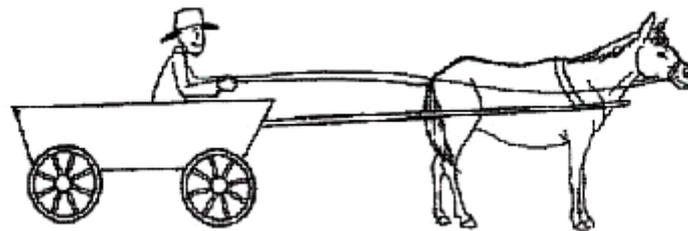
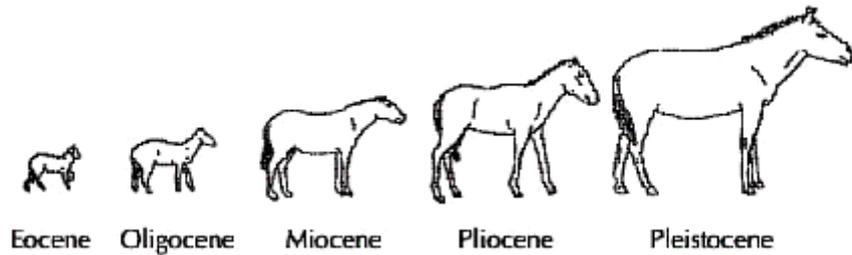
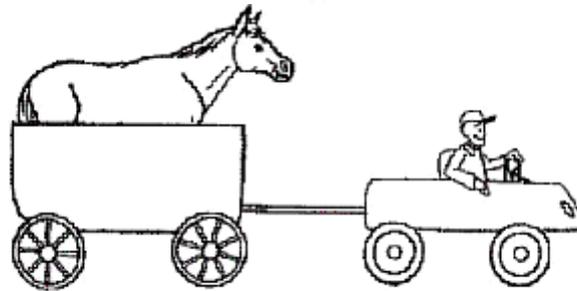


# VERTEBRATE ZOOLOGY



1898



1998

“The Horse – an outstanding example of evolution”.

Saskia Raevouri. Urantia Book. 1998

## BIOS2061 2019

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# Faculty of Science - Course Outline

## 1. Information about the Course

NB: Some of this information is available on the [UNSW Handbook](#)<sup>1</sup>

<b>Year of Delivery</b>	2019			
<b>Course Code</b>	BIOS2061			
<b>Course Name</b>	Vertebrate Zoology			
<b>Academic Unit</b>	School of Biological, Earth and Environmental Sciences			
<b>Level of Course</b>	2 <sup>nd</sup> UG			
<b>Units of Credit</b>	6UOC			
<b>Term(s) Offered</b>	T2			
<b>Assumed Knowledge or Prerequisites</b>	Assumed knowledge: BIOS1101 or equivalent			
<b>Hours per Week</b>	3h lectures, 2 x 2h lab			
<b>Number of Weeks</b>	10 weeks			
<b>Commencement Date</b>	Week beginning 3 June 2019			
<b>Summary of Course Structure (for details see 'Course Schedule')</b>				
<b>Component</b>	<b>HPW</b>	<b>Time</b>	<b>Day</b>	<b>Location</b>
Lectures	3			
Lecture 1		12 - 1 pm	Monday	Central Lecture Block 4
Lecture 2		1 - 2 pm	Wednesday	Central Lecture Block 4
Lecture 3		10 - 11 am	Friday	Central Lecture Block 4
Practicals	2 x 2hr			
Option 1 Lab 1		1 - 3 pm	Monday	E26 Teaching lab 3
Lab 2		12 - 2 pm	Friday	E26 Teaching lab 3
Option 2 Lab 1		4 - 6 pm	Monday	E26 Teaching lab 3
Lab 2		2 - 4 pm	Friday	E26 Teaching lab 3
<b>TOTAL</b>				
<b>Special Details</b>	Week 9 Lab 2 (Friday) is a fieldtrip to Centennial Park. This is held during normal practical class times.			

## 2. Staff Involved in the Course

Staff	Role	Name	Contact Details – room and email	Consultation Times
<b>Course Conveners</b>		Prof Sue Hand	Biolink 557 <a href="mailto:s.hand@unsw.edu.au">s.hand@unsw.edu.au</a>	Email for appointment
		Prof Mike Archer	Biolink 563 <a href="mailto:m.archer@unsw.edu.au">m.archer@unsw.edu.au</a>	Email for appointment
<b>Other Teaching Staff</b>	Lecturers & Facilitators	Prof Iain Suthers	E26 Level 4 <a href="mailto:i.suthers@unsw.edu.au">i.suthers@unsw.edu.au</a>	Email for appointment
		Prof Richard Kingsford	E26 Level 5 <a href="mailto:richard.kingsford@unsw.edu.au">richard.kingsford@unsw.edu.au</a>	Email for appointment
		Dr Jodi Rowley	Australian Museum <a href="mailto:jodi.rowley@austmus.gov.au">jodi.rowley@austmus.gov.au</a>	Email for appointment
		Dr Peter Yates	SIMS <a href="mailto:peter.yates@sims.org.au">peter.yates@sims.org.au</a>	Email for appointment
	Tutors & Demonstrators	TBA		
	Snr Technical Officer	Bernadette Phu	<a href="mailto:bernadette.phu@unsw.edu.au">bernadette.phu@unsw.edu.au</a>	

### 3. Course Details

<b>Course Description<sup>2</sup></b> (Handbook Entry)	Australia has a high diversity of vertebrate species (e.g. kangaroos, tree frogs, parrots, snakes). This course examines the evolution, diversity and natural history of these animals with a special emphasis on how they cope with Australia's environment. It covers the evolutionary origins and relationships between the major vertebrate groups and explores their diversity of form, function and behavior. There is a detailed investigation of fish, amphibians, reptiles, birds and mammals, particularly their ecology, life history and emerging conservation issues. Practical work involves examining living and preserved specimens (including dissections) and an excursion near UNSW studying vertebrates in the wild.	
<b>Course Aims<sup>3</sup></b>	<ol style="list-style-type: none"> <li>1. To impart a fundamental understanding of the evolution and diversity of organisms classified as vertebrates (Phylum Chordata)</li> <li>2. To teach students the origins of the major features of vertebrates.</li> <li>3. To introduce the principles of taxonomy in the classification of living organisms</li> <li>4. To demonstrate the major conservation issues facing vertebrate life with an emphasis on Australian fauna methods to synthesise biological and other information to produce adaptive action plans.</li> </ol>	
<b>Student Learning Outcomes<sup>4</sup></b>	At the end of this course, students should <ol style="list-style-type: none"> <li>1. Have an understanding of the evolutionary interrelationships between the major groups within the Phylum Chordata</li> <li>2. Be able to identify and distinguish among different vertebrate taxa</li> <li>3. Understand current thinking on the origins of the major features defining the major lineages</li> <li>4. Understand the major issues in the conservation of Australia's vertebrates</li> </ol>	
<b>Graduate Attributes Developed in this Course<sup>5</sup></b>		
<b>Science Graduate Attributes<sup>5</sup></b>	<b>Select the level of FOCUS</b> <i>0 = NO FOCUS</i> <i>1 = MINIMAL</i> <i>2 = MINOR</i> <i>3 = MAJOR</i>	<b>Activities / Assessment</b>
<b>Research, inquiry and analytical thinking abilities</b>	<b>2</b>	All activities and assessments require and enhance ability to synthesise and act on biological and other information
<b>Capability and motivation for intellectual development</b>	<b>1</b>	Presentation of conflicts between different biological information. Students have many opportunities to develop and express these skills through lecture discussion, assignments, and in interpretation for final exam
<b>Ethical, social and professional understanding</b>	<b>0</b>	
<b>Communication</b>	<b>1</b>	Written reports and group work during lab classes
<b>Teamwork, collaborative and management skills</b>	<b>2</b>	Students will collaborate in lab classes over dissections and are encouraged to discuss what they see
<b>Information literacy</b>	<b>2</b>	Students will gain experience in finding and citing information from primary, secondary and web-based literature

<sup>2</sup> [UNSW Handbook](#)

<sup>3</sup> [Learning and Teaching Unit: Course Outlines](#)

<sup>4</sup> [Learning and Teaching Unit: Learning Outcomes](#)

<sup>5</sup> [Contextualised Science Graduate Attributes](#)

<b>Major Topics (Syllabus Outline)</b>	<ul style="list-style-type: none"> <li>• Introduction, taxonomy and the evolution of early vertebrates</li> <li>• Evolution of fish to amphibians</li> <li>• Evolution and origin of "reptiles"</li> <li>• The birds</li> <li>• Evolution and origins of mammals</li> </ul>
<b>Relationship to Other Courses within the Program</b>	<p>In line with school policy, there are no formal pre-requisites. This course allows students to draw on material that they have learned in various 1st-year biological subjects and apply this to understanding Vertebrate Life. In 2nd year, useful companion subjects are BIOS 2011 (Evolutionary and Physiological Ecology), BIOS 2031 (Biology of Invertebrates), BIOS 2051 (Flowering Plants) and GEOS2071 (Life Through Time). This course is assumed knowledge for BIOS3601 (Advanced Field Biology).</p>

#### 4. Rationale and Strategies Underpinning the Course

<b>Teaching Strategies</b>	<p>Teaching includes lectures and practicals, with continuous assessment. As well as being introduced to theories currently used in our understanding of the origin of vertebrates and their traits, students will be challenged to continually evaluate the basis and evidence for these theories.</p>
<b>Rationale for learning and teaching in this course<sup>6</sup>,</b>	<p><b>Suggested approaches to learning in the course, and resource materials</b></p> <p>Students should approach each component of the course with the aim of evaluating whether particular aspects of biology are relevant to management decisions in the context of the particular conservation issue presented. As this is a fundamental knowledge course, memory work will be a necessary component. There is also a large volume of material which student will encounter so students are strongly encouraged to study as they go. <b>Relying solely upon last minute preparation for the final prac exam is NOT advised.</b></p> <p>You are expected to attend all your scheduled classes. Since this subject is <b>NOT</b> offered in distance mode, if you miss classes, your progress will be significantly hindered. After attending lectures and pracs much of the material can be studied independently, with the aid the textbook, lecture outlines (on the web), and the references contained in the lecture notes.</p> <p>Some of the practical exercises are to be completed independently. However, it is advised that students should plan to stay for the duration of 2 hour lab classes. There is a strong correlation between how long students stay in a lab and their final lab assessment grade. The demonstrators are casual staff, and are therefore difficult to contact outside prac times – use them while they are in prac.</p> <p>Each assessment appears in the schedule with the code of the class to which it relates most strongly. However, this course aims to develop the ability to integrate different strands of information, so a student might use information from any of the classes in any of the assessments, especially in more general exercises such as the research assignment.</p>

<sup>6</sup>[Reflecting on your teaching](#)

## 5. Course Schedule

Some of this information is available on the [Online Handbook](#)<sup>7</sup> and the [UNSW Timetable](#)<sup>8</sup>.

Week Date (Mon)	Lecture 1 (1h)	Lecture 2 (1h)	Lecture 3 (1h)	Lab 1 (2h)	Lab 2 (2 h)
Week 1 June 3	Introduction & Chordates	Classification & Cladistics	<i>No Lecture</i>	Chordates & Sharks I	Sharks II
Week 2 June 10	<i>Public Holiday</i>	Fish 1	Fish 2	<i>Public Holiday</i>	Fish I
Week 3 June 17	Fish 3	Fish 4	Frogs 1	Fish II	Tetrapods
Week 4 June 24	Frogs 2	Reptiles 1	Reptiles 2	Frogs & Lizards	Snakes, Turtles & Crocodiles
Week 5 July 1	No classes				
Week 6 July 8	Mammals 1	Mammals 2	Mammals 3	Lab Quiz & Mammals I	Mammals II
Week 7 July 15	Mammals 4	Mammals 5	<i>No lecture</i>	Mammals III	<i>No lab</i>
Week 8 July 22	Humans	<i>No lecture</i>	Mammals 6	Zoomobile	Zoomobile (alternate date)
Week 9 July 29	Birds 1	Birds 2	<i>No lecture</i>	Birds & Dinosaurs	Birds in their Habitat
Week 10 August 5	Birds 3	Birds 4	Birds 5	Revision	Prac Exam

<sup>7</sup> UNSW Virtual Handbook: <http://www.handbook.unsw.edu.au>

<sup>8</sup> UNSW Timetable: <http://www.timetable.unsw.edu.au/>

## 6. Assessment Tasks and Feedback

Task	% of total mark	Assessment Criteria	Date of		Feedback		
			Release	Submission	WHO	WHEN	HOW
Lab Drawings	15	Thoroughness and precision of drawing and labels	Wks 1-3	End of class	Tutors	2 weeks following submission	Written comments on drawings
Lab Reports	10	Accuracy of answers based on lab materials and related materials from Wks 4 and 7	Wks 4-7	Week following practical	All lecturers	2 weeks following submission	Written comments on reports
Bird Survey of Centennial Park	5		Wk 9	End of class	Tutors	2 weeks following submission	Written comments on report
Lab Quiz	10	Accuracy of answers based on lab materials from Wks 1-4	Wk 6	End of quiz	Sue Hand	Wk 6	Mark on-line
Practical Exam	20	Accuracy of answers based on lab materials from Wks 1-10, emphasis on Wks 6-10	Wk10	End of class	All lecturers		With final results
Final Exam	40	Accuracy of answers based on interpretation of lecture material and recommended readings	Exam period	End of exam	All lecturers		With final results

The website for BIOS2061 Vertebrate Zoology can be accessed via Moodle.

The username is your student number and the password is your unipass. Lecture notes as PDF files will be posted at this site soon after the lecture.

**Lab quiz –** is an on-line multiple choice exam. No materials can be taken into the quiz.

**Practical exam** - is of the “musical chairs” type where you have 1.5 minutes at each question and then move on to the next. You may only take writing materials into the exam.

**The final theory exam** - will be of two hours duration and will be held during the normal UNSW exam period at the end of Term 2 as scheduled by the registrar. No notes, books or examination aids of any kind will be allowed. The University expects that all students (domestic and international) to be present and available until the end of the examination period. Exchange and study abroad students are required to sign a declaration to this effect-- but many seem to forget this. There are also cases of local students who book holidays during the exam period. While we can of course take medical and misadventure considerations into account, other matters are not grounds for rescheduling exams or giving additional exams before or after the scheduled exam.

## Submitting your Practical Drawings

Your practical drawings for Weeks 1 to 3 must be submitted before you leave the lab in each of those weeks. Late submissions will have marks deducted (10% per day). If you have a problem that affects your work, you should immediately apply for special consideration and contact the appropriate lecturer if you need an extension.

## Guidelines for Practical Drawings

Each drawing should be made on ONE side of an unlined sheet of white A4 paper.

Each drawing should include a TITLE, LABELS and a SCALE BAR.

All drawings, the title and the labels SHOULD be done in pencil ONLY (preferably soft lead that will not smudge). And, the pencil should be SHARP!

Drawings should be neat, clean and large (fill about 2/3 of the page so as to leave enough space for clear labelling).

Labels should be written horizontally, and must be accurate and spelled correctly.

Each label indicator line must be straight (use a ruler) and should not cross over other label lines. Do not use arrow heads!

The scale bar should represent a 'rounded' number such as 500µm or 20mm NOT 133.7mm!

## 7. Additional Resources and Support

<b>Text Books</b>	<p><u>Suggested Text:</u> Pough, F.H., Janis, C.M. and Heiser, J.B. (2012). <i>Vertebrate Life</i>. 9th Edition. Prentice Hall International. The text book is an integral part of this course. Be sure to get the latest edition as it is completely revised from earlier editions (e.g. 5<sup>th</sup>).</p> <p><u>Recommended Reading:</u> Van De Graaff, K.M. and Crawley, J.L. (2009). <i>A Photographic Atlas for the Biology Laboratory</i>. 7th Edition. Morton Publishing Company, Englewood, Colorado. Shubin, N. (2008). <i>Your Inner Fish: A Journey into the 3.5-Billion-Year History of the Human Body</i>. Vintage Books, New York.</p>
<b>Course Manual</b>	Course manual will be available to purchase from the UNSW Bookshop; it will also be posted on Moodle.
<b>Required Readings</b>	Because this course is designed to develop and evaluate students' ability to select and criticize material, students make their own choices of reading matter from the material presented in classes and course manual.
<b>Additional Readings</b>	<p>Other references will be given in individual lectures, using citations of electronically available material</p> <p><u>Demonstrators and tutors.</u> They can help you integrate the lecture and practical material. Note however, that they are casual staff NOT paid outside class hours, so use them during class!!</p> <p><u>Lecturers:</u> As the ultimate source of help, for each lecture or prac, the lecturer responsible is indicated by their name in the schedule. Enquiries about the contents of this class, or requests for appointments, should be directed to this lecturer's email address. It will be much easier for the lecturer to help you rapidly if you come with a written attempt at a problem, or a page of notes on which you have identified your FIRST point of difficulty.</p>
<b>Recommended Internet Sites</b>	<p><u>Online material</u> Lecturers put notes for their lectures onto Moodle Lectures are available as iLectures This Manual is available on Moodle</p> <p><u>UNSW Library.</u> One starting point for assistance is: <a href="http://info.library.unsw.edu.au/web/services/services.html">info.library.unsw.edu.au/web/services/services.html</a> From the library website, the Sirius Database is useful for accessing scientific databases such as current contents and science citation index.</p>

<b>Societies</b>	Royal Zoological Society of NSW: <a href="http://www.rzsnsw.org.au">www.rzsnsw.org.au</a>
<b>Computer Laboratories or Study Spaces</b>	See BSB Student Office (located Biolink Ground Floor G27) for access.

## 8. Required Equipment, Training and Enabling Skills

<b>Equipment Required</b>	<p><u>For Labs:</u></p> <ol style="list-style-type: none"> <li>1. Your dissecting instruments from First Year Biology. From this kit the only instruments you will use are <b>nurses' scissors</b> (=one blunt blade and one sharp blade) and <b>blunt probe</b>.</li> <li>2. Note plain (un-lined) paper/pencils/eraser for drawings of dissections and lab material. A "Visual Diary" which is a blank notebook is a good idea.</li> <li>3. <b>LAB COAT</b> and <b>CLOSED TOED SHOES</b>. University-wide requirements mean that we need to ensure that all students are wearing the appropriate safety clothing in these labs. You must bring these items to every lab class otherwise you will not be allowed to attend. If you forget your lab coat, disposal lab coats are available for purchase at the BSB student office (Biolink G27).</li> </ol> <p><u>For Field Trip:</u></p> <p>Closed toed shoes, rain gear, sunscreen, drinking water</p>
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## 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.

<b>Mechanisms of Review</b>	<b>Last Review Date</b>	<b>Comments or Changes Resulting from Reviews</b>
<b>Major Course Review</b>		This course has been progressively modified over the years, as student numbers have grown, so that more intensive teaching methods are inappropriate.

<p><b>CATEI</b> <b>myExperience</b></p>	<p>2015-2016  2017</p>	<p>Student feedback on the course is gathered periodically, using various means, including the Course and Teaching Evaluation and Improvement (CATEI) Process and myExperience.</p> <p>This feedback is generally positive, and written comments show that any aspect of the course which one student disliked was usually well-liked by another student. Nevertheless, all suggestions for improvement are considered carefully with a view to acting on them constructively where possible. For example, the dissections are seen by some students as most useful because they are hands-on, while other students feel they needed strong direction in the labs with exact questions about what they should learn from each lab. Therefore, we have reduced the scope of some exercises, and have added more direction to the lab notes where there are especially large numbers of specimens.</p>
<p><b>myExperience</b></p>	<p>2019</p>	<p>In 2019, myExperience will be open to students during term and close prior to the exam period.</p>

## 10. Administration Matters

<p><b>Expectations of Students</b></p>	<p>You are expected to attend all your scheduled classes. <b>Field trips are compulsory.</b> Since this subject is <b>NOT</b> offered in distance mode, if you miss classes, your progress will be significantly hindered. Any alterations to the schedule will be announced in a preceding class. If you miss a class, it is your responsibility to (i) catch up on the course material, and (ii) find out the details of any announcements. Students whose attendance at classes or assessment is affected by obligatory religious ceremonies should discuss ways of dealing with this clash with one of the convenors prior to, or at the commencement of, the course; you may be required to show proof of the nature of the ceremony and your obligation to attend.</p> <p><b><u>Suggested approaches to learning in the course, and resource materials</u></b> Students should approach each component of the course with the aim of evaluating whether particular aspects of biology are relevant to management decisions in the context of the particular conservation issue presented. As this is a fundamental knowledge course, memory work will be a necessary component. There is also a large volume of material which student will encounter so students are strongly encouraged to study as they go. <b>Relying solely upon last minute preparation for the lab quiz and final prac exam is NOT advised.</b></p> <p>You are expected to attend all your scheduled classes. Since this subject is <b>NOT</b> offered in distance mode, if you miss classes, your progress will be significantly hindered. After attending lectures and pracs much of the material can be studied independently, with the aid the textbook, lecture outlines (on the web), and the references contained in the lecture notes.</p> <p>Some of the practical exercises are to be completed independently. However, it is advised that students should plan to stay for the duration of 2 hour lab classes. There is a strong correlation between how long students stay in a lab and their final lab assessment grade. The demonstrators are casual staff, and are therefore difficult to contact outside prac times – use them while they are in the prac.</p>
<p><b>Report Submission</b></p>	<p>In Weeks 1-3 and Week 9, practical reports must be submitted before leaving the laboratory (Weeks 1-3) or the field excursion (Week 9).</p> <p>All other practical reports should be submitted, by 4 pm the following week, in the BEES assignment box, at the Student Office (G27), BioLink building. Reports must have a cover sheet firmly attached; cover sheets are available from the school office. <b>You must keep a photocopy of all work handed in.</b></p>

	<p>Late reports will have marks deducted as outlined in the schedule above. If you have a problem that affects your work, you should <u>immediately</u> apply for special consideration <u>and</u> contact the appropriate lecturer if you need an extension for a particular report or assignment. If you need a long extension, tell the lecturer <u>well before</u> the deadline.</p> <p>BEES cover sheet and related information are at <a href="http://www.bees.unsw.edu.au/biosciences-student-office">http://www.bees.unsw.edu.au/biosciences-student-office</a></p>
<p><b>Work Health and Safety<sup>9</sup></b></p>	<p>The School of BEES values the health and safety of all persons associated with its activities. The School is committed to the expectation, as outlined in the UNSW WHS Policy, that no one will come to harm whilst engaging in research, teaching or learning, or any other activity undertaken by BEES workers, students or others. To achieved this expectation everyone must ensure they take all reasonable care for their own health and safety, and also take all reasonable care that the health and safety of others is not adversely affected either by their acts or omissions. In addition, it is a legal requirement that all workers, students and others comply with any reasonable instruction given by UNSW with regards to health and safety to ensure UNSW is in compliance with the NSW WHS Act and Regulation 2011.</p> <p>The School of BEES follows the UNSW chain of HS responsibility and accountability for all persons in the workplace, extending down from the Head of School through to the students undertaking BEES courses. Within this chain of responsibility and accountability, the Course Convener is responsible for ensuring all activities associated with their course are safe. The Course Convener has identified all potential hazards associated with course activities and documented risk control measures to ensure your health and safety. For each activity, clear written instructions are given and appropriate hazard warnings or risk minimisation procedures included for your protection. It is the student's responsibility to prepare for all practical work. Students should be familiar with the written procedures scheduled for the practical class and follow all personal protection requirements specified to complete the exercise in a safe manner. Provided it is safe to do so, students must comply with all safety instructions given by the Course Convener and/or Laboratory / Field Demonstrator, and observe the safety Information located outside or within teaching rooms. If you are unsure of any safe work procedures or written instruction regarding safety, you should seek further information from the Course Convener and/or Laboratory / Field Demonstrator before attempting the task.</p> <p>In addition, if you observe any unsafe work environment, procedure or equipment you have a duty to ensure that the hazard is reported and appropriate steps are taken to prevent harm. You should be aware of your responsibilities (<a href="http://www.safety.unsw.edu.au/">http://www.safety.unsw.edu.au/</a>). Your colleagues will be grateful that you have helped ensure the continued enjoyment of their day without any nasty surprises.</p> <p><b>General conduct</b></p> <p>A laboratory is for serious work not horseplay. Eating, drinking or smoking in laboratories is not allowed. Students must read the instructions to their laboratories carefully beforehand and be aware of all possible hazards. No undergraduate students will be allowed to work in the laboratories outside class hours without permission and some supervision. All accidents and injuries must be reported to the lecturer or demonstrator in charge of the practical class for treatment if necessary. A 'Hazard/Incident' report should be filled in if an accident or incident occurs without causing an injury. With injury, an additional 'Injury/Loss of Time' report is also required. Never dispose of broken glass or other dangerous rubbish in waste paper baskets. Put broken glass into bins marked 'broken glass' and other sharp objects into bins labeled 'sharps' or 'contaminated sharps'.</p> <p><b>Laboratory and protective clothing</b></p> <p>Clothes should protect your body and not be highly inflammable. Laboratory coats are essential in all laboratories. You will be asked to leave if a supervisor feels your attire puts you at risk. Where necessary, safety equipment will be provided and should be used as directed.</p>

<sup>9</sup> [UNSW Health & Safety](#)

Closed-in shoes are compulsory so they can give adequate protection against corrosive liquids and cuts. Persons wearing thongs or arriving in bare feet will not be allowed into practical classes.

### **Fire hazards**

Students with long hair should tie it up while working in the laboratory, since long, loose-hanging hair can be a nuisance and a serious fire hazard.

### **Use of fire extinguishers**

**Electrical fires** must not be fought with liquid-foam extinguishers dry powder, CO<sub>2</sub> or BCF (Bromochlorodifluoromethane) types are more suitable. Fires caused by **sodium** should not be fought with liquid-foam or CO<sub>2</sub>. Use solid powder or BCF. Report any use of a fire extinguisher so that the cylinder can be refilled. After using BCF or CO<sub>2</sub> extinguishers, ventilate the area thoroughly to remove vapours.

### **If clothes catch fire**

#### *1. If your own clothing catches fire*

**Do not run.** If there is no one to help you, promptly lie on the floor and roll over and over to smother the flames.

#### *2. If another person's clothing catches fire*

Force the person to lie down on the floor immediately. This prevents the flames from reaching the eyes and entering the nose. Roll the person over and over on the floor to smother the flames. A fire blanket or laboratory coat may be used to smother the flames. **Never** use a chemical fire extinguisher.

### **Evacuation**

If there is a fire, explosion or other major calamity an alarm will sound. Follow the instructions from your lecturer or demonstrator. Close all the doors and windows if possible. Quickly check to see that everyone is out of the room. Move steadily to the nearest stair well and out of the building. **Do not use the lifts.** Assemble in the grassy area in front of the Biological Science Building. Supervisors should bring the class roll and check that everyone has left the building.

### **Accidents**

#### **Fire or serious injury**

Telephone 56666 and then describe carefully:

- The location of the emergency, giving the name of the building, the floor and the room number.
- The type of emergency.
- Your name and extension number.

#### **Minor injuries**

Telephone the University Health Service on 55425 or 55426 or 55427.

#### **First Aid**

First Aid may be obtained by phoning:

Ms Rosa Ascencio	on	9385 2016
Mr Frank Hemmings	on	9385 3274
Ms Rochelle Johnston	on	9385 8054
Ms Mira Van der Ley	on	9385 8031

In case of an electric shock, shout for help. Disconnect the current or remove the person from the current using some **insulated** material. If there is no pulse and no breathing, start external cardiac compression and mouth to mouth artificial respiration. When the pulse and breathing have been restored get medical aid immediately. If high voltage current is involved, **do not** attempt to assist the person until the current has been disconnected at the mains.

**(FOR ADDITIONAL INFORMATION SEE THE COPY OF THE UNIVERSITY'S SAFETY MANUAL IN THE LECTERN IN EACH LABORATORY)**

<p><b>Assessment Procedures</b></p> <p><b>UNSW Assessment Policy<sup>10</sup></b></p>	<p>Assignment procedures are described above in "Assignment Submission". If you have a problem that affects your work, you should immediately apply for special consideration and see the appropriate lecturer if you need an extension for a particular assignment. If you need a long extension, tell the lecturer well before the deadline.</p> <p>The final examination will be scheduled by the examinations branch. Students should be available for examination throughout the entire UNSW mid-year examination period. Supplementary examinations will only be granted to students who miss the final examination due to illness or other unexpected reasons outside their control. A student who wishes to apply for a supplementary examination should contact one of the course convenors as soon as the problem becomes apparent, as well as applying for special consideration through the student office. If a supplementary examination is granted, it will be held before the beginning of session 2. Until then, you should maintain a current address with SIS, and be available for contact and assessment.</p>						
<p><b>Equity and Diversity<sup>11</sup></b></p>	<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 (9385 4734 or <a href="http://www.studentequity.unsw.edu.au/">http://www.studentequity.unsw.edu.au/</a> ).</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>						
<p><b>Grievance Policy<sup>12</sup></b></p>	<p>In all cases you should first try to resolve any issues with the course convenor. If this is unsatisfactory, you should contact the School Student Ethics Officer (A/Prof Stephen Bonser, <a href="mailto:s.bonser@unsw.edu.au">s.bonser@unsw.edu.au</a>) or the School's Grievance Officer / Designated Officer under the UNSW Plagiarism Procedure. (A/Prof Scott Mooney <a href="mailto:s.mooney@unsw.edu.au">s.mooney@unsw.edu.au</a>).</p> <p>UNSW has formal policies about the resolution of grievances that can be reviewed in myUNSW A to Z Guide (see <a href="https://student.unsw.edu.au/complaints">https://student.unsw.edu.au/complaints</a>).</p> <table border="0" data-bbox="507 1227 1509 1404"> <thead> <tr> <th data-bbox="507 1227 804 1285"><b>Designated/Grievance Officer</b></th> <th data-bbox="874 1227 1161 1285"><b>School Student Ethics Officer</b></th> <th data-bbox="1238 1227 1481 1256"><b>University Contact</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="507 1285 804 1404">A/Prof Scott Mooney School of BEES <a href="mailto:s.mooney@unsw.edu.au">s.mooney@unsw.edu.au</a> Tel: 9385 8036</td> <td data-bbox="874 1285 1161 1404">A/Prof Stephen Bonser School of BEES <a href="mailto:s.bonser@unsw.edu.au">s.bonser@unsw.edu.au</a> Tel: 9385 3863</td> <td data-bbox="1238 1285 1509 1375">University Counselling Services Tel: 9385 5418</td> </tr> </tbody> </table>	<b>Designated/Grievance Officer</b>	<b>School Student Ethics Officer</b>	<b>University Contact</b>	A/Prof Scott Mooney School of BEES <a href="mailto:s.mooney@unsw.edu.au">s.mooney@unsw.edu.au</a> Tel: 9385 8036	A/Prof Stephen Bonser School of BEES <a href="mailto:s.bonser@unsw.edu.au">s.bonser@unsw.edu.au</a> Tel: 9385 3863	University Counselling Services Tel: 9385 5418
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<sup>10</sup> [UNSW Assessment Policy](#)

<sup>11</sup> [UNSW Equity & Diversity](#)

<sup>12</sup> [UNSW Student Complaint Procedure](#)

## 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:

<https://student.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

## **12. A sampler of things for BIOS2061 students to consider when writing essays**

In what follows, we have given you guidelines for improving your writing for essays and later research theses, publications etcetera. That said, some scientific journals have specific requirements such as how references should be formatted in the reference list or cited in the body of your paper. But for general essays (as in this course) and most scientific writing, the following guidelines should be followed.

### **GENERAL ADVICE**

1. Read the instructions for any essay you are asked to write very carefully--and follow them. If you do not understand all of the instructions, ask for clarification. If you skim the instructions and fail to do what you have been asked to do, you will lose marks.
2. Make certain that you understand what aspects of the topic you are expected to address.
3. Normal scientific papers have the following: Title, Author, Abstract, Introduction, Methods, Results, Discussion, Conclusion, Acknowledgements, References, Appendix. Student essays, however, may only have: Title, Author, Abstract, Introduction (or Background), Discussion, Conclusion, Acknowledgements, References.
4. Outline your essay first. Make a list of dot points to remind you about the main topics you intend to cover. Then go back and start to flesh them out. Keep the length of each section under control so the length of the whole essay doesn't 'blow out'. It's much harder to condense an essay that has become too long than it is to write up to the limit allowed.
5. Before you start fleshing out the dot points, read what you need (publications that will provide the information you require) and take notes associated with the dot points. Be sure you take careful notes about the reference and page number from which you obtained any particular bit of information you are likely to use in your essay.
6. Write simple, short sentences. It is called the 'KISS' principle: 'Keep it simple stupid!' If your sentences become too long or entangled, they will become increasingly impossible to decipher. Examiners then begin to doubt your understanding or ability to communicate and may give up trying to make sense of your writing. This is a dreadfully common but easily avoided trap.
7. After you write something, read it out aloud. If you find you have to pause or stop and think about what you have said or meant, rewrite it until it is easy to say smoothly, quickly and clearly.

8. Writing IS rewriting. Never stop with your first draft. It can always be improved whether you are 18 or 180 or improved with rewriting even if you have already done this 10 times. Sometimes it is best when you have finished to leave the draft alone for a day and then revisit it after you have done other things.
9. Don't fall in love with the sentences or sections you have written or you won't be able to trim them down, revise them or, if necessary in the end, discard them.
10. Don't pad your writing out with bullshit because it only ends up annoying the reader and losing you marks. Say what you need to say to make the points you need to make with an economic use of carefully chosen words—and then stop.

## OVERALL STRUCTURE

11. All complete sentences (the only kind you should write) should have a noun or pronoun (i.e., 'subject' of the sentence) and a verb ('action' word). For example, 'Dogs exist.' is a complete sentence. In contrast, 'Dogs throwing up inside.' is not a complete sentence because it's missing a verb.
12. Don't be guilty of creating '*non sequiturs*' (something that 'does not follow') in your writing. Make sure that the sense of what you are saying or arguing flows naturally from start to finish. A *non sequitur* is something that appears in a case being made without any logical reason for it being there. For example, 'There are many kinds of dogs based on facial shape and body form. Cat canines are ugly.' The second statement has no relation to, and does not build from (or on), the first statement. It causes the reader to screw up their face and say 'What's that got to do with anything?' or 'How did we get to that conclusion?' In pure logic, a *non sequitur* is a conclusion that does not follow from the statements that went before. For example, 'My dog has fleas. Fleas love my dog.' The second statement is not a justifiable conclusion based solely on the first statement. *Non sequiturs* are far too common in student essays!
13. In terms of the logic of your arguments, make sure your conclusions *do* follow from the statements or arguments that precede them. If your premises are flawed, your conclusion will be invalid.
14. Use punctuation to say exactly what you mean. Recall the outcome of the following sentence being given to a class of students who were asked to punctuate it to clarify its meaning: 'A woman without her man is nothing'. The males punctuated it as follows: 'A woman, without her man, is nothing'. The females, however, responded with: 'A woman; without her, man is nothing.' Punctuation is powerful so use it to say exactly what you mean.
15. In general, please try NOT to right and left justify your writing. You should only left justify text. If you do justify the right and left sides, not only is it harder to read, the spacing between words

visually screws up which makes it hard for a reader to know if the actual spacing has errors.

16. In general, try to use a font that is *sans serif*—one that does not have ‘tails’ at the tops & bottoms of the letters. The *sans serif* font used here is Arial. It is easier than (e.g.) to read in essays, PowerPoint, etcetera. ‘*Serif*’ fonts (such as Times New Roman) are just that much less crisp because the bases of the letters tend to approximate one another.
17. In general, do not use coloured letters in your text or diagrams unless it is necessary. Use black letters. Similarly, do not use bold format unless it too is necessary for some technical reason.

## FIGURES

18. Use figures to complement the text and vice versa. Do not use the text to explain the figure if it is self-explanatory; if you do, you are wasting words.
19. Make sure you use a scale if there is an object in the figure.
20. Make the figure just large enough so what needs to be visible is clearly visible. Keep extraneous, irrelevant material out of figures.
21. Make sure the caption clearly explains what the figure is depicting.
22. The caption does not need to be a complete sentence although a complete sentence may be more easily understood.
23. Be careful to cite the source of the figure as part of the caption. For example: ‘Comparison of the number of species of macropodids in each habitat type (after Dawson 1975)’.

## STOPS

24. Never put a full stop after a phrase. For example, the title of the essay ‘Behaviour in Sugar Gliders’ should not have a full stop after ‘Gliders’ because it is not a complete sentence.
25. Never put a full stop at the end of part of a sentence *inside* parentheses. For example, ‘The fox is a canid (which in turn is a carnivoran).’ Include a full stop only if the whole sentence is inside parentheses. (The fox is a canid, which in turn is a carnivoran.)
26. If you are quoting someone else’s statement and use a whole sentence as it was originally published, put quotes around it and, in the reference to the quote, note the page on which the quote appeared. For example, ‘Clinker (1987, p. 33) said “I did not mix either blood sample with peanuts.” ‘
27. But if you are lifting part of a quote out of a longer statement, use three (3) stops to represent the missing bits of the original sentence. For example, ‘Clinker (1987, p. 42) said “...but it was not the outcome we expected.” ‘

28. Abbreviations should get a full stop as appropriate particularly in situations where the last letter of the abbreviation is *not* the last letter of the word being abbreviated: e.g., et al., viz., etc., etcetera. Conversely, where the last letter of the abbreviation is the last letter of the word being abbreviated, you should *not* use a full stop: e.g., Dr, St (for Street), Mr, Ms etcetera.
29. Do not use abbreviations at the beginning or ends of sentences. For example, '*Petaurus australis* has many attributes including odour, colour etcetera'. [Not good form: '*P. australis* has many attributes including odour, colour etc.']

### **COMMAS**

30. Use commas to set off what are parts of a sentence that require you to pause when you read the whole thing. For example, 'There were no vampires, black or white, visible anywhere in the cave.'
31. Normally you would never put a comma before the word 'and'. For example, 'It was a dark, stormy night and he had no idea where he was.'
32. The word 'however' should *almost* always be set off with commas. E.g., 'It was indeed a dark and stormy night, however, he was too wasted to care.' Always consider whether the word 'but' might be more succinctly used. E.g., 'It was indeed a dark and stormy night, but he was too wasted to care.'

### **SEMICOLONS & COLONS**

33. If in your writing you want to tie closely together what are in fact two complete sentences, do it with a semicolon. For example, 'Pasteur realised there was only one way to stop the infection; he had to bite his own leg off below the knee.'
34. Use a colon if you are trying to follow a statement with an appropriate action that is not in the format of a complete sentence. For example, 'Pasteur realised there was only one way to stop the infection: bite off his own leg below the knee.'
35. If you make a statement followed by a series of points, separate the statement and the points with a colon. For example, 'The dog had lost too many things: its ear, its hearing and its toy duck.'
36. Alternatively, you can use a double dash instead of a colon in situations of the two kinds of statements just noted above: 'Pasteur realised there was only one way to stop the infection—bite off his own leg below the knee.'

## CONTRACTIONS and ABBREVIATIONS

37. Contractions should not be used in scientific writing. Break them up and use the two words separately. For example, use 'do not' (not don't), cannot (not can't), will not (not won't), that is (not that's) etcetera.
38. If you are going to use abbreviations in an essay or scientific paper, make certain that these are explained either in the Introduction or the first time they are introduced in the text. For example, 'The Indian Ocean Dipole (IOD) appears to be related to droughts in Australia. If the IOD is in fact the cause of these, monitoring changes in the IOD may provide a predictive tool to anticipate droughts.'

## ITALICS

39. Latin/Greek words should normally be italicised: e.g., *et al.* (which is a Latin abbreviation for *et alia* which means 'and others').
40. Other normally italicised words include scientific names (e.g., *Petaurus australis*) and sometimes muscle or other formal anatomical names (e.g., *Gluteus maximus*).
41. Other words normally put in italics include: *ibid*, when you are noting a reference to a publication that you previously just noted and don't want to keep repeating the details of the reference. For example, 'Dogs are not adverse to eating anything with food value (Gobble 2003). It has been noted in Mexico that rabid dogs have even been seen to consume cats (*ibid*).'
42. That said, some journals no longer require some foreign words to be presented in italics such as 'et alia'. But in essays in UNSW, you should use *et al.* when referring to other things or persons implied to be included but not spelled out. For example, 'There are nine species of singing whales (Flipper *et al.* 2004).'
43. While discussing *et al.*, it should be used when you are referring in the body of your essay to a single publication by three or more authors. If there are one or two authors, both names should be given in the reference in the text. For example, 'The Golem was known to eat putrid fish (Gandarath & Wogwort 1735).'
44. Most scientific journals use italics for journal names in the reference list at the end of the paper.
45. Do not use italics to emphasize a word in a quotation from someone else just because you want to draw attention to it—unless you indicate after the quote that the emphasis is yours.

## UNDERLINING

46. Underlining is an alternative to italics and shouldn't be used if italics are available. For example, 'The Eastern Grey Kangaroo (Macropus giganteus) is relatively uncommon in western Victoria.'
47. Underlining for emphasis is not a normal thing to do in scientific writing. The words used should be sufficient to communicate the meaning without the need to exaggerate this meaning using italics, bold or underlining.

## SCIENTIFIC NAMES—FORMAL AND INFORMAL FORMATS

48. Terminology is as follows
- a. genus (singular); genera (plural)
  - b. species (singular and plural)
  - c. abbreviations: gen. for genus; sp. for species; spp. for more than one species
  - d. *Macropus giganteus* (caps for generic names; lower case for species)
  - e. Never start a sentence with an abbreviated generic name. For example, DO NOT say: '*M. giganteus* is big.' You must say '*Macropus giganteus* is big', even if you have just used the full name in the previous sentence. But if it is *not* at the beginning of a sentence and you have already indicated above this what the '*M.*' stands for, you can use the abbreviation.
  - f. *Formal taxonomic* terms that need to have the first letter capitalised: the names of a genus (e.g. *Macropus*), subgenus (e.g., *Prionotemnus*), subfamily (e.g., Macropodinae), family (e.g., Macropodidae), superfamily (e.g., Macropodoidea), suborder (e.g., Phalangerida), order (e.g., Diprotodontia), etc. on up the line. For example, 'There are two Suborders, Phalangerida and Macropodiformes, in the Order Diprotodontia.'
  - g. *Formal use of the taxonomic rank* involves capitalising the rank name: e.g., Subgenus *Prionotemnus*, Genus *Macropus*, Subfamily Macropodinae, Family Macropodidae, etcetera.
  - h. *Informal taxonomic* terms from subfamily on up are not capitalised (unless at the start of a sentence) and have different endings than the above. For example: subfamily (e.g., macropodine; or macropodines if it is more than one species you are referring to), family (e.g., macropodid), superfamily (e.g., macropodoid), suborder (e.g., phalangeridan) and order (e.g., diprotodontian). Incidentally: 'macropod' is not a scientific word; it is an abomination used only by the scientifically illiterate!

- i. When referring to attributes of species of a genus, you should not imply that these are attributes of the generic name. For example, you should say 'All species of *Macropus* exhibit an enlarged fourth metatarsal and use embryonic diapause.' You should NOT say '*Macropus* has an enlarged fourth metatarsal and uses embryonic diapause' because it does not—it has species. The *genus* does not have feet or a reproductive tract. The *species* have enlarged fourth metatarsals and reproductive tracts.

### **WHEN TO USE WHICH OR THAT**

49. When trying to decide whether you should use the word 'which' or 'that' you use 'which' if what follows that point in the sentence is not essential to the meaning of the sentence and could have been separated by a comma. For example, 'The boy picked the black dog which was sitting in the corner'.
50. If what follows the which/that in the sentence is essential to the meaning of the sentence, you should use the word 'that'. For example, 'The boy picked the black dog that had watched him from the moment he walked in the door.'
51. In the first sentence above, 'black dog' is the significant bit hence 'which' is the correct word to use in linking the two parts of the sentence. In the second sentence, the fact that the dog was watching him becomes the key issue hence 'that' is the correct word to use to link the two parts of the sentence.

### **WHEN THERE IS AN ERROR IN A QUOTATION AND IT'S NOT YOURS**

52. If you are quoting someone else's statement and know it to be wrong in some detail (e.g., a word is misspelled), you need to put the term 'sic' in square brackets immediately after the word in the quotation that is incorrect. For example, 'The resercher [sic] was determined to be a perfectionist' (Dreadful 1999, p. 10).

### **REFERENCES AND REFERENCE LISTS**

53. When citing references to back up what you are saying, it is always better if you can to use a primary reference than a textbook or other 'secondary' reference.
54. Do not cite or quote from a reference that you yourself have not actually seen. If you want to refer to a statement made by someone noted by someone else, and you have only seen the latter, then you need to come clean and say so. For example, you could say: 'There are known cases of dog vampires (Bloodlusty 1867 *fide* Donabelievhim 1959).' The Latin expression *fide* means 'by faith' and indicates that you are trusting Donabelievhim to have correctly reported what Bloodlusty actually said. Another way of expressing this is:

'There are known cases of dog vampires (Bloodlusty 1867 as cited in Donabelievhim 1959).'

55. The main things to watch in compiling reference lists are accuracy and consistency. Make sure your references are word and punctuation perfect. Do not add or subtract words from the title of the paper or change the punctuation, even if it is in your opinion wrong.
56. In terms of consistency, make sure that whatever format rules you use, you use them consistently. For example, don't capitalise some of the words in a book title and not others. If you capitalise words in one book in the list, make sure you do the same thing for all other books cited in the list.
57. Also, make sure that every reference you have noted in the essay is in fact detailed in the reference list at the end. Conversely, make sure all references given in the reference list are in fact cited in the essay and, if not, remove them from the reference list.

### **SPELL CHECKERS**

58. ALWAYS use a spell-checker set for English (Australian) if it is available. But beware of the following problems.
  - a. Spell-checkers will not know whether the whether is fine for the girls or there high-cut dresses over their are wear they where them when it reigns. Hence YOU must read your essay very carefully, word by word.
  - b. If you are not careful, spell-checkers will try, inappropriately, to change words in quotes that you have used from other sources, or words in references listed in your reference list—and this must not happen.

### **THE PLAGUE KNOWN AS PLAGIARISM**

59. Under no circumstances should you ever be guilty of plagiarism. Academics get fired if they plagiarise. All your work must be your own; if it is not and you have not acknowledged where something you have used has come from, you can expect a '0' for a grade, or worse. Hence, please make absolutely certain that when you take notes from other works you have read that you carefully note where your notes came from—so you do not make the mistake of thinking further down the track that they were your words: an honest but fatal mistake.

Prof Mike Archer  
Prof Suzanne Hand  
BIOS2061 Vertebrate Zoology, 2019