



The University of Southern Queensland

Course specification

Description: Applied Ecology						
Subject	Cat-nbr	Class	Term	Mode	Units	Campus
BIO	3314	54819	2, 2006	ONC	1.00	Toowoomba

Academic group:	FOSCI
Academic org:	FOS002
Student contribution band:	2
ASCED code:	010905

STAFFING

Examiner: Andrew Le Brocque

Moderator: Kerry Withers

REQUISITES

Pre-requisite: BIO2208

RATIONALE

Management of terrestrial ecosystems requires knowledge and understanding of the patterns and processes of animal and plant populations and communities. In addition, knowledge of the structuring and dynamics of natural and disturbed environments are important components of current resource management practices. This course is designed to teach the principles of habitat assessment through knowledge of vegetation structure and dynamics, the basic principles and aims of wildlife management and the inter-relationships between wildlife, vegetation and the environment. The course is of value to environmental scientists, engineers, field biologists, natural resource managers and professional ecologists.

SYNOPSIS

THIS COURSE IS OFFERED IN EVEN-NUMBERED YEARS ONLY. The course provides knowledge of the habitat ecology, population dynamics and community ecology of terrestrial ecosystems, with an Australian focus. The main theory topics are the biogeography and adaptations of the Australian flora and fauna, principles and advanced applications of ecology and principles of wildlife and vegetation management. Advanced techniques in sampling and analysing animal and plant populations and communities are also explored. Practical work will include compulsory extended field studies.

OBJECTIVES

On completion of this course students will be able to:

1. demonstrate an understanding of the characteristics of the Australian environment and the evolution of Australia's unique terrestrial flora and fauna;

2. develop an understanding of the biogeography of the Australian flora and fauna in relation to historical and present day factors;
3. demonstrate an understanding of how Australia's vegetation shows pattern on scales related to different influencing factors;
4. describe the physiological and behavioural adaptations of terrestrial vertebrates for coping with fluctuating Australian environments;
5. demonstrate an understanding of and apply major ecological theories, concepts and models to practical problems in wildlife and vegetation management;
6. demonstrate an understanding of and describe the ecological processes operating at the landscape level;
7. apply basic ecological methods to studies of vegetation and wildlife;
8. actively participate in field and laboratory practical sessions and demonstrate competence in the application of advanced ecological methods to the study of terrestrial ecosystems.

TOPICS

	Description	Weighting (%)
1.	Biogeography of Australian flora and fauna: Climatic, edaphic and historical factors shaping Australia's flora and fauna with emphasis on the role of fire.	15.00
2.	Sampling and measuring vegetation and animal abundance: experimental design and analysis considerations, floristics, physiognomy, abiotic factors, diversity, mark-release-recapture, animals' signs, remote methods.	13.00
3.	Australian vegetation: patterns in Australian vegetation; adaptations to fire, drought and soil fertility.	12.00
4.	Vertebrate Adaptations: adaptations for coping with fluctuating Australian environments.	15.00
5.	Plant-animal interactions: population dynamics and predator-prey relationships, herbivory, pollination, seed dispersal.	15.00
6.	Landscape processes: biotic interactions within ecosystems, resource competition, niche theory, community succession, disturbance and diversity.	15.00
7.	Principles of ecosystems management: aims of ecosystems management, island biogeography theory and reserve design, wildlife and habitat management.	15.00

TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at <http://bookshop.usq.edu.au> click 'Semester', then enter your 'Course Code' (no spaces).

Attiwill, P & Wilson, B 2003, *Ecology: An Australian Perspective*, Oxford University Press, South Melbourne.

Le Brocque, AF, Withers, K & Maron, M 2006, *BIO3314 - Terrestrial Ecology Practical Notes and Supplementary Materials*, University of Southern Queensland, Toowoomba.

Le Brocque, AF & Maron, M 2006, *Data Analysis in Community Ecology: Supplementary Resource Materials*, University of Southern Queensland, Toowoomba.

REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Barbour, MG, Burk, JH, Pitts, WD, Gillam, FS & Schwartz, MW 1999, *Terrestrial Plant Ecology*, 3rd edn, Addison Wesley Longman, Menlo Park, CA.

Beadle, NCW 1981, *The Vegetation of Australia*, Cambridge University Press, Cambridge.

Caughley, G and Sinclair, A 1994, *Wildlife Ecology and Management*, Blackwell Science, Boston.

Caughley, G et al 1987, *Kangaroos: Their Ecology and Management in the Sheep Rangelands of Australia*, Cambridge University Press, Cambridge.

Cronin, L 1997, *Australian Flora*, Reed, Kew, Vic.

Dytham, C 2003, *Choosing and Using Statistics: A Biologists Guide*, 2nd edn, Blackwell Science, Oxford.

Ebert, TA 1998, *Plant and Animal Populations*, Academic Press, San Diego, Calif.

Grigg, G, Jarman, P & Hume, I 1989, *Kangaroos, Wallabies and Rat-kangaroos*, Surrey Beatty & Sons, Vol 1&2.

Groves, RH 1994, *Australian Vegetation*, 2nd edn, Cambridge University Press, Cambridge.

Hume, Ian D 1999, *Marsupial Nutrition*, Cambridge University Press, Cambridge.

Kent, M & Coker, P 1992, *Vegetation Description and Analysis: A Practical Approach*, Belhaven Press, London.

Krebs, CJ 1999, *Ecological Methodology*, 1st edn, Benjamin/Cummings, Menlo Park.

Krebs, CJ 2001, *Ecology: the Experimental Analysis of Distribution and Abundance*, 5th edn, Addison-Wesley, San Francisco.

Strahan, R (ed) 1995, *Mammals of Australia*, Reed Books: The Australian Museum, Chatswood, NSW.

Video Education Australia 1994, *Managing Wilderness Areas*,
(30 mins video)

Video Education Australia 2002, *Living with Fire: Bushfires and Land Management in Australia*,
(20 mins video)

Wilson, DE et al 1996, *Measuring and Monitoring Biological Diversity: Standard Methods for Mammals*, Smithsonian Institution Press, Washington/London.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Examinations	3.00
Field Trips or Excursions	16.00
Laboratory or Practical Classes	14.00
Lectures	26.00
Private Study	56.00
Report Writing	50.00

ASSESSMENT DETAILS

Description	Marks out of	Wtg(%)	Due date
REPORT 1	10.00	15.00	22 Sep 2006
REPORT 2	20.00	15.00	22 Sep 2006
PROJECT	20.00	20.00	27 Oct 2006
3HR CLOSED EXAMINATION	50.00	50.00	END S2 (see note 1)

NOTES

1. Examination dates will be available during the Semester. Please refer to the examination timetable when published.

IMPORTANT ASSESSMENT INFORMATION

- 1 Attendance requirements:
It is the students' responsibility to attend and participate appropriately in all activities (such as lectures, tutorials, laboratories and practical work) scheduled for them, and to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.
- 2 Requirements for students to complete each assessment item satisfactorily:
To complete each of the assignments satisfactorily, students must obtain at least 50% of the marks available for each assignment. To complete the examination satisfactorily, students must obtain at least 50% of the marks available for the examination. To complete the practical component satisfactorily, students must submit all the nominated practical reports and obtain at least 50% of the marks available for each report submitted.
- 3 Penalties for late submission of required work:
If students submit assignments after the due date without prior approval then a penalty of up to 20% of the total marks gained by the student for the assignment will apply for each working day late.
- 4 Requirements for student to be awarded a passing grade in the course:
To be assured of a passing grade, students must demonstrate, via the summative assessment items, that they have achieved the required minimum standards in relation to the objectives of the course by: (i) satisfactorily completing the examination and

assignments; and (ii) obtaining at least 50% of the total weighted marks available for all summative assessment items.

- 5 Method used to combine assessment results to attain final grade:
The final grades for students will be assigned on the basis of the weighted aggregate of the marks obtained for each of the summative assessment items in the course.
- 6 Examination information:
In a Closed Examination, candidates are allowed to bring only writing and drawing instruments into the examination.
- 7 Examination period when Deferred/Supplementary examinations will be held:
Any Deferred or Supplementary examinations for this course will normally be held during the next examination period, although at the discretion of the examiner, in consultation with the student(s) an alternative date may be arranged.
- 8 University Regulations:
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL <http://www.usq.edu.au/corporateservices/calendar/part5.htm> or in the current USQ Handbook.

ASSESSMENT NOTES

- 9 In order to attend laboratory classes, students must provide and wear appropriate personal protective equipment. This shall include a laboratory coat, closed in shoes, and safety glasses. Such equipment must be approved by supervising staff. Failure to provide and wear the appropriate safety equipment will result in students being excluded from classes.
- 10 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner. Students must retain a copy of each item submitted for assessment. If requested by the Examiner, students will be required to provide a copy of assignments submitted for assessment purposes. Such copies should be despatched to USQ within 24 hours of receipt of a request being made. The examiner of a course may grant an extension of the due date of an assignment in extenuating circumstances.
- 11 A Course Assignment Cover Sheet, signed by the student must be attached to all submitted assignments. Failure to do so may result in the assignment not being graded.
- 12 Students who obtain an overall passing mark, but who do not perform satisfactorily in one assessment item, may, at the discretion of the examiner, be granted a supplementary assessment. Students will be granted a deferred examination only if they perform satisfactorily in all other assessment items.