

ENVS2009: Catchment and Water Resource Management

Callaghan and Ourimbah
Semester 2 - 2025



THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

OVERVIEW

Course Description

The management of inland water resources requires a holistic understanding of the basic ecology of freshwater systems, factors that impact water quality and the balance between water use by humans and maintenance of healthy aquatic habitats. In this course, students will examine ways to assess water and aquatic habitat quality and management of water resources. The course will include local and regional case studies and examples.

Academic Progress Requirements

Nil

Requisites

Course Replacement:
You cannot enrol if you have successfully completed any of the following course(s):
SRMT2030

Assumed Knowledge Contact Hours

ENVS1001 and BIOL1002 and BIOL1003 (or BIOL1070)

Callaghan

Field Study *

Face to Face Off Campus

6 hour(s) per term for 1 term starting Week 4

Field study will include a full day field trip offered on two days.

Students will choose one of those days.

Lecture

Face to Face On Campus

2 hour(s) per week(s) for 13 week(s) starting Week 1

Practical *

Face to Face On Campus

3 hour(s) per week(s) for 9 week(s) starting Week 2

Ourimbah

Field Study *

Face to Face Off Campus

6 hour(s) per term for 1 term starting Week 4

Field study will include a full day field trip offered on two days.

Students will choose one of those days.

Lecture

Face to Face On Campus

2 hour(s) per week(s) for 13 week(s) starting Week 1

Practical *

Face to Face On Campus

3 hour(s) per week(s) for 9 week(s) starting Week 2

Unit Weighting Workload

* This contact type has a compulsory requirement.

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

www.newcastle.edu.au

CRICOS Provider 00109J

CONTACTS

Course Coordinator	Callaghan and Ourimbah Dr Craig Evans Craig.Evans@newcastle.edu.au (02) 4055 0695 Consultation: By appointment
Teaching Staff	Other teaching staff will be advised on the course Canvas site.
School Office	School of Environmental and Life Sciences Room C228 Chemistry Building Callaghan CESE-SELS@newcastle.edu.au +61 2 4921 5080 9am-5pm (Mon-Fri) School of Environmental and Life Sciences SO-104 / SO-105 Science Offices OURIMBAH CESE-SELS@newcastle.edu.au +61 2 4921 5080 9am-5pm (Mon-Fri)

SYLLABUS

Course Content	<ul style="list-style-type: none">• Hydrological cycle and Australia's water resources• Key physical and chemical processes in running and standing waters• Basic ecology of running and standing waters• Ecological impacts of water development and water pollution• Methods for assessing water quality for ecological health and human consumption• Source water treatment and supply• Wastewater treatment, disposal and recycling• Urban stormwater management and water sensitive urban design• Policies and legislation for water management
Course Learning Outcomes	<p>On successful completion of this course, students will be able to:</p> <ol style="list-style-type: none">1. Demonstrate knowledge of the ecological principles underlying the management of freshwater systems.2. Critically evaluate the current issues and challenges related to the management of freshwater resources.3. Demonstrate practical skills in freshwater habitat and water quality assessment including data collection, analyses and interpretation.4. Clearly report findings and make evidence-based recommendations about the condition of aquatic habitats and water quality.
Course Materials	<p>Lecture Materials: -</p> <p>Recommended Reading: -</p> <p>Required Reading:</p> <ul style="list-style-type: none">- Readings may be derived from various sources and will be advised in advance where applicable.

COMPULSORY REQUIREMENTS

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

Contact Hour Requirements:

- Practical Attend 80% of sessions
- Field Study Attend 100% of sessions

Course Assessment Requirements:

-

Compulsory Placement and WHS Requirements:

-

SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	21 Jul	Distribution of water and availability of freshwater resources in Australia	No practical	
2	28 Jul	Properties of water/ Physical features and processes in flowing water systems	Campus catchment water quality - habitat assessment, field measurement and sample collection	Practical assignment 1 (part A) - desktop review
3	4 Aug	Chemical and biological processes in flowing water systems (I)	Campus catchment water quality - sample analysis. Field excursion preparation	Practical assignment 1 (complete)
4	11 Aug	Chemical and biological processes in flowing water systems (II)	Compulsory field excursion - Williams River water quality and habitat assessment	
5	18 Aug	Standing water systems / Human impacts on water quality and aquatic ecosystems	Field trip water and macroinvertebrate sample processing	
Recess				
6	1 Sep	Issues in catchment management	Macroinvertebrate identification and data compilation from field trip sample analyses	Online quiz #1
7	8 Sep	Public water supply - storage, treatment & distribution of water for potable use	Microbial water quality indicators and disinfection of drinking water (I)	
8	15 Sep	Drinking water quality monitoring - pathogens and microbial quality indicators	Microbial water quality indicators and disinfection of drinking water (II)	
9	22 Sep	Urban rainwater harvesting - water quality, usage and environmental benefits	No practical - free week for preparation of field trip report	Practical assignment 2
Recess				
10	6 Oct	Urban storm water management and water sensitive urban design	Constructed wetland design for storm water quality management	Assessment 1: Williams River field trip report Practical assignment 3a
11	13 Oct	Wastewater management and treatment processes	Details to be advised	
12	20 Oct	Wastewater disposal, re-use, and land application	Concepts in land application of liquid wastes by irrigation	Practical assignment 3b Online quiz #2
13	27 Oct			
Exams				
Exams				

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	Essays / Written Assignments	Week 10 - Friday Oct 10	Individual	30%	1, 2, 3, 4
2	Examination: Formal	Formal Examination Period. Rescheduled examinations may only be granted in accordance with the Adverse Circumstances Affecting Assessment Items Policy.	Individual	40%	1, 2
3	Online Quizzes	Weeks 6 and 12	Individual	10%	1, 2
4	Practical Exercises	Assignment 1: Part A - prac session Week 2; Full assignment - end of Week 3 Assignment 2: End of Week 9 Assignment 3: 2 parts - completed in class and submitted at the end of prac sessions in Weeks 10 & 12	Individual	20%	1, 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 up to 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 - Essays / Written Assignments

Assessment Type	Written Assignment
Purpose	The data summary and water quality assessment report derived from field excursion activities evaluates student capacity in learning objectives 1, 2, 3 and 4 and will convey evidence-based understanding of key concepts and topics. Practical skills will be acquired in generating the necessary data, while a theoretical understanding of water quality assessment will be evaluated through presentation of data and synthesis of literature.
Description	Written report involving data analysis, presentation, and interpretation
Weighting	30%
Length	9 pages (approx.)
Due Date	Week 10 - Friday Oct 10
Submission Method	Assignment Boxes Electronic via Canvas AND hard copy to ENVS2009 assignment box
Assessment Criteria	Provided via Canvas
Return Method	Specific Location
Feedback Provided	Returned Work - . Individual feedback will be provided with each marked assignment
Opportunity to Reattempt	Students will not be given the opportunity to reattempt this assessment.

Assessment 2 - Examination: Formal

Assessment Type	Online Open Book Formal Examination
Purpose	The final formal examination is designed to test the individual student's knowledge of the breadth of course material and their ability to describe, analyse and hypothesise from this material. Marks are awarded in accordance with Table 1 from the Workload Assessment Marking and Grading Policy (Policy 000649) at http://www.newcastle.edu.au/policy/000649.html
Description	Written examination
Weighting	40%
Length	2 hours
Due Date	Formal Examination Period.

Submission Method	Rescheduled examinations may only be granted in accordance with the Adverse Circumstances Affecting Assessment Items Policy.
Assessment Criteria	Formal Exam
Return Method	Details regarding the structure and format of the exam will be provided via Canvas
Feedback Provided	Not Returned
Opportunity to Reattempt	No Feedback - . Students will not be given the opportunity to reattempt this assessment.

Assessment 3 - Online Quizzes

Assessment Type	Quiz
Purpose	The purpose and benefit of the online quizzes is to promote review of lecture material and provide students with feedback on their understanding of key concepts. These tests further represent valuable preparation for the end of semester formal exam, as they comprise the style of questions students used in that assessment task. Each of the online quizzes are weighted at 5% (combined total = 10%) of the overall course assessment.
Description	Multi-choice style questions
Weighting	10%
Length	20 questions, 40 minutes
Due Date	Weeks 6 and 12
Submission Method	Online Quizzes completed and submitted online
Assessment Criteria	Provided with the quiz
Return Method	Online
Feedback Provided	Online - .
Opportunity to Reattempt	Students will not be given the opportunity to reattempt this assessment.

Assessment 4 - Practical Exercises

Assessment Type	Tutorial / Laboratory Exercises
Purpose	The practical exercises will evaluate student comprehension of basic theory and skills in water quality assessment and use of water as a resource. Between them, they address 3 of the 4 learning objectives of the course. Practical assignments 1 & 3 are weighted at 5% each and assignment 2 at 10% (combined total = 20%) of the overall course assessment.
Description	Assignment 1 - Desktop review, data generation, interpretation and written answers based on field and lab work in Weeks 2 & 3. Assignment 2 - Written assignment based on work done during lab sessions in Weeks 7 & 8 Assignment 3 - Two (2) part written answer exercise on work done during prac sessions in Weeks 10 & 12
Weighting	20%
Due Date	Assignment 1: Part A - prac session Week 2; Full assignment - end of Week 3 Assignment 2: End of Week 9 Assignment 3: 2 parts - completed in class and submitted at the end of prac sessions in Weeks 10 & 12
Submission Method	Specific Location Hard copy to be submitted during practical class
Assessment Criteria	provided during class and via canvas where applicable
Return Method	Specific Location
Feedback Provided	Returned Work - . Individual feedback will be provided with each marked assignment
Opportunity to Reattempt	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.

Attendance

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

Attendance/participation will be recorded in the following components:

- Field Study (Method of recording: Student to sign class attendance sheet)
- Practical (Method of recording: Student to sign class attendance sheet)

Attendance and/or Other Class Requirements:

The practical component of the course and the associated field excursions are compulsory. Attendance at practical classes will be recorded each week and students are expected to attend at least 80% of practicals in order to pass the course. Practical work sheets/exercises must be submitted by the due date, or late penalties will apply. It will not be possible to complete missed practical work at a later date. If practical sessions are missed the student must discuss the situation with the course co-ordinator or apply for Adverse Circumstances consideration (see above) and attach the required documentary evidence as per the normal process. For ALL practical sessions and field activities students must bring along writing materials (notebook and pen/pencil) and a calculator, and must wear fully enclosed footwear. For the 'wet' laboratory practicals students must bring along these items and wear fully enclosed shoes, a laboratory coat and safety glasses. Students should also wear enclosed shoes and appropriate clothing for field activities.

Risk Assessment and Health & Safety Requirements

The issue of safety for staff and students is taken very seriously by the University. Students studying courses requiring completion of a Risk Assessment Safety Induction or other Health & Safety requirement MUST complete all safety components. These will generally occur in the first week of each course or prior to a placement or field trip. Students will be advised of Risk Assessment and Health & Safety requirements by the Course Coordinator at the beginning of the semester.

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.
Learning Analytics	The University uses an evidence-based approach to enhancing student learning and delivering support. Our careful analysis of data through learning analytics informs decision making processes related to student learning, academic outcomes, and support services. Learning analytics may be used to identify targeted individual opportunities for additional support services or interventions.
Interviews on Assessment Items	<p>An Interview may be conducted on any assessment item in this course, in accordance with the Interview on Assessment Items Procedure. The purpose of the interview is to verify the author of the material submitted in response to the assessment task and provide a quality assurance measure.</p> <p>In the event the Course Coordinator is not satisfied that a student's oral responses are consistent with the work originally submitted, the matter will be referred to the Student Academic Conduct Officer, who will take appropriate action under the Student Conduct Rule.</p>
Academic Integrity and Ethical Academic Conduct Policy	<p>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.</p> <p>Please refer to the Academic Integrity and Ethical Academic Conduct Policy</p>
Adverse Circumstances	<p>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).</p> <p>Applications for special consideration due to adverse circumstances will be made using the online Adverse Circumstances system where:</p> <ol style="list-style-type: none">1. the assessment item is a major assessment item; or2. 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; or4. the course has a compulsory attendance requirement. <p>Before applying you must refer to the Adverse Circumstance Affecting Assessment Items Procedure.</p>
Use of generative artificial intelligence in course assessments	<p>It is critical that any work submitted for assessment is your own original work. Before using generative AI tools (such as ChatGPT, Perplexity, Microsoft Copilot, etc) in any assessable work you must ensure that such use is in line with the requirements for the course and expectations of your Course Coordinator</p> <p>Misuse of AI tools may be considered a breach of the University's Student Conduct Rule and could result in disciplinary action.</p> <p>Artificial Intelligence detection software may be used to review any work you submit. If you have used AI in any way other than has been expressly permitted by your course coordinator, you may be engaging in academic misconduct and be subject to penalties.</p> <p>For information, refer to:</p> <ul style="list-style-type: none">• Generative AI Tools

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- [Academic Integrity](#)

**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.

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