School of Environmental and Life Sciences

ENVS6525: Sustainability and Ecosystem Health
Online
Trimester 1 - 2024

THE UNIVERSITY OF
NEWCASTLE
AUSTRALIA

COURSE OUTLINE

OVERVIEW

Course Description Sustainability and Ecosystem Health offers a systematic examination of an emergent paradigm in environmental management, ecosystem health and resilience thinking. It explores these concepts via the theoretical perspectives and methodologies of complexity and transdisciplinarity. The ecosystem health paradigm examines environmental issues using key indicators of system health such as integrity, resilience, vigour, diversity, stability, and adaptability. Major environmental issues are analysed from a complex adaptive systems perspective with humans and their institutions seen as integral parts of socio-ecological systems, i.e., a 'humans in the ecosystem' approach. The Hunter Valley of New South Wales, Australia provides a rich setting for case studies at the regional level. Other case studies are explored, including human induced climate change and global warming at the biosphere scale. Links between complex adaptive socio-ecological systems at varied scales are also explored. All case studies are used to highlight interdependencies and opportunities for diagnosing, maintaining, or restoring ecosystem and human health and resilience.

Academic Progress Requirements Nil

Contact Hours **Online**
Self-Directed Learning
Online
10 hour(s) per week(s) for 13 week(s) starting Week 1

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	**Online** Dr John Gould John.Gould@newcastle.edu.au Consultation: By Appointment only.
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)

SYLLABUS

Course Content

Theme 1: Basic Concepts
1.   Resilience: and indicator of sustainability

Theme 2: Complex Adaptive Systems
1.   Ecological and social systems as linked complex adaptive systems
2.   Feedback, thresholds, and tipping points
3.   Panarchy and scale
4.   Resilience, adaptability, and vulnerability
5.   Sustainability indicators: a systems approach

Theme 3: Case Study in Sustainability
1.   Social learning, adaptive management and governance for ecosystem health and sustainability
2.   The Hunter region of NSW, Australia

Theme 4: Creating Sustainable Futures
1.   Individual case studies identified by students

Course Learning Outcomes

On successful completion of this course, students will be able to:
1. Articulate the difference between complicated systems and complex adaptive systems.

2. Explain why complex adaptive systems change the way they do.

3. Use ecosystem health and resilience theory to interpret, understand and analyse real world case studies.

4. Justify approaches to managing complex adaptive systems.

5. Critique the management of complex adaptive systems and recommend best practice approaches that respond to the behaviour of complex adaptive systems.

6. Explain the relationship between resilience and sustainability.

SCHEDULE

Week	Week Begins	Topic	Learning Activity	Assessment Due
1	29 Jan	Settling In	Tutorial/Discussion Board	Tutorial topic to be allocated by Online Tutor by Friday Week 1 Postings to Tutorial Discussion Board and Responses to questions by Wednesday of each Week Presentation due by Monday of chosen topic week
2	5 Feb	Ecosystems and human social systems as linked complex adaptive systems	Tutorial/Discussion Board: Investigating complex adaptive systems	
3	12 Feb	Adaptive Cycles	Tutorial/Discussion Board: Exploration of stages of transformation of a system	
4	19 Feb	Panarchy and scale	Tutorial/Discussion Board: Cross-scale change processes	
5	26 Feb	Feedback loops and adaptability	Tutorial/Discussion Board: Connectivity, diversity, and redundancy	Essay due Friday, Week 5
6	4 Mar	Feedback loops and thresholds	Tutorial/Discussion Board: Feedbacks, slow variables, and resilience	
7	11 Mar	Systems thinking	Tutorial/Discussion Board: Lifecycle analysis and conceptual modelling	
8	18 Mar	Planning final major project	Giving and accepting feedback	Proposal due Friday, Week 8
9	25 Mar	Engaging communities	Tutorial/Discussion Board: Arnstein's ladder of deliberative democracy	
10	1 Apr	Social learning and adaptive management	Tutorial/Discussion Board: Broadening participation in decision-making	
11	8 Apr	Resilience	Tutorial/Discussion Board: Indicators for resilience and pressure-state-response	
12	15 Apr	Final major project completion		Final Major Report due Friday, Week 12
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	Audio/visual Canvas Collaborate presentation and facilitation of discussion board	Tutorial topic to be allocated by Online Tutor in Week 1 Postings (2) to Tutorial Discussion Board Responses to questions by Wednesday of each Week	Individual	30%	3, 4, 5
2	Essay	Friday, Week 5	Individual	30%	1, 2, 3
3	Applied major report	Proposal – Friday, Week 8 Final Report – Friday, Week 12	Individual	40%	1, 2, 3, 4, 5, 6

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 - Audio/visual Canvas Collaborate presentation and facilitation of discussion board

Assessment Type   Presentation
Description   Students will create a short video presentation to explore their chosen topic.
Tutorial facilitation: Students will co-facilitate a Zoom tutorial with other students who are presenting their chosen topic in the same week.
Weighting   30%
Due Date   Tutorial topic to be allocated by Online Tutor in Week 1 Postings (2) to Tutorial Discussion Board
Responses to questions by Wednesday of each Week
Submission Method   Online
Assessment Criteria   Full assessment criteria available on the CANVAS site.
Return Method   Online
Feedback Provided   Online

Assessment 2 - Essay

Assessment Type   Essay
Description   In essay format, students will synthesise an argument as to why environmental issues are complex rather than complicated.
Weighting   30%
Due Date   Week 5
Submission Method   Online
Assessment Criteria   Full assessment criteria available on the CANVAS site.
Return Method   Online
Feedback Provided   Online

Assessment 3 - Applied major report

Assessment Type	Report
Description	Students will write a business case to explore complex adaptive systems, resilience, and sustainability.
Weighting	40%
Due Date	Proposal - Week 8
	Final Report - Week 12
Submission Method	Online
Assessment Criteria	Full assessment criteria available on the CANVAS site.
Return Method	Online
Feedback Provided	Online

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).

WH&S Requirements   Work-Setup-Checklist:
http://www.newcastle.edu.au/__data/assets/pdf_file/0020/200846/Ergonoimc-advice.pdf

Ergonomic-Tips:
http://www.newcastle.edu.au/current-staff/working-here/work-health-and-safety/safety-at-work

Take-a-break-every-30-minutes:
http://www.newcastle.edu.au/current-students/support/health-counselling-and-wellbeing/your-physical-health/study-safely

Manage-your-eyes:
https://www.usc.edu.au/media/1000574/Exercises-for-Computer-Users-and-Office-Workers.pdf

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.

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 at 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/no-room-for/policies-and-procedures

that support a safe and respectful environment at the University.