School of Environmental and Life Sciences

SRMT3060: Restoration Ecology

Callaghan and Ourimbah
Semester 1 - 2024

COURSE OUTLINE

www.newcastle.edu.au
CRICOS Provider 00109J

OVERVIEW

Course Description

The United Nations General assembly have declared 2021 – 2030 as the UN Decade on Ecosystem Restoration and that restoration is fundamental to sustainable development, mitigating and adapting to climate change, enhancing food security as well as water and biodiversity conservation. SRMT3060 explores the science upon which actions to assist the recovery of degraded, damaged or destroyed ecosystem should be based. Real-world degradation problems and restoration solutions will be examined to equip students with the knowledge and skills for entry into careers involving ecological restoration policy and/or practice. All lectures are recorded and the practical component consists of face to face workshops and compulsory fieldwork sessions.

Academic Progress Requirements

Nil

Assumed Knowledge

STAT1070, ENVS1001, ENVS2005

Contact Hours

Callaghan
Field Study *
Face to Face Off Campus
12 hour(s) per term starting Week 1

Laboratory
Face to Face On Campus
3 hour(s) per week(s) for 6 week(s) starting Week 1

Lecture
Online
2 hour(s) per week(s) for 12 week(s)

Ourimbah
Field Study *
Face to Face Off Campus
12 hour(s) per term starting Week 1

Laboratory
Face to Face On Campus
3 hour(s) per week(s) for 6 week(s) starting Week 1

Lecture
Online
2 hour(s) per week(s) for 12 week(s)

* This contact type has a compulsory requirement.

Unit Weighting

10

Workload

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

CONTACTS

Course Coordinator

Callaghan and Ourimbah
Dr Alex Callen
Alex.Callen@newcastle.edu.au
Consultation: As arranged via email

Teaching Staff

Other teaching staff will be advised on the course Canvas site.

School Office

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9am-5pm (Mon-Fri)

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SYLLABUS

Course Content

1. Restoring landscape and physical processes
2. Restoring wildlife habitat and key symbiotic interactions
3. Species re-introductions and interactions
4. Specialist restoration treatments and techniques
5. Reference ecosystems and evaluation of restoration schemes
6. Social context of restoration
7. Restoration in a changing climate

Course Learning Outcomes

On successful completion of this course, students will be able to:

1. Explain and apply the key principles underpinning ecological restoration;
2. Assess the condition of, and threats to, an ecosystem though fieldwork and desktop activities;
3. Describe and interpret environmental information obtained from the field and other scientific resources;
4. Identify and describe appropriate restoration goals and evaluation strategies;
5. Design and explain appropriate restoration strategies and techniques to address specific problems eg. re-vegetation, weed control;
6. Write a technical document in the style expected of environmental professionals.

Course Materials

Other Resources:

- Many useful websites for this course are provided on Canvas. If you wish to buy a weed identification book – this is the best one to buy: Richardson F.J., Richardson R.G., Shepherd R.C.H (2016) Weeds of the South-east: An Identification Guide for Australia. (Third Edition) CSIRO publishing, Canberra.
- A free App for your phone "Key to Weeds of SE Qld & Northern NSW" is highly recommended.
  https://www.lucidcentral.org/editors-pick-animal-plant-and-mineral-identification-keys/key-to-weeds-of-se-qld-and-northern-nsw/

Recommended Reading: Recommended but NOT COMPULSORY:

- A number of references used in the weekly lectures are also available via Course Readings and a Reading List will be posted on Canvas. These recommended readings supplement the Australian content within Galatowitsch (2012).

Recommended Text:
- Galatowitsch, S.M. (2012) Ecological Restoration. Sinauer Associates, Sunderland, MA. Covers scientific theory & practice to a level expected of University graduates. May be purchased from The School Locker https://theschoollocker.com.au/universities/the-university-of-newcastle

COMPULSORY REQUIREMENTS

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

Contact Hour Requirements:
- Field Study - There is a compulsory attendance requirement in this course. Students must attend 100% of fieldwork sessions.
- Field Study Induction Requirement - Students must attend and pass the induction requirements before attending these sessions.

SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	26 Feb	Introduction to Restoration Ecology - What we are trying to achieve?	Compulsory induction, course overview, expectations. Restoration Ecology Think-tank Regional spatial review - urban and peri-urban restoration opportunities	Compulsory safety induction
2	4 Mar	Restoration planning I - Theoretical thinking	Field Study - Visit I to restoration site Site Overview - opportunities & constraints, vegetation community & condition Re-visiting your restoration goals	
3	11 Mar	Restoration planning II - Reality Check	Desktop study of Restoration & Reference site Developing the conceptual model & setting restoration goals (Computer Lab/Workshop)	
4	18 Mar	Why are Reference Ecosystems crucial?	Field Study - Visit I to reference site Describing vegetation community & condition, site characteristics	
5	25 Mar	Wildlife habitat & conflicting goals	Field Stu Visit II to reference site Identifying dominant plant species useful for restoration	Part 1 of Restoration Plan Due 5pm Thursday 28 March
6	1 Apr	EASTER - No lecture	No Computer Lab/Workshop	
7	8 Apr	Restoring biotic interactions - considering redundancy (flora, fauna & soil microbes)	Field Study - Visit II to restoration site Site Concept Design, plant identification, staging and restoration considerations	Choose video assessment topic (weed species) by this date
Mid-Semester Recess				

Mid-Semester Recess				
8	29 Apr	Plant interactions (the good, the bad and the unknown)	Understanding herbicide risk When to worry about weeds (Computer Lab/Workshop)	
9	6 May	Plant re-introductions (practical issues)	Interventions - developing a decision matrix (Computer Lab/Workshop)	Video presentation (weed species) due 5pm Thursday 09 May
10	13 May	Evaluation of restoration projects	Design of restoration strategies and techniques (Computer Lab/Workshop)	
11	20 May	Restoring ecosystem processes	The role of adaptive management and developing key performance indicators	
12	27 May	Restoration in a changing climate Society & restoration	No Computer Lab/Workshop	FULL Restoration Plan Due 5pm Thursday 30 May
13	3 Jun	No online lecture	No Computer Lab/Workshop	
Examination Period				
Examination Period				

ASSESSMENTS

This course has 3 assessments. Each assessment is described in more detail in the sections below.

	Assessment Name	Due Date	Involvement	Weighting	Learning Outcomes
1	Field Study Assessment	Part 1 - 5pm Thursday 28 March; Part 2 (Full Plan) - 5pm Thursday 30 May	Individual	40%	2, 3, 4, 5, 6
2	Video	5pm Thursday 09 May	Individual	15%	1, 5
3	Exam	Formal exam period	Individual	45%	1, 4, 5

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 - Field Study Assessment

Assessment Type Written Assignment
Purpose To translate key principles of restoration ecology into a practical management document for effective ecological restoration.
Description You will write a Restoration Plan for the designated study site using your fieldwork data, your own desktop research and assisted by workshop materials. Your Plan will be submitted in two parts to distribute the workload across the semester. Further details are provided in the assignment guidelines on Canvas. If you do not listen to the lectures and participate in the workshops during semester, you will have difficulty completing this assessment to an acceptable standard. Part 1 (worth 15% of total marks) and Full Plan (worth 25% of total marks).
Weighting 40%
Length Part 1: 2000 words (15%) Part 2 : 3000 words (25%)
Due Date Part 1 - 5pm Thursday 28 March;
Part 2 (Full Plan) - 5pm Thursday 30 May
Submission Method Online
Assessment Criteria Rubric provided in assignment guideline on Canvas
Return Method Online
Feedback Provided Online - 3 weeks after submission.

Assessment 2 - Video

Assessment Type Presentation
Purpose Improve understanding of weed control methods; diversify science communication using audio-visual format.
Description Each student will research, develop and record a short video presentation on a topic relevant to restoration ecology and practice. Further details about the topic and type of video are provided in the assignment guidelines on Canvas.
Weighting 15%
Length 3 minutes
Due Date 5pm Thursday 09 May
Submission Method Online
Assessment Criteria Rubric provided in assignment guideline on Canvas.
Return Method Online
Feedback Provided Online - 3 weeks after submission.

Assessment 3 - Exam

Assessment Type Formal Examination
Purpose Test understanding of all topics covered in lecture videos
Description The final exam uses a series of theoretical problems and case study scenarios to test understanding of the topics covered in the lectures.
Weighting 45%
Due Date Formal exam period
Submission Method Online
Assessment Criteria Details provided in final computer lab workshop.
Return Method Not Returned
Feedback Provided No Feedback

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:

- Field Study (Method of recording: Attendance recorded against class roll. 100% attendance at field study sessions is a requirement of the course.)

- Laboratory (Method of recording: Attendance recorded against class roll.)

WH&S Requirements

The COMPULSORY safety induction occurs at the start of the FIRST Computer Lab/Workshop session in WEEK 1.
Closed shoes and appropriate clothing (as per induction) MUST BE WORN FOR FIELDWORK.

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.