

AGEN 7002 ECOSYSTEMS IN A CHANGING WORLD

Credit Points 10

Legacy Code 800170

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Description Natural and managed ecosystems on our planet are experiencing a rapidly changing environment as a consequence of changing patterns of land and resource use, loss of biodiversity, altered atmospheric composition and anthropogenic climate change. This subject will introduce students to ecosystem concepts in the context of ecological and evolutionary responses to global change. Students will obtain practical experience in quantitative analysis of carbon, nutrient, water and energy budgets, and explore the consequences of global change for ecosystem services and biodiversity over a range of spatial and temporal scales. Teaching will be led by HIE staff with expertise in ecosystem responses to environmental change, soil microbial contributions to ecosystem function and the impacts of environmental change on plants, animals and their interactions.

School Graduate Research School

Discipline Agriculture, Environmental and Related Studies, Not Elsewhere Classified.

Student Contribution Band HECS Band 2 10cp

Level Postgraduate Coursework Level 7 subject

Assumed Knowledge

A Bachelor of Science in Biology, Environmental Science, or Agricultural Science, with some background in plant science and ecology.

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Quantitatively describe fundamental ecosystem functions
2. Solve problems mathematically on paper and in spreadsheets
3. Construct and interpret graphical representations of data
4. Apply systems approach to complex environmental issues
5. Critically discuss primary research articles on ecosystem responses to environmental change
6. Write critical evaluation of a primary research article

Subject Content

Ecosystem concepts, introduction to global change
 Geology and soils
 Water and energy balance
 Primary production and allocation
 Carbon cycling
 Nutrient cycling
 Microbial ecology and ecosystem processes
 Trophic dynamics; food webs and plant-animal interactions
 Biodiversity and ecosystem function
 Temporal dynamics: Disturbance, succession
 Scaling from plots to the globe; landscape processes
 Global change and ecosystems
 Ecosystem management in a changing world

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/Group Task
Short Answer	5 sets	50	N	Individual
Essay	4 x 250 words	20	N	Individual
Quiz	3 x 30 minutes	30	N	Individual

Prescribed Texts

- Chapin, FS, Matson, PA & Vitousek, PM, 2012, Principles of terrestrial ecosystem ecology, 2nd edn, Springer, New York.

Teaching Periods

Spring (2022)

Hawkesbury

Day

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View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=AGEN7002_22-SPR_HW_D#subjects)

Spring (2023)

Hawkesbury

On-site

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View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=AGEN7002_23-SPR_HW_1#subjects)