# EVST13014 *Freshwater and Marine Systems*
## Term 1 - 2020

Profile information current as at 17/05/2022 02:51 pm



## Corrections

### Unit Profile Correction added on 06-04-20

Assessment 2 has now been changed to an alternate form of assessment. Please see your Moodle site for details of the assessment.

Assessment 3 has now been changed to an alternate form of assessment. Please see your Moodle site for details of the assessment.

The Residential School for this unit has been cancelled and alternative online learning materials will be made available on Moodle in due course.

# General Information

## Overview

In this unit you will focus on aquatic ecology with an emphasis on freshwater systems. You will develop an understanding of Australia's diverse and unique freshwater and estuarine systems, and their community and ecosystem dynamics, while developing communication and critical thinking skills relevant to research and industry employment. You will study the management of freshwater systems and develop skills required for field and laboratory work.

## Details

Career Level: *Undergraduate*
Unit Level: *Level 3*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

## Pre-requisites or Co-requisites

Pre-requisites: BOTN12010 or ZOOL12009
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 - 2020

- Mixed Mode
- 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. **Presentation**
Weighting: 25%
3. **Report**
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 Verbal comments from students at residential school, Unit Evaluation comments and reflections of unit coordinator

**Feedback**

ASSESSMENT. Assessment tasks were updated in 2019, placing emphasis on analysis, interpretation and communication skills, through two written assessments and a seminar presentation. In the Unit Evaluation on Moodle, there was one comment that an exam would be preferred to three assessments.

**Recommendation**

The assessments provided opportunities for students enrolled in the unit to demonstrate their understanding of the learning material, and to read further on topics that interested them. The skills gained by providing written reports and seminar presentations are highly relevant to future employers. Students regarded the seminar presentation positively because of the collegiate and supportive environment provided during the residential school. The comment on preferring exams could be addressed in several ways, including by reinstating an exam or by specifically requiring the scientific report to provide information on all topics covered in the learning materials (this was implied). Recommended action - review Assessment 3.

#### Feedback from Verbal comments from students at residential school, Unit Evaluation comments and reflections of unit coordinator

**Feedback**

RESIDENTIAL SCHOOL. Positive feedback on the residential school was received in 2019. In the Unit Evaluation there was a comment that the field trip at residential school was definitely the highlight and that it was helpful to practically apply learnings from readings. There was also a suggestion that the macroinvertebrate identification lab be revised as it wasn't possible to analyse all of the samples collected within the time allocated. This was partly due to the small cohort in 2019 (fewer students to sort and identify macroinvertebrate samples).

**Recommendation**

The residential school should be retained, particularly the visit to a local creek to collect water quality, fish and macroinvertebrate data for use in the scientific report. Macroinvertebrate collection and identification is a key skill in freshwater ecology, so it is important to continue to demonstrate and conduct sampling, and to incorporate the macroinvertebrate identification lab. However, to reduce the perception that all samples need to be analysed in the lab, consider retaining samples from fewer replicate sites. The number of retained samples can be varied depending on student enrolment numbers.

#### Feedback from Unit Evaluation rankings and reflections of unit coordinator

**Feedback**

UNIT MATERIALS. Students appeared to follow the structure and organisation of the learning material. The students who completed the Unit Evaluations ranked all categories as "Strongly Agree". It was unclear whether the study guide was utilised by students.

**Recommendation**

Retain general structure of Moodle site and organisation of materials. Review whether the study guide is still required, as material is covered in the lectures, textbook and readings.

## Unit Learning Outcomes

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

1. Describe the classification and features of aquatic habitats (including streams, lakes, estuaries and oceans)
2. Explain stratification and mixing processes and how they impact on the chemical composition of waters including nutrient cycles and gases
3. Discuss the ecology of the major components of aquatic biota, the relationships between them and the management of freshwater systems
4. Use standard methods to sample abiotic and biotic components of aquatic systems, analyse the data obtained, and interpret and communicate the results.

## 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 - Presentation - 25% | • | • | | |
| 3 - Report - 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 - Presentation - 25% | • | • | • | • | • | • | | | | |

| Assessment Tasks | Graduate Attributes | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 3 - Report - 50% | • | | • | • | • | • | | • | | |

## Textbooks and Resources

### Textbooks

EVST13014

**Prescribed**

**Australian freshwater ecology: processes and management**
Edition: 2nd edn (2014)
Authors: Boulton, AJ, Brock, MA, Robson, BJ & Ryder, DS
Wiley Blackwell
Chicester , UK
ISBN: 978118568224
Binding: Paperback

**Additional Textbook Information**
Paper copies can be purchased from the CQUni Bookshop here: http://bookshop.cqu.edu.au (search on the Unit code)

**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: Harvard (author-date)
For further information, see the Assessment Tasks.

## Teaching Contacts

**Nicole Flint** Unit Coordinator
n.flint@cqu.edu.au

## Schedule

**Week 1 - 09 Mar 2020**

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|---|---|
| Introduction<br>Light and stratification | Boulton et al. 2014 pp. 13-15, 27-36, 97-99 and scan Chapters 9, 10 and 11 for related issues.<br>Boulton et al. 2014 pp. 21-30. | |

**Week 2 - 16 Mar 2020**

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

| | | |
|---|---|---|
| Dissolved and suspended solids<br>Gases | Boulton et al. 2014 pp. 21-30.<br>Boulton et al. 2014 pp. 45-52.<br>Boulton et al. 2014 pp. 37-40, 41-44, Figure 3.16. | |

**Week 3 - 23 Mar 2020**

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|---|---|
| Nutrients<br>Eutrophication | Boulton et al. 2014 pp. 50-51, 53-55, 55-58, 58-60.<br>Boulton et al. 2014 pp. 253-258, 283, 293-295. | |

**Week 4 - 30 Mar 2020**

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|---|---|
| Microbiology and algae<br>Aquatic macrophytes | Boulton et al. 2014 pp. 80-81, 154-157, 271, 71-73, 76, 146, 255-256.<br>Boulton et al. 2014 pp. 74-77, 144-146, 39, 44, 54, 65, 75, 77-78, 84-85, 129, 159-160, 253-258, 283, 293-295. | |

**Week 5 - 06 Apr 2020**

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|---|---|
| Macroinvertebrates | Boulton et al. 2014 pp. 81-84, 146-150, 154-158.<br>Boulton et al. 2014 pp. 160-162, 164-168. | |

**Vacation Week - 13 Apr 2020**

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

**Week 6 - 20 Apr 2020**

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|---|---|
| Nekton | Boulton et al. 2014 pp. 40 (Box 3.1), 64-66, Figure 4.2, 150-151, 152-154, 157, 167, 224, 226-227, 269-273. | **Report on a selected topic** Due: Week 6 Monday (20 Apr 2020) 11:59 pm AEST<br>**Presentation** Due: Week 6 Friday (24 Apr 2020) 11:59 pm AEST |

**Week 7 - Residential School, Rockhampton - 27 Apr 2020**

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

**Week 8 - 04 May 2020**

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|---|---|
| Zooplankton<br>Basic ecotoxicology | Boulton et al. 2014 pp. 82, 86-88 and 147-150. | |

**Week 9 - 11 May 2020**

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|---|---|
| Ecological indicators | Boulton et al. 2014 pp. 275-277. | |

**Week 10 - 18 May 2020**

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|---|---|
| Toxic pollution<br>Heavy metals | Readings provided in resource materials on Moodle. | |

**Week 11 - 25 May 2020**

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|---|---|
| Pesticides | Boulton et al. 2014 pp. 269-273. | |

**Week 12 - 01 Jun 2020**

| Module/Topic | Chapter | Events and Submissions/Topic |
|---|---|---|
| Ecosystem dynamics<br>Management of aquatic systems | Boulton et al. 2014 pp. 66-70, 80, 86-88,142, Figure 4-13, Box 4.4.<br>Boulton et al. 2014 pp. 200, 221-226, Chapter 11. | **Scientific report** Due: Week 12 Friday (5 June 2020) 11:59 pm AEST |

**Review/Exam Week - 08 Jun 2020**

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

**Exam Week - 15 Jun 2020**

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

## Term Specific Information

This unit has a compulsory residential school in Rockhampton, from 27 to 30 April.

## Assessment Tasks

### 1 Report on a selected topic

**Assessment Type**
Written Assessment

**Task Description**
You are an environmental scientist, a new environmental issue has emerged in the catchment that you work in and you have been asked to provide a report on its likely impacts on local waterways and possible management actions.
You will choose one of four possible topics as the issue that has emerged in your catchment (choices will be provided on Moodle). In your report, you will relate the issue facing your catchment to factors including the classification and features of aquatic habitats, stratification and mixing processes, chemical composition of waters, the ecology of the major components of aquatic biota and management of aquatic systems.
Your report will be presented in the format of executive summary, introduction, main body, and conclusions, with correct and appropriate referencing. You have been asked to keep the report to a maximum of 2000 words.

**Assessment Due Date**
Week 6 Monday (20 Apr 2020) 11:59 pm AEST

**Return Date to Students**
Week 8 Friday (8 May 2020)

**Weighting**
25%

**Minimum mark or grade**
45%

**Assessment Criteria**
The assessment criteria include:

- Clear and concise writing in correct English, proper sentence construction, organisation of material and correct use of terminology (10%)
- Knowledge of physical, chemical and biological components of aquatic habitats, with focus on an identified environmental issue (20%)
- Ability to thoroughly research an environmental issue and possible management actions (30%)
- Presentation of logical arguments, supported by published evidence, on the likely impact and extent of the environmental issue, its effects on aquatic ecosystems and possible management solutions (30%)
- Correct referencing of material including tables, figures and literature (10%)

Please note that penalties will apply for reports that do not meet the required word limit (within 10% over and 10% under the limit). The word limit includes words in tables but not those in the reference list.
It is recommended that you choose your topic from the four possible topics early in the term and you must then advise your topic choice on the course Moodle discussion forum.

**Referencing Style**

- Harvard (author-date)

**Submission**
Online

**Submission Instructions**
Assignments must be submitted as either *.doc or *.docx files via Moodle

**Learning Outcomes Assessed**

- Describe the classification and features of aquatic habitats (including streams, lakes, estuaries and oceans)
- Explain stratification and mixing processes and how they impact on the chemical composition of waters including nutrient cycles and gases
- Discuss the ecology of the major components of aquatic biota, the relationships between them and the management of freshwater systems

**Graduate Attributes**

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

## 2 Presentation

**Assessment Type**
Presentation

**Task Description**
You will prepare and present a 12 minute PowerPoint presentation on the same topic as your report on an emerging environmental issue (Assessment 1).
The PowerPoint slides are to be submitted electronically via Moodle prior to the residential school.
You will be required to deliver your presentation during the residential school. The format of the presentation session will be similar to a scientific conference, with 12 minutes to present and 3 minutes for questions.
You will be delivering the presentation to your colleagues, and you will have the opportunity to ask constructive questions and discuss the information presented by others.

**Assessment Due Date**
Week 6 Friday (24 Apr 2020) 11:59 pm AEST
Please submit your presentation slides as a PowerPoint file (*.pptx) in Moodle by this due date. Presentations will be delivered during the residential school.

**Return Date to Students**
Week 8 Friday (8 May 2020)

**Weighting**
25%

**Minimum mark or grade**
45%

**Assessment Criteria**
Your presentation will be assessed on:

- Relevance of content to a presentation format (60%)
- Clarity and conciseness of presentation slides and delivery, and adherence to time limit (40%)

Penalties will apply for presentations that take less than 10 minutes or more than 14 minutes to deliver. The key to successful presentations is adequate preparation.

**Referencing Style**

- Harvard (author-date)

**Submission**
Offline Online

**Submission Instructions**
Please submit your presentation slides as a PowerPoint file (*.pptx) in Moodle. Presentations will be delivered during the residential school.

**Learning Outcomes Assessed**

- Describe the classification and features of aquatic habitats (including streams, lakes, estuaries and oceans)
- Explain stratification and mixing processes and how they impact on the chemical composition of waters including nutrient cycles and gases

**Graduate Attributes**

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

## 3 Scientific report

**Assessment Type**
Report

**Task Description**
This assessment item will be a scientific report of the field trip carried out during residential school. You are required to demonstrate what you've learned about aquatic ecosystems during the unit.
The report will be presented in the format of abstract, introduction, methods, results and discussion. Maximum 2500 words.

**Assessment Due Date**
Week 12 Friday (5 June 2020) 11:59 pm AEST

**Return Date to Students**
Exam Week Friday (19 June 2020)

**Weighting**
50%

**Minimum mark or grade**
50%

**Assessment Criteria**
The assessment criteria include:

- Clear and concise writing in correct English, proper sentence construction, organisation of material and correct use of terminology (10%)
- Knowledge of physical, chemical and biological components of aquatic habitats (20%)
- Appropriate description of methods, data presentation and analysis (30%)
- Ability to link together information from all of the physical, chemical and biological parameters measured to accurately describe the functioning of the aquatic system (15%)
- Logical discussion, supported by published evidence (15%)
- Correct referencing of material including tables, figures and literature (10%)

Please note that penalties will apply for reports that do not meet the required word limit (within 10% over and 10% under the limit). The word limit includes words in tables but not those in the reference list.

**Referencing Style**

- Harvard (author-date)

**Submission**
Online

**Submission Instructions**
Assignments must be submitted as either *.doc or *.docx files via Moodle

**Learning Outcomes Assessed**

- Discuss the ecology of the major components of aquatic biota, the relationships between them and the management of freshwater systems
- Use standard methods to sample abiotic and biotic components of aquatic systems, analyse the data obtained, and interpret and communicate the results.

**Graduate Attributes**

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

## 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