CHEM19085 *Environmental Chemistry*
Term 1 - 2017

Profile information current as at 26/04/2024 02:46 am

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 - 2017

- 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 Moodle

Feedback
2015 content was displayed in 2016

Recommendation
All links will be updated accordingly.

Action
All material was updated

Feedback from Moodle

Feedback
Residential school running across disciplines appeared disorganised, casual member was not organised.

Recommendation
The residential school was run as a cross-discipline experience. The students learnt about geology of the surrounding Mount Morgan Site as well as the acid mine drainage problem and sampling protocols. A new timetable will be given to accommodate any time fluctuations.

Action
Residential school was updated and its were changed.

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

— N/A Level ◦ Introductory Level • Intermediate Level • Graduate Level ◦ Professional Level ◦ Advanced Level

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
5th Edition (2012)
Authors: Baird and Cann
Freeman
New York , USA
ISBN: 978-1-4292-7704-4
Binding: Hardcover

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: Turabian
For further information, see the Assessment Tasks.

Teaching Contacts

James Chapman Unit Coordinator
j.chapman@cqu.edu.au

Schedule

Week 1 - 06 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Module 1 Water: acid-base chemistry of natural waters	Supplement lecture material with textbook (Baird & Cann): Chapter 10	

Week 2 - 13 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Module 1 Water: Redox chemistry of natural waters	Chapter 10	

Week 3 - 20 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic
Module 1 Water: Water pollution and water purification	Chapter 11	

Week 4 - 27 Mar 2017

Module/Topic	Chapter	Events and Submissions/Topic

Module 1 Water: BOD/COD, Nutrients, Hydrological cycle	Chapter 10,11	

Week 5 - 03 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
Module 2 Air: Stratospheric chemistry; ozone holes	Chapter 1, 2, 17	

Vacation Week - 10 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic

Week 6 - 17 Apr 2017

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

Week 7 - 24 Apr 2017

Module/Topic	Chapter	Events and Submissions/Topic
Module 2 Air: Ground-level air pollution; environmental & health consequences	Chapter 3, 4	**Research & Discussion Questions** Due: Week 7 Friday (28 Apr 2017) 11:45 pm AEST

Week 8 - 01 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Module 2 Air: Ground-level air pollution; environmental & health consequences	Chapter 3, 4	

Week 9 - 08 May 2017

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	Chapter 5, 6, 7, 8	

Week 10 - 15 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Module 3 Energy & Climate Change: Renewable energy, alternative fuels & the hydrogen economy	Chapter 5, 6, 7, 8	

Week 11 - 22 May 2017

Module/Topic	Chapter	Events and Submissions/Topic
Module 4 Ecological & human health: Toxic heavy metals	Chapter 12	**Laboratory Report** Due: Week 11 Friday (26 May 2017) 11:45 pm AEST

Week 12 - 29 May 2017

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

Review/Exam Week - 05 Jun 2017

Module/Topic	Chapter	Events and Submissions/Topic

Exam Week - 12 Jun 2017

Module/Topic	Chapter	Events and Submissions/Topic

Assessment Tasks

1 Research & Discussion Questions

Assessment Type
Written Assessment

Task Description
You will complete four tasks covering selected aspects of water, air, energy and the environment. Each task requires you to write a short discussion, summary or a chemical calculation.
Each topic should be 500 words (maximum) in length. Some tasks require you to carry out in-depth research (you will need to consult with references outside of the textbook, with a particular focus on journal articles). ***Remember to always cite your sources where relevant.***
Full details of this assessment task are found in the unit Moodle site under Assessment Task 1.

Assessment Due Date
Week 7 Friday (28 Apr 2017) 11:45 pm AEST

Return Date to Students
Monday (15 May 2017)

Weighting
25%

Minimum mark or grade
40%

Assessment Criteria
You will be awarded marks for clarity, accuracy, completeness and the ability to research. Full details will be available on the Moodle site.

Referencing Style

- Turabian

Submission
Online

Submission Instructions
Via course Moodle site - accepted file types: docx, doc, rtf only

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 Laboratory Report

Assessment Type
Practical and Written Assessment

Task Description
The compulsory Residential School includes a field trip and two days of laboratory work. You will be working in groups

using a range of advanced analytical instrumentation and techniques to analyse a range of samples taken from the environment.
You will **submit 1 written laboratory report.** The topic for the practical will be decided during the residential school.

Assessment Due Date
Week 11 Friday (26 May 2017) 11:45 pm AEST

Return Date to Students
Monday (5 June 2017)

Weighting
25%

Minimum mark or grade
40%

Assessment Criteria
Marks will be awarded for:

- Clarity and completeness (10%)
- Appropriate treatment of experimental data and correct calculations, including correct number of significant figures (50%)
- Accuracy of results and sound interpretations of data (30%)
- Evidence of research (using sources other than the textbook, Lab Manual or the Study Guide) in any discussions or answers to questions, including appropriate acknowledgement of sources (10%)

Referencing Style

- Turabian

Submission
Online

Submission Instructions
Submit 1 fully written, independent report online via moodle site

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
Calculator - all non-communicable calculators, including scientific, programmable and graphics calculators are authorised
Dictionary - non-electronic, concise, direct translation only (dictionary must not contain any notes or comments).

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