



FACULTY OF SCIENCE
SCHOOL OF BIOLOGICAL EARTH AND ENVIRONMENTAL SCIENCES

BIOS3601

ADVANCED FIELD BIOLOGY



TERM 1, 2019

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Faculty of Science - Course Outline

1. Information about the Course

Year of Delivery	2019			
Course Code	BIOS3601			
Course Name	Advanced Field Biology			
Academic Unit	School of Biological Earth and Environmental Science			
Level of Course	Undergraduate			
Units of Credit	6UOC			
Session(s) Offered	T1			
Assumed Knowledge, Prerequisites or Co-requisites	BEES2041 and familiarity with the principles of systematics			
Hours per Week	3 HPW			
Summary of Course Structure (for details see 'Course Schedule')				
Component	HPW/week	Time	Day	Location
Field trip	6 days	All day	10 th -15 th February	Smiths Lake Field Station
Workshop 1: Statistics	3 hrs / week 1	1pm-4pm	Thursday, 21 st Feb	G29 Bioscience Bldg
Workshop 2: Statistics	3 hrs / week 2	1pm-4pm	Thursday, 28 th Feb	G29 Bioscience Bldg
Workshop 3: Individual projects development	3 hrs / week 3	1pm-4pm	Thursday, 7 th March	Mathews 228 (K-F23-228)
Workshop 4: Statistics	3 hrs / week 7	1pm-4pm	Thursday, 4 th April	G29 Bioscience Bldg
Workshop 5: Natural History exhibition	2 hrs / week 8	1pm-4pm	Thursday, 11 th April	Alan Wilton Tea Room, Rm 133 Samuels building
Workshop 6: Presentations	3 hrs / week 10	1pm-4pm	Tuesday, 30 th April	Mathews 228 (K-F23-228)
TOTAL	Up to 60 hrs			
Special Details	<ul style="list-style-type: none"> A compulsory field trip is run for the course dates tbc Six workshops will be run during Week 1- Week 10 			

2. Staff Involved in the Course

Staff	Role	Name	Contact Details	Consultation Times
Course Convenor		Prof. Mike Letnic	m.letnic@unsw.edu.au	Appointments via email
Additional Teaching Staff	Lecturers & Facilitators	Corey Callaghan Assoc. Prof. Paul Gribben Assoc. Prof. Will Cornwell Alexandra Ross David Hair Dr Daniel Falster	james.rees@live.com.au p.gribben@unsw.edu.au w.cornwell@unsw.edu.au alexandra.ross@unsw.edu.au davidhair50@gmail.com daniel.falster@unsw.edu.au	Appointments via email
	Technical Staff	Dr Len Martin Rosa Ascencio	j.lawes@unsw.edu.au r.ascencio@unsw.edu.au	Appointments via email

TEACHING STAFF

Prof. MIKE LETNIC

My research and teaching is focused on the conservation and management of ecosystems. I am particularly interested in improving understanding of landscape and continental-scale processes that influence the structure of terrestrial and aquatic ecosystems and threaten biodiversity. I am currently investigating the role that top predators play in sustaining biodiversity, improving the reintroduction success of endangered mammals, the ecology and biology of crocodiles and landscape scale approaches to control the impacts of invasive species, particularly, cane toads and foxes.

Assoc. Prof. PAUL GRIBBEN

My research focuses on understanding the processes that shape marine communities. I am particularly interested in how different ecological levels – from individuals to communities - respond to environmental stressors. Recent research has focussed on the ecology and evolution of marine invaders and how habitat-forming species such as seaweeds, mussels and oysters control biodiversity at local and biogeographic scales. My research is conducted in a range of ecosystems - from intertidal sandy shores to subtidal rocky reefs.

Assoc. Prof. WILL CORNWELL

Will Cornwell grew up in California, studied at Cornell, Cambridge, and Stanford. He worked doing research in Canada (UBC), Holland (VU), and now in Australia (UNSW). His research is on plant diversity and how it affects ecosystem processes. He is especially interested in ecological processes on tiny scales that affect the carbon cycle and indirectly the global climate.

Dr DANIEL FALSTER

My research focuses on the processes of tree growth and community assembly in vegetation. I am particularly interested in understanding how plant species differ in their construction and function, and how trade-offs among different elements of function enable multiple species to coexist. Two of my current projects are 1) building mathematical models able to predict what plants grow where, and 2) Assembling a database on the properties of Australian plant species. I am passionate about science, open data, reproducible research, and helping biologists to flourish in the age of big data.

ALEXANDRA ROSS

I am a PhD candidate with the Centre for Ecosystem Science at UNSW. I work with Australian natives that are at risk of extinction due to predation. Many of these species are small marsupials that have evolved without big predators, making them naive to invasives like the feral cat and fox. I am particularly interested in finding unique strategies to allow our natives to coexist with these feral predators. I'm currently working with wallabies, bilbies, and bettongs.

COREY CALLAGHAN

Corey Callaghan grew up on a farm in rural upstate New York, with a passing interest in birds. While in undergrad pursuing degrees in Environmental Science and Mathematics & Statistics, his interest in birds grew exponentially. He simultaneously became a dedicated birder and passionate about ornithological research. His research is focused on bird diversity in urban ecosystems, largely modelling lots of citizen science data; but, he is interested in anything 'birdy'. His life list is almost to 2000, and his favorite bird is the White Hawk.

DAVID HAIR

I am a former member of the professional staff of the School of BEES and, before its inception, the School of Biological Science and the School of Zoology. I gained a B.Sc. (with Honours in Zoology) from UNSW in 1980. I am currently a member of the following organisations: Birdlife Australia, Birding NSW, and the Southern Oceans Seabird Study Association. I have wide experience in avian field surveys, both as a volunteer and professionally. I have had a passionate interest in birds for many years, especially for groups such as waders and seabirds.

Dr LEN MARTIN.

My primary interests relate to earth surface processes, how they function and interact with climate and environmental change over long periods of time, including the late Quaternary and post-glacial period in terrestrial and coastal settings. I have continued to refine the use of sedimentary sequences to inform the palaeoenvironmental record of eastern Australia and I am exploring how integration of biological proxies and sedimentary sequences can be improved. A theme that overarches all of my research is the continual refinement of chronological controls on the sequences that I investigate, particularly Radiocarbon dating.

ROSA ASCENCIO

For the last 17 years I have worked as a technical officer for a range of courses in BEES and BABS, including first year biology, optometry, geology, histology, botany, zoology and have worked on multiple field based courses.

3. Course Details

Course Description (Handbook Entry)	An advanced practical training in diversity, systematics, biology and identification of terrestrial animals and plants and aquatic invertebrates. The course is run principally as an intensive one (1) week course at Smiths Lake Field Station during O-week. Students will receive theoretical and practical training in current methods of trapping, collecting and identifying animals and plants, estimation of population size, biodiversity, the conduct of animal surveys, and data analyses. The course coverage will include both vertebrate and invertebrate animals and plants.	
Course Aims	The course aims to: 1) Provide skills and knowledge in ecological research, including posing research questions, designing experiments and collecting and analysing data for a range of animals and plants and; 2) Provide understanding of issues in experimental design and sampling; 2).Develop skills in field observation, data analysis and presentation of findings in presentations and reports.	
Student Learning Outcomes	There are four, broad learning outcomes expected from this course: 1) At the end of the course, students should be aware and have some experience of sampling methods for a range of terrestrial and aquatic animals and plants and; 2) Students will understand issues to consider when designing experiments and; 3) Students will gain experience in structuring ecological experiments to address research questions, including a) the careful formulation of hypotheses, b) the design of field experiments and sampling, c) collection of data, d) data analysis, and interpretation, and e) communication of results via presentations and scientific reports and; 4) Students will be able to develop their own ideas and research questions and undertake an independent research project. 5) Students will develop their powers of observation and recording of biological information.	
Graduate Attributes Developed in this Course		
Science Graduate Attributes	Select the level of FOCUS <i>0 = NO FOCUS</i> <i>1 = MINIMAL</i> <i>2 = MINOR</i> <i>3 = MAJOR</i>	Activities / Assessment
Research, inquiry and analytical thinking abilities	3	1) Field trip report 2) Design and implementation of small group research project 3) Natural history project
Capability and motivation for intellectual development	2	1) Self-directed assignments and small group project, with associated literature searches and interpretation
Ethical, social and professional understanding	2	1) Strong emphasis on the design and implementation of field based ecological research. 2) Awareness of ethical issues associated with ecological research
Communication	3	1) Written assignments 2) Oral presentations 3) Group work
Teamwork, collaborative and management skills	3	1) Field work, small group project and oral presentation
Information literacy	3	1) Literatures searches and referencing associated with reports

Major Topics (Syllabus Outline)	Major topics to be covered include: 1) Theoretical and practical training in current methods of trapping, collecting and identifying animals (vertebrates and invertebrates) and plants 2) Issues with the design and implementation of animal and plant research 3) Estimation of population size and biodiversity 3) The conduct of animal surveys 4) Design of research projects, data analyses and presentation of findings (written and oral).
Relationship to Other Courses within the Program	This course complements other core courses offered within the Program, building on systematics, data analysis, experimental design and communication knowledge and skills developed in earlier years.

4. Rationale and Strategies Underpinning the Course

Teaching Strategies	1) A field trip will be undertaken to introduce students to sampling and analytical techniques they may encounter in the field of biology, with special relevance to sampling animals and plants. 3) The field trip will be complemented by several computer-based workshops where you will receive statistics training. These activities can be applied to both your major assignments. 4) Student presentations at the start and end of the small group research project and the end of the field trip help develop valuable skills in oral communication. 5) Several practical modules associated with identifying biodiversity are undertaken in the field course. These modules will give students an introduction in the relative magnitude of biodiversity in several groups of organisms (small mammals, plants, microbats, invertebrates and birds) across several habitats; and give students an appreciation of what biodiversity actually means in terms of morphological and ecological uniqueness of some small and lesser known vertebrate and invertebrate groups. 6) Natural history project is designed to develop students skills in observation, recording and presentation of biological information. 7) Written assignments are designed to elucidate issues in designing and implementing experiments (Field Report) and develop growing skills in presenting scientific research (Small Group Project Report)
Rationale for learning and teaching in this course,	The focus on experimental ecology in the field modules and small group projects was chosen as this approach is most powerful in advancing our understanding of terrestrial and aquatic ecology, and developing sound scientific data to underpin conservation efforts. The ability to develop hypotheses from field observations and subsequently design and conduct rigorous experiments, analyse and interpret the resultant data and communicate effectively in written and oral form to a range of audiences are skills essential for graduates seeking employment in this field.

5. Course Schedule

Week	Date(s)	Workshops	Assessment Tasks <i>**See Section 6 for more details</i>
Week 0	11 th February	FIELD TRIP 10th-15th February– Smiths Lake	
Week 1	18 th February	Workshop 1: Statistics with Mike Letnic 1-4pm Thursday 21 st February, Bioscience Bldg, G29	
Week 2	25 th March	Workshop 2: Statistics with Daniel Falster 1-4pm Thursday 28 st February Bioscience Bldg, G29	
Week 3	4 th March	Workshop 3: Individual projects development 1-4pm Thursday 7 th March, Mathews 228	
Week 4	11 th March	No workshop	
Week 5	18 th March	No workshop	
Week 6	25 th March	No workshop	Field trip report due (40%) due 4pm, 25th March, BEES office
Week 7	1 st April	Workshop 4: Statistics 1-4pm Thursday 4 th April, Bioscience Bldg, G29	
Week 8	8 th April	Workshop 5: Natural history exhibition 1-4pm Thursday 11 th April. Alan Wilton Tea Room, Samuels Building Rm 113.	Natural history project (10%) due 4pm 8th April, BEES office.
Week 9	15 th April	No workshop	
Week 10	22 nd April	No workshop	
Week 11	29 th April	Workshop 6: Independent project presentations 1-4pm Tuesday 30 th April, Mathews 228	Independent project presentations (10%) IN WORKSHOP 1-4pm Tuesday 30th April, Mathews 312 Independent project report due (40%) 4pm Monday 29th April, BEES office

FIELD TRIP STRUCTURE

All students will be involved with sampling the following subject areas: mammals/habitat, birds, aquatic invertebrates, plants and animal behaviour. To do this, the class will be split into 4 groups, and each group will survey a different taxon with a different lecturer each day from Monday to Thursday (see timetable below). Mammal and bird surveys start early in the morning with one group conducting bird surveys and one group checking mammal traps. The group scheduled for plants will be on breakfast duty. Data collected by each group will be collated and analysed each day and provided to the whole class at the end of the trip for the field trip report. In addition, frogs, owls, bats and arboreal mammals will be surveyed at night as an optional exercise. An introduction to the survey techniques and objectives of the AFB sampling exercises for each taxa is outlined in the course notes that follow.

After returning from the early morning surveys students will continue in the four groups, with the mammal groups doing habitat assessments and collating photographs from infra-red cameras, the bird surveys continuing until mid-morning when this group will continue with lake surveys. The plant group will head off to look at the relationship effects of fire on forest structure and to set-up the long-term monitoring plot and the carbon biomass group will go into the bush to do their measurements.

Thursday afternoon we will work through the analysis and discussion of the collective datasets, after all groups have been through the different taxa. We will set up a system for collating data from each taxon and each group will complete this each day, analysing the data collected in consultation with the lecturer involved. You will be required to think about what the data shows or doesn't show, sources of variation and bias, and to use your biometry skills where needed to explore the dataset. And following on from this we will go through more data analysis during workshops in Weeks 1-2, Thursdays 1pm-4pm.

Evening Seminars and work-shopping student group project ideas

On the first evening there will be a briefing after dinner on the field trip. During the field trip we will also discuss aspects of experimental design and the approach for writing your reports in the evenings. You should take notes during these seminars, as this material will be useful in your field reports and individual project reports.

Throughout the field trip, students need to be planning their small group research projects; forming groups and talking about their research ideas and questions. The field trip is an excellent opportunity to get feedback on the projects and on Thursday evening we will ask each group of students to present their research problem and question, hypothesis to be tested and broad sampling design/approach. These are informal and are designed to get feedback on questions and designs. They are not assessed!

Tuesday and Wednesday evenings are free to allow more time for relaxing, spotlighting and rest. On Thursday evening, each of the four groups will give a brief presentation (5-10 minutes) of one of the main modules together with an interpretation of the results and issues surrounding the techniques and taxa. This talk is meant to be congenial, low key and is not assessed, so don't stress about it!! Following the talk by each group there will be a class discussion.

With all the early morning starts and optional evening animal spotting this field trip can quickly get very tiring. Please take care to get enough sleep and rest whenever you can! Also please try to be quiet around the sleeping quarters when others may be asleep.

FIELD TIMETABLE PLAN

	EARLY MORNING 6:00-8:00	MORNING SESSION (8:30-13:00) HABITAT, BIRDS, CARBON, PLANTS, MARINE INVERTS	AFTERNOON SESSION (14:00-17:00)	EVENING SESSION (19:00-22:00)
Sunday			Arrive Smiths Lake <ul style="list-style-type: none"> Set Elliot traps, Get boats set up 	Field trip briefing: All Optional: <ul style="list-style-type: none"> Spotlighting/Owling Frogging
Monday- Thurs	Plant group does breakfast	Plant Surveys Survey plant height in burned and un-burned plots, set-up long-term monitoring plot.	Plant ID skills and data analysis ID samples collected in morning from transects Show how to press plant material & make adequate notes for easy ID. Data collation and analysis.	Monday: <ul style="list-style-type: none"> Optional: Spotlighting/Owling Frogging Optional: <ul style="list-style-type: none"> Spotlighting/Owling Frogging
Monday -Thurs		Carbon measurements. Carbon biomass group undertakes biomass measurements.	Calculation of biomass estimates Plant IDs and calculates biomass estimates.	Tuesday: Natural history, Mike Letnic Optional: <ul style="list-style-type: none"> Spotlighting/Owling Frogging
Monday-Thurs	Bird group surveys birds (starts ~7am)	Bird Census continues to mid-morning Transect and point counts to compare effects of distance, obs. type, weather, habitats, catch per unit effort relationships. Group split between two staff. Lake Survey (late am to afternoon) Sediment cores for invertebrate collection in sites around the lake. Deployment and collections of whelk traps.	Lake Survey Process invertebrate samples, sampling design discussion, data collation and preliminary graphing.	Wednesday <ul style="list-style-type: none"> Workshop ideas for individual projects Optional: <ul style="list-style-type: none"> Spotlighting/Owling Frogging
Monday-Thurs	Mammal group checks mammal traps	Mammal survey and habitat assessment Check mammal traps from 6a Design of sampling method to assess microhabitat features around trap points, Data collation/analysis. ***Thursday morning the mammal traps will be retrieved as they are checked 6-8am then cleaned.	<ul style="list-style-type: none"> Thursday afternoon/evening the mammal traps will be cleaned and packed. 	Thursday: Student presentations <ul style="list-style-type: none"> Final data analysis and presentation preparation. Student presentations
Friday		Cleaning and packing camp site	Return to Sydney	

6. Assessment Tasks and Feedback

NATURAL HISTORY: OBSERVING AND RECORDING NATURE

Natural History Portfolio (10%)

Being able to make observations of organisms and record those observations are fundamental skills for field biologists because this is how new insights and hypotheses are often generated. However, the making of observations without actually quantifying those observations is not necessarily science and frequently falls into the realm of “natural history”. While natural history is not science, most successful field biologists are skilled natural historians whose honed powers of observation have enabled them to obtain new insights or facilitate the development of quantitative approaches to test hypotheses. Indeed, the modern fields of ecology, zoology and botany stem from the writings and observations of 19th century natural historians including Darwin, Wallace and Banks. Even today there are many gifted natural historians whose skill in the bush and knowledge of their subject means that they, not scientists, are the foremost experts in their fields of study.

Your task for this assessment is to be a natural historian in its true sense. We are asking you to undertake a natural history study of any organism or taxa of your choosing in any medium you choose. Your study could be (but is not limited to) a collection of photographs, a herbarium, a seed collection, a pinned insect collection, a shell collection, a series of line drawings, painting/s, a film, a detailed list of sightings, or musings.

Your natural history study needs to be curated (themed) in such a way that it provides a study that could be for example, taxonomic (i.e. species identifications or a classification of organisms), biogeographical (the organisms of a particular location), ecological (a description of organisms’ interactions with their environment and other species), behavioural or even perhaps spiritual. Feel free to discuss your inspirations with AFB staff.

Some video examples from previous years

<https://www.youtube.com/watch?v=2sZr4nvzS40>

<https://www.youtube.com/watch?v=27E4BqGNXs0>

<https://youtu.be/haTD1WHir14>

Recommended reading

E.J. Banefield 1908 *Confessions of a Beachcomber*. University of Queensland Press.

Dakin, W.J 1980 *Australian Seashores*. Angus and Robertson.

Cribb, A.B. Cribb, J.W. 1975. *Wild food in Australia*. Collins.

Finlayson, H. H. 1979. *The Red Centre: Man and Beast in the Heart of Australia*. Angus & Robertson

Low T 2014 *Where Song Began: Australia's Birds and How They Changed the World*. Penguin.

Marshall J. and Drysdale R 1966. *Journey Among Men*. Sun Books

Ratcliffe F. 1938. *Flying fox and drifting sand: the adventures of a biologist in Australia*. London: Chatto and Windus.

Read, J.L. 2003. *Red Sand, Green Heart: Ecological Adventures in the Outback*. Lothian Books

Rolls, E. 1969. *They All Ran Wild*. Angus and Robertson

Wilson S and Swan G 2003. *Reptiles of Australia*. Princeton, New Jersey: Princeton University Press.

Assessment

Your natural history study will be assessed on its presentation, the curation and documentation of the study i.e. is there a structured theme, taxonomic catalogue or habitat catalogue that provides observational insight.

Due date Week 8, Monday 8th April, 4pm, BEES office G27

Show and tell exhibition: Week 8, 1-4 pm Alan Wilton Tea Room, Rm 113 Samuels Building

Curation/documentation	Presentation	Zing	Total
5	2.5	2.5	10

FIELD REPORT

Field Report from field trip (40%)

You are required to provide a scientific report with Introduction, Methods, Results and Discussion using one of the data-sets collected during the AFB field trip. Your choice of the field course module to report on can be made in consultation with AFB staff. The Introduction should provide a brief background on the subject studies with reference to previous literature. The methods can include details of sites surveyed, field measurements, observations and statistical techniques used. Results should include a statistical analysis of the data graphs and/or tables. The discussion should provide an overview of the results in light of published literature on the subject. You are required to cite the literature you use in your Field Report. Details of the assessment criteria are shown on page 14 and the headings required and the marks assigned to each heading for each component are shown below;

Headings	5
Introduction	5
Methods	10
Results	10
Discussion	5
Structure and clarity	5
TOTAL	40

Due Date: Week 6, Monday 25th March 4:00pm, BEES Assignment Box G27. Word limit: 1500 words

INDIVIDUAL PRESENTATIONS

Individual Project Presentation (10%)

There will be a final presentation of the group project (see next page), worth 10% of the marks for the course, to be held during week 11. Each group will make a brief (~8 minute) presentation of their research question, approach and methods, results and discussion of the findings. The presentations will occur in the scheduled Thursday timeslot for AFB over two weeks. **Due Date: Week 11, 30th April 1-4pm Mathews 228.** The order of project presentation will done by lots.

INDIVIDUAL PROJECTS

Individual Project Report (40%)

You are required to undertake a field sampling exercise to answer a basic question in biology/ecology and write a report on your results in the format of a scientific paper. You will be using skills obtained during the field trip in terms of understanding methods and problems in field sampling. The introduction should use literature to set the context for the research question being addressed. It will help if you find a paper you like from a good journal and model your report on the style and structure.

Working in groups of 3-5 you will undertake the research into the best method, clearly define your question, undertake necessary sampling and analyse the data. Each person will write up their own report on the data which will be worth 40% of the final mark, but group work is encouraged for all other aspects of the project. Sample questions are provided but please discuss other options with us at Smiths Lake. Details of the assessment criteria are shown on page 14 and the marking scheme for this assignment is shown below;

Abstract	Introduction	Methods	Results	Discussion	Reference	Overall writing	Zing	Total
2	8	6	7	7	2	4	4	40

Due Date: Week 11, 29th April, 4pm, BEES Assignment Box G27

ASSESSMENT TASK AND FEEDBACK SUMMARY

Task	Knowledge & abilities assessed	Assessment Criteria	% of total mark	Date of		Feedback		
				Release	Submission	WHO	WHEN	HOW
Natural History project	1. Ability to observe and record biological information;	1. Clearly identifies study objective 2. Records observations 3. Interprets observations with context	10	0 week	Date tbc	Convenor Academics Demonstrators	By appointment	Marks and written comments
Field trip report	1. Places collection of field data in the context of the literature; 2. Accurately records the methods used 3. Evaluates hypotheses 3. Ability to synthesise data from the field trip to test a hypothesis and discuss data in context of the literature and constraints on experimental design.	1. Clearly defines aim of study and hypotheses tested. 2. Develops argument supported by literature search and field data 3. Applies appropriate analysis to the data. Correctly interprets analyses and places findings in the context of the literature. 4. Expression and articulation; 5. Complete and consistent reference style, and complete reference list.	40	0 week	Date tbc	Convenor Academics Demonstrators	By appointment	Marks and written comments
Independent project presentations	1. Development of research problem and question; 2. Capacity to design experiment and put together appropriate methods to examine question 3. Ability to organise self and group to collect robust data 4. Ability to present and analyse key trends in data 5. Knowledge of topic through reading of literature 6. Ability to collaborate 7. Ability to communicate verbally	1. Clearly articulates problem/context and question 2. Simple outline of methods 3. Enthusiastic description of results with graphs and statistics 4. Synthesis and conclusion 5. Presentation style, content; 6. Contribution to the group	10	0 week	Date tbc	Convenor Academics Demonstrators	During workshop	Marks and oral comments
Independent project report	Points 1-6 above 7. Ability to communicate in writing	1. Clearly articulates problem/context and question 2. Detailed description of methods 3. Results with graphs, statistics 4. Synthesis and conclusion 5. Contribution to the group 6. Thorough literature search; 7. Expression and articulation; 8. Complete and consistent reference style, and complete reference list.	40	0 week	Date tbc	Convenor Academics Demonstrators	Examination period	Marks and written comments

7. Additional Resources and Support

Text Books	There are no prescribed text books for this course
Course Manual	You are reading it! (also available as .pdf from Moodle)
Required Readings	Reference to studies in the primary literature (i.e., original studies in journal articles rather than textbooks) will form an important part of the course. We highly recommend you take a short online tutorial offered by UNSW Library: http://elise.library.unsw.edu.au/home/welcome.html
Additional Readings	Additional readings (journal articles) may be suggested within the course lectures. These can be accessed via the University library <i>Sirius</i> and associated databases. Instructions on how to access these articles are provided in the UNSW Library tutorial suggested above.
Recommended Internet Sites	Course web page (Moodle) Lecture and workshop outlines, instructions for assessment and other useful resources will be posted throughout the session on the BIOS3601 web page. You will need to log on (using your student number and zpass) to Moodle at: http://lms-blackboard.telt.unsw.edu.au/webapps/portal/frameset.jsp
Computer Laboratories or Study Spaces	As a School of BEES student you have swipe card access to the School computer laboratory in G07. If you choose to join the UNSW student society Arc @ UNSW, you will also be granted access to the Arc Postgraduate Student Lounge (see details at http://www.arc.unsw.edu.au/)

8. Required Equipment, Training and Enabling Skills

<p>Equipment Required</p>	<p>Field trip: Warm clothes, good wet weather gear, wetsuits (if possible), snorkel (if possible), dive booties or reef walkers, sleeping bag, pillows, swimmers, hats, beanies, sunglasses, sunscreen, towels, boots or other close toed shoes, lots of warm clothes.</p> <p>Detailed information on what to pack for the field trip will be provided ahead of time by Jaz Lawes</p>
<p>Enabling Skills Training Required to Complete this Course</p>	<p>Reference to studies in the primary literature (i.e., original studies in journal articles rather than textbooks) will form an important part of the course. We highly recommend you take a short online tutorials offered by UNSW Library: http://elise.library.unsw.edu.au/home/welcome.html</p> <p>Students are required to observe OHS regulations during the fieldtrip and practicals - safety should be your top priority during fieldtrips and lab classes. If you are unsure of any procedures, please consult with staff.</p> <p>During field trips, it is essential to wear weather appropriate clothing, and always be aware of what is going on around you. Extra care must be taken on the lake shores due to wave action, boat traffic and slippery surfaces.</p> <p>FIELD WORK GUIDELINES</p> <p>Field work is an inherently dangerous pastime, and to ensure your safety we must insist that you follow a few basic guidelines for working to collect data for your project.</p> <ul style="list-style-type: none"> • Always work in groups, no-one should go out collecting data alone. EVER!! • If you will work away from urban areas, take a mobile phone and tell someone where you are going and when you will return. If you will be late, let them know. • If working away from urban areas, take a basic first aid kit: we can lend you one if needs be. • Do not do anything illegal! This includes trespassing, so only work in areas you know that you are allowed to work in. • Tread lightly! Don't go blazing trails through bushland areas, be considerate of the environments you are working in. Observational work is preferred. • Wear sensible clothing for the environment you are working in. So in bushland areas, wear sensible hard-soled shoes, a hat, long trousers and sleeves. Be conscious of ticks, leeches, spiders and snakes. • If working in the intertidal zone, only work at low tide and always have someone watching for waves. • Do not pick any flora nor catch any vertebrate fauna without permission. In general you need a license from NPWS to do this, and we don't have a "cover-all" license for all sampling techniques everywhere. • Projects involving observations of subtidal marine organisms will only be approved if students have considerable snorkelling experience (preferably with current SCUBA licence).

9. Course Evaluation and Development

Student feedback is gathered periodically by various means. Such feedback is considered carefully with a view to acting on it constructively wherever possible. This course outline conveys how feedback has helped to shape and develop this course.

Mechanisms of Review	Last Review Date	Comments or Changes Resulting from Reviews
Major Course Review	NA	This course has run for more than decade, with a break in 2011. It has been running in its current format since 2012 and has not undergone regular CATEI assessment, but not a major course review.
CATEI	2012 2013 2014 2015 2016	The CATEI process in 2012 and 2013 was used to modify the teaching approach to include workshops on statistics and expand the modules offered on the Smith's Lake field trip. Information on the assessment tasks was clarified within the manual and marks were reassigned based on student feedback of workload. Based on previous years feedback the File trip report due date has been moved forward to facilitate earlier feedback on marks. Evaluation will be undertaken again in 2017.

10. Administration Matters

Expectations of Students	Attendance on the field trip is compulsory, and attendance at workshops is highly recommended. Please remember that you pay fees to study at UNSW, and attending all classes will help you get the most out of your financial investment. In general, a minimum rate of 80% attendance is required to fulfil the course requirements.								
Assignment Submissions	<p>Unless otherwise specified, submitted assignments are to be placed in the assignment box at the BEES Undergraduate Office (Rm G27). Assignments must fulfil conditions of the BEES Assignment cover sheet, which must be attached (see http://www.bees.unsw.edu.au/webfm_send/154). The cover sheet lists penalties for late submission, and there is a declaration stating that you have kept a copy and that the report is your own and has not been previously submitted for assessment.</p> <p>School policy for late report submission For reports submitted up to seven (7) days late, a 10% per day penalty applies. Reports submitted more than seven (7) days late will not be marked. If medical grounds preclude submission of a report by the due date, contact should be made with the course convenor as quickly as possible. A medical certificate will be required for late submission on medical grounds and must be appropriate for extension period.</p> <p>Assignment deadlines are essential for course management and for equitability amongst students. Please be warned that these penalties will be enforced.</p>								
Occupational Health and Safety	<p>Students are required to observe OHS regulations during the fieldtrip and practicals - safety should be your top priority during fieldtrips and lab classes. If you are unsure of any procedures, please consult with staff.</p> <p>Information on relevant Occupational Health and Safety policies can be found at: http://www.fin.unsw.edu.au/RiskManagement/RiskManagement.html</p> <p>Please also refer to the “Field work guidelines” in Section 8 of these course notes.</p>								
Assessment Procedures UNSW Assessment Policy	<p>There is no final examination scheduled for this course.</p> <p>For information on examinations see http://www.bees.unsw.edu.au/current/undergraduate/student-guidelines</p>								
Equity and Diversity	<p>Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course Convenor prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equity and Diversity Unit on 9385 4734 or http://www.studentequity.unsw.edu.au/ http://www.equity.unsw.edu.au/disabil.html</p> <p>Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.</p>								
Student Complaint Procedure	<table border="1"> <thead> <tr> <th data-bbox="550 1608 853 1691">School Contact</th> <th data-bbox="853 1608 1173 1691">Faculty Contact</th> <th data-bbox="1173 1608 1495 1691">University Contact</th> </tr> </thead> <tbody> <tr> <td data-bbox="550 1691 853 2098"> Dr. Jes Sammut j.sammut@unsw.edu.au </td> <td data-bbox="853 1691 1173 2098"> A/Prof Julian Cox Associate Dean (Education) julian.cox@unsw.edu.au Tel: 9385 8574 Or Dr Scott Mooney Associate Dean (Undergraduate Programs) s.mooney@unsw.edu.au Tel: 9385 8063 </td> <td data-bbox="1173 1691 1495 2098"> Student Conduct and Appeals Officer (SCAO) within the Office of the Pro-Vice-Chancellor (Students) and Registrar. Telephone 02 9385 8515, email studentcomplaints@unsw.edu.au University Counselling and Psychological Services Tel: 9385 5418 </td> </tr> </tbody> </table>	School Contact	Faculty Contact	University Contact	Dr. Jes Sammut j.sammut@unsw.edu.au	A/Prof Julian Cox Associate Dean (Education) julian.cox@unsw.edu.au Tel: 9385 8574 Or Dr Scott Mooney Associate Dean (Undergraduate Programs) s.mooney@unsw.edu.au Tel: 9385 8063	Student Conduct and Appeals Officer (SCAO) within the Office of the Pro-Vice-Chancellor (Students) and Registrar. Telephone 02 9385 8515, email studentcomplaints@unsw.edu.au University Counselling and Psychological Services Tel: 9385 5418		
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11. UNSW Academic Honesty and Plagiarism

What is Plagiarism?

Plagiarism is the presentation of the thoughts or work of another as one's own.

*Examples include:

- direct duplication of the thoughts or work of another, including by copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and
- claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.†

For the purposes of this policy, submitting an assessment item that has already been submitted for academic credit elsewhere may be considered plagiarism.

Knowingly permitting your work to be copied by another student may also be considered to be plagiarism.

Note that an assessment item produced in oral, not written, form, or involving live presentation, may similarly contain plagiarised material.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does *not* amount to plagiarism.

The Learning Centre website is main repository for resources for staff and students on plagiarism and academic honesty. These resources can be located via:

www.lc.unsw.edu.au/plagiarism

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

- correct referencing practices;
- paraphrasing, summarising, essay writing, and time management;
- appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

* Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle

† Adapted with kind permission from the University of Melbourne