and breadth or depth of knowledge and skills. Independent application of knowledge and skills in unfamiliar contexts. Meeting professional requirements and AQF descriptors for the degree. May require pre-requisites where discipline specific introductory or developing knowledge or skills is necessary. Normally undertaken in the third or fourth full-time study year of an undergraduate program.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

COURSE LEARNING OUTCOMES		GRADUATE QUALITIES
On successful completion of this course, you should be able to...		Completing these tasks successfully will contribute to you becoming...
1	Select suitable sampling and instrument techniques	Knowledgeable Creative and critical thinker
2	Solve quantitative analytical problems	Knowledgeable Empowered
3	Assign compound structure based on spectroscopic data	Empowered
4	Operate safely in a laboratory and generate reports	Empowered

5. Am I eligible to enrol in this course?

Refer to the UniSC Glossary of terms for definitions of “pre-requisites, co-requisites and anti-requisites”.

5.1. Pre-requisites

CHM202 or CHM210 or LFS251

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

Not applicable

5.4. Specific assumed prior knowledge and skills (where applicable)

This is a third year course and assumes that students are in their second or third year of university

5.5. Microcredential Information

Not applicable

6. How am I going to be assessed?

6.1. Grading Scale

Standard Grading (GRD)

High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL).

6.2. Details of early feedback on progress

In week 3 of this course, the first lab report should be submitted and feedbacks will be provided in week 4.

6.3. Assessment tasks

DELIVERY MODE	TASK NO.	ASSESSMENT PRODUCT	INDIVIDUAL OR GROUP	WEIGHTING %	WHAT IS THE DURATION / LENGTH?	WHEN SHOULD I SUBMIT?	WHERE SHOULD I SUBMIT IT?
All	1	Report	Individual	40%	- 3 lab reports: maximum 600 words/report, 10% weighting for each lab report. - 6 quizzes: maximum 100 words/quiz, 1.67% weighting for each quiz.	Refer to Format	In Class
All	2	Examination - not Centrally Scheduled	Individual	20%	60 min, 800 words	Week 8	Online Submission
All	3	Examination - Centrally Scheduled	Individual	40%	2 hours, 1500 words	Exam Period	Exam Venue

All - Assessment Task 1: Laboratory Reports and quizzes

GOAL:	Utilising analytical data to produce written scientific reports. Review knowledge before doing practicals.
PRODUCT:	Report
FORMAT:	Submit 3 lab reports in weeks 4, 7 & 9. Individual reports in the format of: Title, Abstract, Introduction, Methods, Results Discussion, Conclusion, Answering questions, references. Submit quiz on canvas on the date performing lab practicals.
CRITERIA:	**No.** — **Learning Outcome assessed** 1 Demonstrated understanding of instrumentation and manipulation of data in discipline specific reports — 1 4
GENERIC SKILLS:	Communication, Collaboration, Problem solving, Organisation, Applying technologies, Information literacy

All - Assessment Task 2: Mid trimester exam

GOAL:	Evaluating the theory of sampling, laboratory procedures and instrument operation
PRODUCT:	Examination - not Centrally Scheduled
FORMAT:	60 minute individual written exam.
CRITERIA:	**No.** — **Learning Outcome assessed** 1 Demonstrated knowledge of sampling, quantitation and instrument techniques — 1 2
GENERIC SKILLS:	Problem solving, Applying technologies, Information literacy

All - Assessment Task 3: Final Examination

GOAL:	Chemical identification and quantitation using advanced analytical chromatography and spectroscopic techniques.
PRODUCT:	Examination - Centrally Scheduled
FORMAT:	Written examination covering all laboratory and lecture content
CRITERIA:	**No.** / **Learning Outcome assessed** 1 Demonstrated application of analytical theory and practice — 1 2 3 4
GENERIC SKILLS:	Problem solving, Applying technologies, Information literacy

7. Directed study hours

A 12-unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Student workload is calculated at 12.5 learning hours per one unit.

8. What resources do I need to undertake this course?

Please note: Course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Canvas site– Please log in as soon as possible.

8.1. Prescribed text(s) or course reader

You need regular access to the resource(s) below. Many texts are available as ebooks through the Library at no additional cost.

REQUIRED?	AUTHOR	YEAR	TITLE	EDITION	PUBLISHER
Required	Skoog, Douglas A.	2022	Fundamentals of Analytical Chemistry	Tenth edition	Cengage

8.2. Specific requirements

Safety glasses, laboratory coat and covered shoes must be brought to laboratory classes.
Moreton Bay students may be required to travel to the Sunshine Coast campus to attend some lab practicals. Should travel be required it will be covered and arranged by the University. Details will be provided by the Course Coordinator.

9. How are risks managed in this course?

Risk assessments have been performed for all laboratory classes and a moderate level of health and safety risk exists. Moderate risks are those associated with laboratory work such as working with chemicals and hazardous substances. You will be required to undertake laboratory induction training and it is also your responsibility to review course material, search online, discuss with lecturers and peers and understand the health and safety risks associated with your specific course of study and to familiarise yourself with the University's general health and safety principles by reviewing the online induction training for students, and following the instructions of the University staff

10. What administrative information is relevant to this course?

10.1. Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Canvas, are electronically checked through Turnitin. This software allows for text comparisons to be made between your submitted assessment item and all other work to which Turnitin has access.

10.2. Assessment: Additional Requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:
(a) The final mark is in the percentage range 47% to 49.4%; and
(b) The course is graded using the Standard Grading scale

10.3. Assessment: Submission penalties

Late submissions may be penalised up to and including the following maximum percentage of the assessment task's identified value, with weekdays and weekends included in the calculation of days late:
(a) One day: deduct 5%;
(b) Two days: deduct 10%;
(c) Three days: deduct 20%;
(d) Four days: deduct 40%;
(e) Five days: deduct 60%;
(f) Six days: deduct 80%;
(g) Seven days: A result of zero is awarded for the assessment task.

The following penalties will apply for a late submission for an online examination:
Less than 15 minutes: No penalty
From 15 minutes to 30 minutes: 20% penalty
More than 30 minutes: 100% penalty

10.4. Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Central Examinations
- Deferred Examinations
- Student Conduct
- Students with a Disability

For more information, visit https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching

10.5. Student Charter

UniSC is committed to excellence in teaching, research and engagement in an environment that is inclusive, inspiring, safe and respectful. The Student Charter sets out what students can expect from the University, and what in turn is expected of students, to achieve these outcomes.

10.6. General Enquiries

For course-specific questions, contact your teaching staff or Course Coordinator.

For other enquiries or to access support, please contact Student Central:

- UniSC Student Central
- UniSC Adelaide Student Central