



CHEM19085 *Environmental Chemistry*

Term 1 - 2018

Profile information current as at 01/05/2024 09:00 am

All details in this unit profile for CHEM19085 have been officially approved by CQUniversity and represent a learning partnership between the University and you (our student). The information will not be changed unless absolutely necessary and any change will be clearly indicated by an approved correction included in the profile.

General Information

Overview

This unit examines air pollution: ozone depletion, sulfur oxides, photochemical smog and greenhouse effects; water pollution; inorganic and organic pollutants, surfactants and detergents; hazardous wastes: classification, treatment, disposal; pollution monitoring: sampling procedures, analytical methods and modelling techniques. The ecological and health effects of chemical pollution are presented and discussed. Renewable energy and energy utilisation is investigated. Distance education students will be required to attend a residential school for this unit.

Details

Career Level: *Undergraduate*

Unit Level: *Level 2*

Credit Points: 6

Student Contribution Band: 8

Fraction of Full-Time Student Load: 0.125

Pre-requisites or Co-requisites

Prerequisites: CHEM11041 Chemistry for the Life Sciences

Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the [Assessment Policy and Procedure \(Higher Education Coursework\)](#).

Offerings For Term 1 - 2018

- Distance
- Rockhampton

Attendance Requirements

All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Residential Schools

This unit has a Compulsory Residential School for distance mode students and the details are:

Click here to see your [Residential School Timetable](#).

Website

[This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.](#)

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

[Regional Campuses](#)

Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

[Metropolitan Campuses](#)

Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Written Assessment**

Weighting: 25%

2. **Practical and Written Assessment**

Weighting: 25%

3. **Examination**

Weighting: 50%

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the [University's Grades and Results Policy](#) for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the [CQUniversity Policy site](#).

You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the [CQUniversity Policy site](#).

Previous Student Feedback

Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

Feedback from Have your say

Feedback

Forums need to be integrated

Recommendation

Using 1 forum will be an approach for next year's offering.

Feedback from Have your say

Feedback

Lecturer referred to previous knowledge being required in chemistry

Recommendation

Chemistry team are currently redeveloping the scaffold for previous knowledge to seamlessly bridge across advanced units in chemistry.

Unit Learning Outcomes

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

1. Understand the chemical principles relating to the chemistry of the different spheres of the environment: atmosphere, hydrosphere, lithosphere and biosphere.
2. Use laboratory skills to make reliable analytical measurements to assess the quality of water, air, soil and food sources.
3. Be familiar with the important environment regulating authority and environmental guidelines.
4. Use research skills to obtain information relating to environmental chemical concepts, environmental issues and current approaches to solve these.

Alignment of Learning Outcomes, Assessment and Graduate Attributes



Alignment of Assessment Tasks to Learning Outcomes

| Assessment Tasks | Learning Outcomes | | | |
|--|-------------------|---|---|---|
| | 1 | 2 | 3 | 4 |
| 1 - Written Assessment - 25% | • | | • | • |
| 2 - Practical and Written Assessment - 25% | | • | | • |
| 3 - Examination - 50% | • | | • | |

Alignment of Graduate Attributes to Learning Outcomes

| Graduate Attributes | Learning Outcomes | | | |
|---|-------------------|---|---|---|
| | 1 | 2 | 3 | 4 |
| 1 - Communication | • | • | • | • |
| 2 - Problem Solving | | • | | • |
| 3 - Critical Thinking | | • | • | • |
| 4 - Information Literacy | • | • | • | • |
| 5 - Team Work | | • | | |
| 6 - Information Technology Competence | | • | • | • |
| 7 - Cross Cultural Competence | | | • | |
| 8 - Ethical practice | | | • | |
| 9 - Social Innovation | | | | |
| 10 - Aboriginal and Torres Strait Islander Cultures | | | | |

Alignment of Assessment Tasks to Graduate Attributes

| Assessment Tasks | Graduate Attributes | | | | | | | | | |
|--|---------------------|---|---|---|---|---|---|---|---|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 - Written Assessment - 25% | • | • | • | • | | • | • | | | |
| 2 - Practical and Written Assessment - 25% | • | • | • | • | • | • | | • | | |
| 3 - Examination - 50% | • | • | • | • | | | | | | |

Textbooks and Resources

Textbooks

CHEM19085

Prescribed

Environmental Chemistry

Edition: 5 (2012)

Authors: Colin Baird and Michael Cann

Freeman

New York , USA

ISBN: 978-1-4292-7704-4

Binding: Other

[View textbooks at the CQUniversity Bookshop](#)

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

Referencing Style

All submissions for this unit must use the referencing style: [Vancouver](#)

For further information, see the Assessment Tasks.

Teaching Contacts

Shaneel Chandra Unit Coordinator

s.chandra@cqu.edu.au

Schedule

Week 1 - 05 Mar 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|--|--|------------------------------|
| Water: acid-base chemistry of natural waters | Supplement lecture material with textbook (Baird & Cann): Chapters 10, 3 | |

Week 2 - 12 Mar 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|--|---------|------------------------------|
| Water: Redox chemistry of natural waters | 10 | |

Week 3 - 19 Mar 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|---------|------------------------------|
| Water: Water pollution and water purification | 11 | |

Week 4 - 26 Mar 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|---------|------------------------------|
| Water: BOD/COD, Nutrients, Hydrological cycle | 10, 11 | |

Week 5 - 02 Apr 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|----------|---|
| Air: Stratospheric chemistry; ozone holes | 1, 2, 17 | Written Assessment 1 Due: Week 5 Friday (6 Apr 2018) 11:59 pm AEST |

Vacation Week - 09 Apr 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|--------------|---------|------------------------------|
|--------------|---------|------------------------------|

Week 6 - 16 Apr 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|----------|------------------------------|
| Module 2 Air: Oxygen chemistry and the stratosphere | 1, 2, 17 | |

Week 7 - 23 Apr 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|--|---------|------------------------------|
| Air: Ground-level air pollution; environmental & health consequences | 3, 4 | |

Week 8 - 30 Apr 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|--|---------|--|
| Air: Ground-level air pollution; environmental & health consequences | 3, 4 | Assessment Task 1 due Monday, 11:55 pm |

Week 9 - 07 May 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|------------|------------------------------|
| Module 3 Energy & Climate Change: greenhouse effect; fossil-fuel energy; carbon dioxide emissions; global warming Module 4 - Ecological & human health: Toxic organic compounds | 5, 6, 7, 8 | |

Week 10 - 14 May 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|--|------------|---|
| Module 3 Energy & Climate Change: Renewable energy, alternative fuels & the hydrogen economy | 5, 6, 7, 8 | Assessment Task 2 due Wednesday, 11:55 pm Written Assessment 2 Due: Week 10 Tuesday (15 May 2018) 11:55 pm AEST |

Week 11 - 21 May 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|--|---------|------------------------------|
| Module 4 Ecological & human health: Toxic heavy metals | 12 | |

Week 12 - 28 May 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|---------|------------------------------|
| Module 4 Ecological & human health: Wastes, soils and sediments | 16 | |

Review/Exam Week - 04 Jun 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|--------------|---------|------------------------------|
|--------------|---------|------------------------------|

Exam Week - 11 Jun 2018

| Module/Topic | Chapter | Events and Submissions/Topic |
|--------------|---------|------------------------------|
|--------------|---------|------------------------------|

Term Specific Information

Previous Student Feedback

Definitely assignment 2 needs improvement - it could have easily been improved with clearer communication on what is desired.

Response

More clarity will be provided on the expectations around Assessment Task 2 on Day 1 and Day 3 of the Residential School

Assessment Tasks

1 Written Assessment 1

Assessment Type

Written Assessment

Task Description

This assessment task relates to the **Unit Learning Outcomes 1, 2, 3 and 4**. It is to be submitted online through the Moodle support site for this unit.

This assessment task requires some research (i.e. you need to consult references outside of the textbook; however, do not limit yourself to the internet). **It is important to start on this assessment task as early as possible.** Remember to always cite your sources throughout your report.

There are four parts to Assessment Task 1, requiring you to solve numerical and descriptive problems.

Assessment Due Date

Week 5 Friday (6 Apr 2018) 11:59 pm AEST

Submitted via Moodle

Return Date to Students

Week 7 Friday (27 Apr 2018)

As stated on Assessment 1 Information sheet on Moodle

Weighting

25%

Assessment Criteria

Clear organisation and presentation of material; conciseness, particularly in presentation of data (10%).

Reliability of information/data and completeness of any required calculations (40%).

Sound reasoning based on scientific (i.e. chemical and environmental) principles in any discussions; good integration of information (40%).

Use of relevant and reliable sources of information, with proper citation of any sources used (10%).

Referencing Style

- [Vancouver](#)

Submission

Online

Learning Outcomes Assessed

- Understand the chemical principles relating to the chemistry of the different spheres of the environment: atmosphere, hydrosphere, lithosphere and biosphere.
- Be familiar with the important environment regulating authority and environmental guidelines.
- Use research skills to obtain information relating to environmental chemical concepts, environmental issues and current approaches to solve these.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Information Technology Competence

- Cross Cultural Competence

2 Written Assessment 2

Assessment Type

Practical and Written Assessment

Task Description

The objective of this assessment task is to produce a 10 page laboratory report. This report will comprise of the chemical analyses you have carried out during the residential school. It is important to include 'processed' data only. Raw data will not be accepted in this report.

Vancouver or Numerical Referencing required.

Assessment Due Date

Week 10 Tuesday (15 May 2018) 11:55 pm AEST

Return Date to Students

Week 12 Tuesday (29 May 2018)

Weighting

25%

Assessment Criteria

Title, Aim and Introduction to practical exercise: 25 marks

Outline of procedure (exact and with sufficient detail and clarity to be reproduced in another laboratory): 15 marks

Data organisation (tabulated, graphed for clarity): 15 marks

Data verification (accuracy and precision estimation): 15 marks

Comparison of data with other similar work, calculations etc.: 15 marks

Overall presentation of report, citations and referencing: 15 marks

Referencing Style

- [Vancouver](#)

Submission

Online

Learning Outcomes Assessed

- Use laboratory skills to make reliable analytical measurements to assess the quality of water, air, soil and food sources.
- Use research skills to obtain information relating to environmental chemical concepts, environmental issues and current approaches to solve these.

Graduate Attributes

- Communication
- Problem Solving
- Critical Thinking
- Information Literacy
- Team Work
- Information Technology Competence
- Ethical practice

Examination

Outline

Complete an invigilated examination.

Date

During the examination period at a CQUniversity examination centre.

Weighting

50%

Length

120 minutes

Minimum mark or grade

40

Exam Conditions

Closed Book.

Materials

Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).

Calculator - all non-communicable calculators, including scientific, programmable and graphics calculators are authorised

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the [Student Academic Integrity Policy and Procedure](#). This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?

A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?

A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?

For academic advice and guidance, the [Academic Learning Centre \(ALC\)](#) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?

**Be Honest**

If your assessment task is done by someone else, it would be dishonest of you to claim it as your own

**Seek Help**

If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)

**Produce Original Work**

Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem