

## SCIE1002: Multidisciplinary Laboratories

Callaghan and Ourimbah

Semester 1 - 2024



THE UNIVERSITY OF  
NEWCASTLE  
AUSTRALIA

## OVERVIEW

**Course Description** Scientific research is typically informed by more than one discipline. As such, it is important for professional scientists to have the capacity to engage and understand the perspectives of multiple disciplines while addressing scientific challenges. In this course, you will learn essential laboratory and fieldwork skills required in both your future field and across a range of other diverse science disciplines. As part of a research team of peers from diverse disciplines, and using the university as a living laboratory, you will investigate practical research questions using multiple disciplinary approaches. You will then communicate your research findings for scientific and lay audiences.

**Academic Progress Requirements** Nil

**Contact Hours**

**Callaghan and Ourimbah Laboratory \***  
Face to Face On Campus  
2 hour(s) per week(s) for 13 week(s) starting Week 1

**Lectorial**  
Face to Face On Campus  
1 hour(s) per week(s) for 13 week(s) starting Week 1

**Online Activity**  
Online  
3 hour(s) per week(s) for 13 week(s) starting Week 1  
This includes directed course content

\* This contact type has a compulsory requirement.

**Unit Weighting Workload** 10  
Students are required to spend on average 120-140 hours of effort (contact and non-contact) including assessments per 10 unit course.

# COURSE OUTLINE

---

# CONTACTS

<b>Course Coordinator</b>	<b>Callaghan and Ourimbah</b> Primary: Dr Glenn Bryant Glenn.Bryant@newcastle.edu.au Consultation: Please email for an appointment. Glenn is the primary point of contact for students, and they are also encouraged to post their course-related (non-private) questions to Glenn's Virtual Office on Canvas.  Secondary: Dr Richard Yu Richard.Yu@newcastle.edu.au (02) 4921 6990 Consultation: Please email for an appointment
<b>Teaching Staff</b>	Other teaching staff will be advised on the course Canvas site.
<b>School Office</b>	<b>School of Environmental and Life Sciences</b> Room C228 Chemistry Building Callaghan Science-SELS@newcastle.edu.au +61 2 4921 5080 9am-5pm (Mon-Fri)  <b>School of Environmental and Life Sciences</b> SO-104 / SO-105 Science Offices Ourimbah Science-SELS@newcastle.edu.au 4349 4568 / 4348 4115 9am-5pm (Mon-Fri)

# SYLLABUS

<b>Course Content</b>	<ul style="list-style-type: none"><li>• Working safely and competently in the laboratory and in the field</li><li>• Collecting and analysing diverse data</li><li>• Conducting experiments</li><li>• Working as part of a team</li><li>• The role of science disciplines in solving complex problems</li><li>• Using multiple disciplinary perspectives to investigate scientific problems</li><li>• Writing scientific reports, including laboratory and fieldwork reports</li><li>• Communicating scientific information to lay audiences</li></ul>
<b>Course Learning Outcomes</b>	<b>On successful completion of this course, students will be able to:</b> <ol style="list-style-type: none"><li>1. As part of a group, gather, compare and summarise information from a range of sources and disciplines.</li><li>2. Collect, accurately record, interpret and draw conclusions from scientific experiments.</li><li>3. Communicate scientific results, information or arguments to a range of audiences, for a range of purposes.</li><li>4. Work safely and competently in a variety of laboratory and field contexts.</li></ol>
<b>Course Materials</b>	<b>Multi-Media Resource:</b> <ul style="list-style-type: none"><li>- Online material available on the course Canvas site</li></ul> <b>Required Reading:</b> <p>Course laboratory manuals</p> <b>Recommended Reading:</b> <p>Materials provided on the course Canvas site</p>

# COMPULSORY REQUIREMENTS

In order to pass this course, each student must complete ALL of the following compulsory requirements:

## Contact Hour Requirements:

Laboratory: There is a compulsory attendance requirement in this course. Students must attend a minimum of 80% of laboratories to meet course requirements.

# SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	26 Feb	Welcome, introductions and safety induction	Laboratory and fieldwork inductions Online material	None
2	4 Mar	Environmental Science and Management: collection of water samples	Laboratory session Pre- and post-laboratory online material	At the start and end of the session (Assessment 4)
3	11 Mar	Biology: assessment of microbiological water quality	Laboratory session Pre- and post-laboratory online material	At the start and end of the session (Assessment 4)
4	18 Mar	Workshop: laboratory and research reports	Workshop session Pre- and post-workshop online material	None
5	25 Mar	Chemistry: water purification	Laboratory session Pre- and post-laboratory online material	At the start and end of the session (Assessment 4)  Group Report (Assessment 1)
6	1 Apr	Psychology: sensory evaluation of water	Laboratory session Pre- and post-laboratory online material	At the start and end of the session (Assessment 4)
7	8 Apr	Geography & Environmental Studies: water	Laboratory session Pre- and post-laboratory online material	At the start and end of the session (Assessment 4)
<b>Mid-Semester Recess</b>				
<b>Mid-Semester Recess</b>				
8	29 Apr	Earth Sciences: energy and climate change	Laboratory session Pre- and post-laboratory online material	At the start and end of the session (Assessment 4)  Laboratory report: water (Assessment 2)
9	6 May	Biology: sources of energy	Laboratory session Pre- and post-laboratory online material	At the start and end of the session (Assessment 4)
10	13 May	Physics: energy use	Laboratory session Pre- and post-laboratory online material	At the start and end of the session (Assessment 4)
11	20 May	Physics: energy storage	Laboratory session Pre- and post-laboratory online material	At the start and end of the session (Assessment 4)
12	27 May	Chemistry: solar energy conversion	Laboratory session Pre- and post-laboratory online material	At the start and end of the session (Assessment 4)
13	3 Jun	Revision	Workshop session Pre- and post-workshop online material	Laboratory report: energy (Assessment 3)
<b>Examination Period</b>				
<b>Examination Period</b>				

# ASSESSMENTS

This course has 4 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Written Group Report	29 March	Group	20%	1, 3
2	Laboratory Report 1: Water	3 May	Individual	30%	2, 3, 4
3	Laboratory Report 2: Energy	7 June	Individual	30%	2, 3, 4
4	Laboratory Preparation Notes	In class for the weeks with a lab, from Week 2 onwards	Individual	20%	1, 2, 3, 4

## Late Submissions

The mark for an assessment item submitted after the designated time on the due date, without an approved extension of time, will be reduced by 10% of the possible maximum mark for that assessment item for each day or part day that the assessment item is late. Note: this applies equally to week and weekend days.

## Assessment 1 - Written Group Report

<b>Assessment Type</b>	Report
<b>Purpose</b>	This assessment task provides the opportunity to demonstrate your understanding of the value of different disciplinary perspectives in addressing complex scientific challenges.
<b>Description</b>	Initially you will research and report on a scientific challenge from a single disciplinary perspective. Others in your laboratory group will research and report on the same challenge but from different disciplinary perspectives. Together with your laboratory group, you will write a group conclusion that each of you can include in your final reports. In the group conclusion you will knit together the findings of the research from the disciplines each of you have considered.
<b>Weighting</b>	20%
<b>Due Date</b>	29 March
<b>Submission Method</b>	Online via Turnitin
<b>Assessment Criteria</b>	A marking rubric is available on the course Canvas site
<b>Return Method</b>	Online
<b>Feedback Provided</b>	Online - Written (online) and/or verbal
<b>Opportunity to Reattempt</b>	Students WILL NOT be given the opportunity to reattempt this assessment.

## Assessment 2 - Laboratory Report 1: Water

<b>Assessment Type</b>	Report
<b>Purpose</b>	This assessment task provides the opportunity for you to demonstrate your understanding of how experimental science is reported, and how to bring together the findings from different disciplinary perspectives.
<b>Description</b>	Every week you will undertake a different experiment and record your findings in your laboratory manual. The data you collect provides evidence you will use to answer the question "Water - would you drink it?"
<b>Weighting</b>	30%
<b>Due Date</b>	3 May
<b>Submission Method</b>	Online via Turnitin
<b>Assessment Criteria</b>	A marking rubric is available on the course Canvas site.
<b>Return Method</b>	Online
<b>Feedback Provided</b>	Online - Written (online) and/or verbal
<b>Opportunity to Reattempt</b>	Students WILL NOT be given the opportunity to reattempt this assessment.

## Assessment 3 - Laboratory Report 2: Energy

<b>Assessment Type</b>	Report
<b>Purpose</b>	This assessment task provides the opportunity for you to refine and further demonstrate your understanding of how experimental science is reported, and how to bring together the findings from different disciplinary perspectives.
<b>Description</b>	Every week you will undertake a different experiment and record your findings in your laboratory manual. The data you collect provides evidence you will use to answer the question "Energy - can it be sustainable?"
<b>Weighting</b>	30%
<b>Due Date</b>	7 June
<b>Submission Method</b>	Online via Turnitin
<b>Assessment Criteria</b>	A marking rubric is available on the course Canvas site
<b>Return Method</b>	Online
<b>Feedback Provided</b>	Online - Written (online) and/or verbal
<b>Opportunity to Reattempt</b>	Students WILL NOT be given the opportunity to reattempt this assessment.

## Assessment 4 - Laboratory Preparation Notes

<b>Assessment Type</b>	Written Assignment
<b>Purpose</b>	This assessment task is designed to help you prepare for your laboratory classes as well as provide a scaffold on which to build your laboratory reports.
<b>Description</b>	For each of the 10 laboratory exercise weeks (2% per week), you need to: 1. Plan what you are going to do before you attend your session by preparing a flow diagram outlining the steps you will take to complete the exercise. 2. Describe what you actually did in the session by drafting the methods and results sections that will ultimately go into your laboratory reports.
<b>Weighting</b>	20%
<b>Length</b>	Around 2 pages each week
<b>Due Date</b>	In class for the weeks with a lab, from Week 2 onwards
<b>Submission Method</b>	In Class
<b>Assessment Criteria</b>	A marking rubric is available on the course Canvas site
<b>Return Method</b>	In Class
<b>Feedback Provided</b>	In Class - each week. verbal and/or written feedback
<b>Opportunity to Reattempt</b>	Students WILL NOT be given the opportunity to reattempt this assessment.

# ADDITIONAL INFORMATION

## Grading Scheme

This course is graded as follows:

Range of Marks	Grade	Description
85-100	High Distinction (HD)	Outstanding standard indicating comprehensive knowledge and understanding of the relevant materials; demonstration of an outstanding level of academic achievement; mastery of skills*; and achievement of all assessment objectives.
75-84	Distinction (D)	Excellent standard indicating a very high level of knowledge and understanding of the relevant materials; demonstration of a very high level of academic ability; sound development of skills*; and achievement of all assessment objectives.
65-74	Credit (C)	Good standard indicating a high level of knowledge and understanding of the relevant materials; demonstration of a high level of academic achievement; reasonable development of skills*; and achievement of all learning outcomes.
50-64	Pass (P)	Satisfactory standard indicating an adequate knowledge and understanding of the relevant materials; demonstration of an adequate level of academic achievement; satisfactory

		development of skills*; and achievement of all learning outcomes.
0-49	Fail (FF)	Failure to satisfactorily achieve learning outcomes. If all compulsory course components are not completed the mark will be zero. A fail grade may also be awarded following disciplinary action.

\*Skills are those identified for the purposes of assessment task(s).

### Attendance

Attendance/participation will be recorded in the following components:

- Laboratory (Method of recording: Scanning your student ID on entry)
- Lectorial (Method of recording: Scanning your student ID on entry)

### Communication Methods

Communication methods used in this course include:

- Canvas Course Site: Students will receive communications via the posting of content or announcements on the Canvas course site.
- Email: Students will receive communications via their student email account.
- Face to Face: Communication will be provided via face to face meetings or supervision.

### Course Evaluation

Each year feedback is sought from students and other stakeholders about the courses offered in the University for the purposes of identifying areas of excellence and potential improvement.

### Oral Interviews (Vivas)

As part of the evaluation process of any assessment item in this course an oral examination (viva) may be conducted. The purpose of the oral examination is to verify the authorship of the material submitted in response to the assessment task. The oral examination will be conducted in accordance with the principles set out in the [Oral Examination \(viva\) Procedure](#). In cases where the oral examination reveals the assessment item may not be the student's own work the case will be dealt with under the [Student Conduct Rule](#).

### Academic Misconduct

All students are required to meet the academic integrity standards of the University. These standards reinforce the importance of integrity and honesty in an academic environment. Academic Integrity policies apply to all students of the University in all modes of study and in all locations. For the Student Academic Integrity Policy, refer to <https://policies.newcastle.edu.au/document/view-current.php?id=35>.

### Adverse Circumstances

The University acknowledges the right of students to seek consideration for the impact of allowable adverse circumstances that may affect their performance in assessment item(s). Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:

1. the assessment item is a major assessment item; or
2. the assessment item is a minor assessment item and the Course Co-ordinator has specified in the Course Outline that students may apply the online Adverse Circumstances system;
3. you are requesting a change of placement; or
4. the course has a compulsory attendance requirement.

Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure available at:

<https://policies.newcastle.edu.au/document/view-current.php?id=236>

### Important Policy Information

The Help button in the Canvas Navigation menu contains helpful information for using the Learning Management System. Students should familiarise themselves with the policies and procedures at <https://www.newcastle.edu.au/current-students/respect-at-uni/policies-and-procedures> that support a safe and respectful environment at the University.

*This course outline was approved by the Head of School. No alteration of this course outline is permitted without Head of School approval. If a change is approved, students will be notified and an amended course outline will be provided in the same manner as the original.*

