BIOL 3100: ECOLOGY & EVOLUTION: AN AUSTRALIAN PERSPECTIVE

(3 Credit hours)
Pacific Study Abroad Program, Spring 2015

Instructor: Dr. David Garton, Georgia Institute of Technology

Textbook: Cotgreave and Forseth, *Introductory Ecology* (Blackwell Publishing).
In addition, class handouts and observation data sheets for field trips

Grading:		
	Two midterm exams:	25% each
	Field assignments:	20% (short reports submitted for review and grading)
	Research paper:	20% (paper due April 25th)
	Participation:	10% (notes in your field journal)

Objectives: This course will cover basic principles of ecology and evolution, with a special emphasis on the unique ecosystems and biomes of Australia. The unusual animals and plants of the southern hemisphere had a significant influence on the early development and understanding of evolutionary theory, and their importance will be discussed. The successful adaptations of Australian mammals to this isolated continent will be explored, as well as the impact of recent human development.

The course includes field trips to areas of ecological interest, and students should be in reasonably good shape as some of the areas have steep trails and/or long walks.

Research paper: You will need to complete a five page (double-spaced, 12 pt. font) research paper on one of Australia's unique plants or animals, group of organisms or communities. You will need to choose this topic on your own, but no two students may share the same topic. Thus, topics are first come, first served, but only upon approval of the instructor. You should read several papers from the primary literature and summarize the basic methods, the most important data, and conclusions from those papers. You may also use internet resources for general information about your topic. Your papers should include a literature cited section and include citations in the text. Use standard citation format. The paper will be due April 25th and all papers should be submitted via email. **No late papers will be accepted**. To make sure that you do not wait until the very last minute to start this assignment you will be required to show me the papers that you plan to read from the primary literature on March 18th.

Attendance policy: Unexcused absence from class or field excursion incurs a 5% reduction in final average for every absence!

DATE		Topic
Feb	16	Introduction to ecology
	17	Biomes: Australia and beyond
	18	Population demographics, Demography exercise
	19	Natural selection, populations and distributions (intro)
Feb	23	Natural selection, populations and distributions (Lotka-Volterra)
	24	Natural selection, populations and distributions (meta-populations and risk of extinction)
	25	Field trip TBD
	26	Midterm Exam 1
Feb	28	Heron Island: Intro. To Coral Reef Ecology
Mar	1	Heron Island: Community Ecology
	2	Heron Island: Species Richness, or why so many different kinds?
	4	Field work: student research projects
	5	Field work: student research projects
Mar	9	Population ecology (biogeography & applications to conservation biology)
	10	Practical geology: The history of Australia and evolution of its flora and fauna

	11	Forests of Australia, or is every tree a *Eucalyptus*?
	12	Field trip to Blue Mountains National Park
Mar	16	Phylogeny of Australian animals: Why so many marsupials?
	17	Predation, parasitism and mutualism
	18	Biogeochemical cycles: Mountains to the sea (and back again)
	19	Field trip to Long Reef Marine Reserve
Mar	23	Invasive species or Why we must spend so long going through customs
	24	Marsupial energetics, or are placentas more efficient for growing babies than pouches?
	25	Trophic transfer processes: where does all that energy go?
	26	Review session
	27 or 28	Midterm Exam 2
Apr	24	Research paper due!