Class code: BIOL-UA 9012

Instructor Details
Dr. Anne Wignall
anne.wignall@nyu.edu
Skype: aewignall
9850 8587
Office hour: Monday 1-2pm

Class Details
Principles of Biology II
Lectures: Thursday 2-5pm (Room 203) & some scheduled Mondays
Laboratory practicals: Monday 2-5pm (9 labs in total)
Room 3.10 UTS Science Building (Building 4) Harris Street Ultimo

Prerequisites
High school Chemistry

Class Description
This course gives a broad overview of biology from an evolutionary perspective. Students will be introduced to the major biological forms and functions using a comparative approach. Particular emphasis will be given to how biological structures and systems are adapted to life history and ecology.

Coursework will comprise lectures, lab work and discussions.

Desired Outcomes
By the end of the course, students should be able to:
1. Define the processes of evolution
2. Describe the major morphological characteristics of the main groups of organisms and compare and contrast their biology
3. Develop falsifiable hypotheses and design experiments to test them
4. Effectively communicate biology using written and oral media
5. Locate and critically assess scientific literature
Assessment Components

Participation and engagement 5%
Online review questions, participation in class discussion

Practical Exam 10%
Short-answer format, based on work in labs 1-6.

Oral Presentation and abstract 20%
12 minute presentation + 3 minutes questions, and 200 word ‘conference’ abstract

Scientific Paper 20%
Short scientific paper of no more than 6 double-spaced pages (excluding tables, figures, references and title page). Based on results from experimental work in first lab class.

Mid-term Exam 20%
Multiple choice and short-answer questions based on lectures 1-5.

Final Exam 25%
Multiple choice and short-answer questions based on lectures 6-14 and labs 7-9.

Failure to submit or fulfil any required course component results in failure of the class.

Assessment Expectations

Grade A: Excellent work showing a thorough knowledge and understanding of the topics, with excellent use of scientific language, detailed analysis and clear logical explanations, showing insight, independent, original thought and reasoning. Work should reveal a considerable degree of independent reading and research and coursework should include the use of primary reference material.

Grade B: Good work with good general knowledge and understanding of the topics, accurate use of scientific language, good general analysis and coherent explanations showing some independent reasoning, reading and research. Coursework may include the use of some primary reference material.

Grade C: Satisfactory work, broadly correct both factually and analytically, with some explanation and reasoning: the work will typically demonstrate a basic understanding of the topic.

Grade D: Passable work, showing a general, superficial knowledge and understanding of the topic, lacking satisfactory use of scientific language or adequate analysis.

Grade F: Unsatisfactory work in all criteria.
NYU Sydney uses the following scale of numerical equivalents to letter grades:

A=94-100
A-=90-93

B+=87-89
B=84-86
B-=80-83

C+=77-79
C=74-76
C-=70-73

D+=67-69
D=65-66

F=below 65

Where no specific numerical equivalent is assigned to a letter grade by the class teacher, the mid point of the range will be used in calculating the final class grade (except in the A range, where 95.5 will be used).

NYU Sydney aims to have grading standards and results similar to those that prevail at Washington Square. At the College of Arts and Sciences, roughly 39% of all final grades are in the B+ to B- range, and 50% in the A/A- range.

We have therefore adopted the following grading guideline: in any non-Stern course, class teachers should try to insure that no more than 50% of the class receives an A or A-. (Stern has a different grading policy that we follow in all Stern courses).

A guideline is not a curve. A guideline is just that: it gives an ideal benchmark for the distribution of grades towards which we work.
NYU Sydney has a strict policy about course attendance for students. Faculty will not give students permission to be absent for any reason. Students should contact their instructors to catch up on missed work but should not approach them for excused absences.

All absence requests must be presented by the student to the Assistant Director, Academic Programs. Wherever possible, requests should be made in advance of an intended absence. In the case of illness, the student should contact the Assistant Director, Academic Programs within three days of the absence or as soon as practicable and provide medical documentation. Faculty will be informed of excused absences by the Assistant Director, Academic Programs.

The faculty will report all unexcused absences to the Assistant Director, Academic Programs, and students’ final grades will be negatively impacted by each such absence. Each unexcused absence will result in the deduction of 3 percentage points from the final grade.

Be aware that absences from class may also impact on the participation grade awarded by your instructor.

Students are expected to arrive to class promptly both at the start of class and after breaks. This attendance policy also applies for classes involving a field trip or other off-campus visit. It is the student’s responsibility to arrive at the agreed meeting point on time.

Written work due in class must be submitted to your instructor during classtime.

Late work should be submitted in person to the Assistant Director, Academic Programs during regular office hours (9:00am-5:00pm, Monday-Friday). In the absence of the Assistant Director, Academic Programs, another member of the administrative staff can accept the work in person. Students must also submit an electronic copy of late written work to Turn-It-In within 24 hours.

Work submitted after the submission time without an agreed extension receives a penalty of 2 points on the 100-point scale (for the assignment) for each day the work is late.

Written work submitted beyond five (5) weekdays after the submission date without an agreed extension fails and is given a zero.

The academic standards of New York University apply to all coursework at NYU Sydney. NYU Sydney policies are in accordance with New York University’s plagiarism policy. The presentation of another person’s words, ideas, judgment, images or data as though they were your own, whether intentionally or unintentionally, constitutes an act of plagiarism.

It is a serious academic offense to use the work of others (written, printed or in any other form) without acknowledgement. Cases of plagiarism are not dealt with by your instructor. They are referred to the Director, who will determine the appropriate penalty (up to and including failure in the course as a whole) taking into account the codes of conduct and academic standards for NYU’s various schools and colleges.

All written coursework must be submitted as a hard copy AND in electronic form. All students must submit an electronic copy of each piece of written work to the plagiarism detection software turn-it-in. Instructions will be provided to you in class.

Internet resources are not acceptable as references. Peer-reviewed scientific papers are required. Information on appropriate referencing will be provided in the course.

Required Text(s)

Supplemental Texts(s) (not required to purchase)

Internet Research Guidelines
Internet resources are not acceptable as references. Peer-reviewed scientific papers are required. Information on appropriate referencing will be provided in the course.

Additional Required Equipment
Lab book – unlined paper
Calculator
Lab Coat and Safety Glasses

Week 1
11th Feb
Lecture 1 (Monday 11th): Bacteria & Archaea (27); Protists (28)
Lecture 2 (Thursday 14th): Introduction to Animal Diversity (32); Invertebrates (33); Introduction to Safety in the Lab

Week 2
18th Feb
Laboratory 1 (Monday 18th): Protists and Fungi.
This lab will include work essential for the scientific paper assessment.
Lecture 3 (Thursday 21st): Vertebrates (34)

Week 3
25th Feb
Laboratory 2 (Monday 25th): Animal Diversity: Porifera Cnidaria, Platyhelminthes, Annelida & Mollusca
Lecture 4 (Thursday 28th): Principles of Animal Form & Function (40); Animal Nutrition (41)

Week 4
4th March
Laboratory 3 (Monday 4th): Animal Diversity: Nematoda, Arthropoda, Echinodermata & Chordata
Lecture 5 (Thursday 7th): Circulation and Gas Exchange (42)

Week 5
11th March
Laboratory 4 (Monday 11th): Vertebrate Anatomy: The Skin and Digestive System
Lecture 6 (Thursday 14th): Osmoregulation and Excretion (44)
Thursday 14th: Mid-term Exam (1 hour).
Week 6
18th March
Laboratory 5 (Monday 18th): Vertebrate Anatomy: The Circulatory and Respiratory Systems

Lecture 7 (Thursday 21st): Animal Reproduction (46); Hormones and the Endocrine System (45)

Student oral presentation abstracts due.

Week 7
25th March
Laboratory 6 (Monday 25th): Vertebrate Anatomy: The Excretory, Reproductive and Nervous Systems

Lecture 8 (Thursday 28th): The Immune System; Animal Development (47)

Student oral presentations start.

SEMESTER BREAK: FRIDAY 29th MARCH – SUNDAY 7th APRIL

Week 8
8th April
(Monday 8th): Field trip

Lecture 9 (Thursday 11th): Neurons, Synapses and Signalling (48); Nervous Systems (49)

Week 9
15th April
Lecture 10 (Monday 15th): Practical Exam (1 hr)

Sensory & Motor Mechanisms (50): Plant Diversity I: How Plants Colonised Land (29)

Lecture 11 (Thursday 18th): Plant Diversity II: The Evolution of Seed Plants (30); Plant Structure, Growth and Development (35)

Lecture 12 (Friday 19th): Fungi (31); Ecology (52-56)

Week 10
22nd April
Laboratory 7 (Monday 22nd): Plant Diversity I: Nonvascular Plants & Seedless Vascular Plants

No Lecture (Thursday 25th): ANZAC DAY

Scientific paper due Monday 22nd April

Week 11
29th April
Laboratory 8 (Monday 29th): Plant Diversity II: Seed Plants (30)

Lecture 13 (Thursday 2nd): Resource Acquisition & Transport in Vascular Plants (36); Soil and Plant Nutrition (37)
## Week 12

**Laboratory 9 (Monday 6th): Plant Anatomy**

**6th May**

Lecture 14 (Thursday 9th): Angiosperm Reproduction and Biotechnology (38); Plant Responses to Interna and External Signals (39)

## Week 13

No lab or lecture.

**13th May**

Preparation for final exam.

## Week 14

No lab or lecture.

**20th May**

Preparation for final exam.

**Final Exam: Monday 27 May**

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### Classroom Etiquette

This is a seminar subject and requires active participation. It also requires respectful and engaged discussion, including listening to and respecting other points of view. Eating is not permitted in any classrooms. Please kindly dispose of rubbish in the bins provided.

### Required Co-curricular Activities

### Suggested Co-curricular Activities

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### Your Instructor

Dr. Anne Wignall (Ph.D., Macquarie University) is a Macquarie University Research Fellow in the Department of Biological Sciences, Macquarie University. She is interested in how species’ ecology and behaviour interact to affect lifetime fitness. Her research focuses on spider and insect models, particularly orb-web spiders. She uses an integrative approach, incorporating functional and mechanistic studies of behaviour, phylogenetic history, quantitative genetics and developmental morphology. Her research has been published in a range of journals including *Behavioral Ecology* and *Animal Behavior*. 