DEPARTMENT OF BIOLOGICAL SCIENCES

BIOLOGICAL SCIENCE HONOURS (BIO4000W)
&
MARINE BIOLOGY HONOURS (BIO4001W)

Welcome to Biological Sciences Honours! This one-year course aims to introduce students to research and, through advanced coursework, to develop an enhanced understanding of scientific theory and practice.

Queries about the course should be either to Dr Jacqueline Bishop (coordinator BIO4000W; Room 3.22, Pearson Building; jacqueline.bishop@uct.ac.za) or A/Prof Colin Attwood (coordinator BIO4001W; Room 3.28, John Day Building; colin.attwood@uct.ac.za)

Application and acceptance criteria

- Application for admission into honours should be done via the online UCT postgraduate studies application form (available at http://www.uct.ac.za/apply/applications/forms/). Note that applicants for honours are not required to submit a research proposal or outline but will be asked for a motivation as to why you want to pursue Hons at UCT.
- Students attaining an average of 70% or more in relevant third-year level science courses are normally assured of acceptance into honours. We will, however, consider applications from all students achieving 3rd year averages of 65% or more.
- Note that factors other than marks may be considered when applications are reviewed, and that final acceptance into honours is at the discretion of the Head of Department. With this in mind, applicants are also invited to submit a brief statement if appropriate (<300 words) providing any additional information (e.g. relevant work experience) which might strengthen their application, as well as the names and email addresses of two academic referees. (email to Ms Anthea Stain at anthea.stain@uct.ac.za)

Compulsory general module (8 February - 18 March)

- Material covered in these blocks is geared towards (i) introducing students to the research facilities provided by the department; (ii) development of basic research and data management skills; (iii) provision of a basic foundation in the philosophy and practice of science, and (iv) development of statistical and numeracy skills.
- The statistics module will be evaluated by means of an examination on **Monday 4th March**, and the Philosophy & History of Biology module by means of a brief assignment (date to be announced). **Students are required to pass the statistics exam to continue with Hons.**
- For all components of the general module, you should, in the first instance, meet the responsible member of staff in the BIO LT (Room 3.24) in the HW Pearson Building.
- Also forming part of this module are separate BIO4000W and BIO4001W weekend field-trips, scheduled for the weekend of 12-14 February.

- Each student is required to attend **a number of writing skills workshops** during the course of the year. These are designed to develop your written skills and will involve different exercises in scientific writing. **Attendance of these workshops is compulsory and a requirement to pass honours; your attendance will be recorded**.

Research projects

- Project-related work accounts for 50% of the total course mark. Don't over-estimate the amount of time available to you - before you know it, the end of the year will be upon you.
- ALL students are required to conduct ONE long research project.
- Projects should be supervised or co-supervised by an academic member of staff in the Department of Biological Sciences.
- For students taking BIO4001W, the project must have a clear marine focus.
- Note that as you will be required to present a research proposal in the **last week of March**, you need to start thinking about project ideas from day one. To this end, you should consult prospective supervisors about project ideas as soon as possible. You are also encouraged to suggest a project of your own design.
- You will be required to submit a complete draft of the project write-up two weeks prior to final project report hand-in. Supervisors will provide you with feedback/suggestions for improvement, which should be addressed in the final report.
- Final project reports should be submitted as two, bound hard-copies and a pdf file. Be aware of the deliverable dates.
- Both draft and final report versions will be marked, the overall project mark being determined as a weighted average of the draft (10%) and final report (90%) marks.
- At the end of the year each student will be required to present the results of his/her project to the department in a mini research symposium.

Theory essay

Students will write a 4000 word essay on one of a number of topics in contemporary biology which will be provided in April. The essays ARE NOT to be linked to your projects. Topics will be provided in due course.

Elective modules and Theory Exam

- Each student is required to **complete eight elective modules** from the list of modules offered (see Table below).
- BIO4000W students have unrestricted module choice whereas BIO4001W students are required to complete a minimum of four marine-centric modules.
- Each elective module runs full-time for a period of one week, and typically requires students to read extensively and to participate actively in discussions of the material covered. Attendance at activities associated with the module is compulsory. Some modules may also involve a practical or field-based component. You will need to manage your time very carefully so as to balance the requirements of your research project with those of your modules.
- You need to select your modules before **Friday 19th February**.
- Each module will be evaluated according to the module coordinator, AND by a three-hour Theory Examination in November. This exam will contain one question relating to each module, of which you must answer four.
- For students attending OTS: your mark for that course will count for the compulsory general module.
- Queries about within-module activities should be directed at the module co-ordinators, NOT the honours course co-ordinators!

Title	Co-ordinator
Molecular approaches in evolution and ecology	Bishop
Exploring limitations on plant growth	Chimphango
Palaeobiology	Chinsamy-Turan
The vegetable wars	Cramer
Plant hydraulics and water relations	February
Bryology	Hedderson
Conservation of dynamic landscapes	Hoffman & Gillson
Neuroendocrinology	Marco
Species and speciation	Muasya
Behavioural ecology	O'Riain
Avian sensory ecology	Spottiswoode
Insect ecology	Picker
Topics and techniques in pollination ecology	Steenhuisen & Hobbahn
Biomes: what are they good for?	Slingsby & Moncrieff
Phylogeny in ecology and evolution	Verboom
Advanced isotopics	West
Advanced stats	Winker
Biology of parasitism in plants and animals	Hobbhahn, Midgley & Reed
Ecology & evolution of bat echolocation	Jacobs & Bastian
Raptor conservation and ecology	Amar
Marine parasitology*	Reed
Plankton diversity, ecology and ecosystem function *	Thibault
Marine biodiversity: discovery, mapping & management*	Sink & Attwood
Ecology of soft sediments*	Pillay
Marine ecosystem modelling*	Moloney
Operational oceanography*	Lucas
Phycology*	Bolton

Course reading
During the course students are required to read FOUR books from the following list. These will be examined in the General Examination paper in November.

What Makes Biology Unique? – Ernst Mayr (compulsory for ALL students)
Bad Science – Ben Goldacre
Why Evolution is True – Jerry Coyne
Palaeofantasy – Marlene Zuk
Your Inner Fish – Neil Shubin
The Unnatural History of the Sea – Callum Roberts
World Ocean Census – Crist, Scowcroft and Harding

General exam & Oral
The course has two exams, a Theory exam which covers modules (see Module section) and a General exam. The General exam will test students' engagement with and ability to write critically about general topics in biology. The prescribed books for the course will be examined as part of this exam, together with questions to test your general understanding of science and biology.

Each student will be examined in an oral format at the end of the course with the course conveners and the external examiners.

General comments

- Honours students are expected to attend ALL departmental research seminars, and to be generally present in the department.
- As far as possible, honours students should contribute to the departmental teaching program by demonstrating on undergraduate practical course. Be careful to choose carefully as these courses require a serious commitment.

Course mark structure

Assignment description	Total %
General module	10
Theory modules	20
Theory essay	5
Projects	35
Seminar	5
Examinations	20
Oral	5
TOTAL	100

JB & CA
January 2016