



Course Outline

Code: SCI102

Title: Biodiversity and Ecology

School:	Science & Engineering
Teaching Session:	Semester 2
Year:	2019
Course Coordinator:	Dr Scott Cummins Email: scummins@usc.edu.au
Course Moderator:	Dr Peter Brooks

Please go to the USC website for up to date information on the teaching sessions and campuses where this course is usually offered.

1. What is this course about?

1.1 Description

In this course you investigate the nature and diversity of life, from microorganisms and fungi to plants and animals. You explore the mechanism of biodiversity: evolution through natural selection. You also learn how different groups of organisms interact and are dependent on their habitats and each other. You use and expand this knowledge in laboratory classes by observing and describing specimens representing the variety of organisms. You also develop practical skills including scientific drawing, microbial isolation techniques, and the use and construction of identification keys.

1.2 Course topics

- Evolution, natural selection and the origin of new species
- Morphology and characteristics of major phyla
- Laboratory skills (microbiology, botany, zoology)
- Scientific drawing and writing skills
- Ecology and conservation of populations and communities

2. What level is this course?

100 level Introductory - Discipline knowledge and skills at foundational level, broad application of knowledge and skills in familiar contexts and with support. Normally associated with the first full-time year of an undergraduate program

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

Specific Learning Outcomes On successful completion of this course you should be able to:	Assessment Tasks You will be assessed on the learning outcome in task/s:	Graduate Qualities or Professional Standards mapping Completing these tasks successfully will contribute to you becoming:
develop and demonstrate knowledge of the processes that lead to biodiversity and the nature and characteristics of global biodiversity	1, 2, 3 and 4	Knowledgeable
develop and put into practice the skills of scientific writing and/or scientific drawing when undertaking tutorial and laboratory exercises	2, 3 and 4	Empowered,
demonstrate your understanding of the ecological interactions between members of an ecological community, and the conservation implications when these interactions are affected by human or natural processes	1, 2 and 4	Sustainability-focussed Creative and critical thinkers
develop a range of practical skills required to undertake microbiological, botanical and zoological investigations	3	Empowered

5. Am I eligible to enrol in this course?

Refer to the [USC Glossary of terms](#) for definitions of “pre-requisites, co-requisites and anti-requisites”.

5.1 Enrolment restrictions

nil

5.2 Pre-requisites

nil

5.3 Co-requisites

nil

5.4 Anti-requisites

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5.5 Specific assumed prior knowledge and skills (where applicable)

High school level science

6. How am I going to be assessed?

6.1 Grading scale

Standard – High Distinction (HD), Distinction (DN), Credit (CR), Pass (PS), Fail (FL)

6.2 Details of early feedback on progress

In weeks 3, 5, 7, 9, 11 of this course, your worksheet will be peer reviewed in tutorials, and feedback will form the basis for completion of the Task 2 assessment.

6.3 Assessment tasks

Task No.	Assessment Tasks	Individual or Group	Weighting %	What is the duration / length?	When should I submit?	Where should I submit it?
1	Leader board Activities	Individual	practice	varied	on going	Blackboard
2	Interpreting Science	Individual	35	Approx. 500-1000 words	Weeks 11	Blackboard
3	Laboratory exercises	Individual	35	Approx. 350 words	Weeks 2, 6, 12	At the end of each relevant lab class
4	Final exam	Individual	30	2hr	Centrally scheduled exam period	Central exam venue
			100%			

Assessment Task 1: Survival of the Fittest - Leader Board Activity

Goal:	The Survival of the Fittest leader board activity is about giving you opportunities to practice and develop mastery over key science vocab and enhancing your ability to explain science processes and ecological interactions. You will work your way up the evolutionary food chain by gaining points in review quizzes, vocab builder exercises, and tutorial work sheets. All material covered in the leader board activity will be assessed in tasks 2, 3 and 4. Have fun, work your way up the leader board and be a top competitor! These points will be able to be turned in at the end of term – for the most valuable resource known to students....TIME.
Product:	Online quiz, tutorial worksheets and vocabulary builders
Format:	Practice and preparation activities will be available before lectures, labs and tutorials.
Criteria:	Correct answers and your participation in your own learning

Assessment Task 2: Interpreting Science

Goal:	You will explore theories regarding the processes that lead to the evolution of biodiversity throughout the tutorial series and will develop skills in reading and comprehending scientific literature. This task specifically develops your critical analyses of science research and your ability to convey science concepts to other scientists. .
Product:	Scientific paper review
Format:	Individual students will complete fortnightly tutorial readings and associated written exercises prior to each tutorial class. You will be guided to reflect on and improve your written work during each tutorial. These will prepare you to achieve the best marks for your graded submission, the scientific paper review from your final tutorial class.
Criteria:	You will be assessed on: <ul style="list-style-type: none"> • Knowledge of the processes that lead to biodiversity • Description of the nature and characteristics of global biodiversity • Analysis of ecological interactions • Scientific writing – for a science audience • Completed self/peer feedback forms – week 1 through 5

Assessment Task 3: Laboratory exercises

Goal:	Demonstrate knowledge of the characteristics and taxonomy of a broad range of phyla, and some practical techniques used to study them.
Product:	Hard copy completed laboratory reports
Format:	Individual; laboratory report prepared within the provided template. You will submit your first Lab report for tutor assessment and feedback. You will then submit one of either Lab workbook 2, 3 or 4, and one of either Lab workbook 5 or 6 for assessment.
Criteria:	Scientific drawings drawn to normal standards including; accurate scale bars, all required features accurately and appropriately labelled, drawn in pencil, appropriate format; Written answers demonstrate knowledge of subject matter and/or evidence of critical thought.

Assessment Task 4: Final exam

Goal:	Demonstrate knowledge of the evolution and characteristics of major phyla, the processes by which biodiversity is generated and the ecological interactions among multispecies systems.
Product:	End of year exam
Format:	Written exam including multiple choice and short answer questions based on directed readings, lectures, tutorials, and laboratory classes.
Criteria:	Correctly answer multiple choice questions; provide comprehensive written responses to short answer questions using a scientific writing style

7. What are the course activities?**7.1 Directed study hours**

The directed study hours listed here are a portion of the workload for this course. A 12 unit course will have total of 150 learning hours which will include directed study hours (including online if required), self-directed learning and completion of assessable tasks. Directed study hours may vary by location. Student workload is calculated at 12.5 learning hours per one unit.

Location: Specific Campus(es) or online:	Directed study hours for location:
USC Sunshine Coast	Weekly: 2 hr lecture; 6 x 2hr laboratory class; 5 x 1hr tutorial. Self-guided tutorials, directed readings and online quizzes for revision of course concepts will comprise this content of this course.
USC Fraser Coast	

7.2 Course content

Week # / Module #	What key concepts/content will I learn?
1	Lecture: Origins and patterns of global biodiversity
2	Prokaryotes and Protists Laboratory: Microscopes, scientific drawing and plate cultures
3	Lecture: Fungi Tutorial: Evolution by natural selection
4	Lecture: Mosses and Ferns Laboratory: Mosses and Ferns
5	Lecture: Gymnosperms and Angiosperms Tutorial: The role of genes in the origin of new species
6	Lecture: Invertebrates: Sponges – Cnidaria Laboratory: Gymnosperms and Angiosperms
7	Lecture: Invertebrates: Lophotrochozoa Tutorial: The role of ecology in the origin of new species
8	Lecture: Invertebrates: Ecdysozoa Laboratory: Invertebrates

9	Lecture: Chordates Tutorial: Extinction and evolution
10	Lecture: Population Ecology Laboratory: Adaptations of vertebrates
11	Lecture: Community Ecology Tutorial: Conserving biodiversity: principles of island biogeography
12	Lecture: Conservation of biodiversity Laboratory: Using and building identification keys
13	Lecture: Course synthesis and exam preparation

Please note that the course activities may be subject to variation.

8. What resources do I need to undertake this course?

Please note that course information, including specific information of recommended readings, learning activities, resources, weekly readings, etc. are available on the course Blackboard site. Please log in as soon as possible.

8.1 Prescribed text(s)

Please note that you need to have regular access to the resource(s) listed below as they are required:

Author	Year	Title	Publisher
Reece, J. B., Meyers, N. M., Urry, L. A., Cain, M. L., Wasserman, S. A., Minorsky, P. V., Jackson, R. B., Cooke, B, N.	2015	Campbell Biology (Australian edition) 10 th Edition	Pearson/Benjamin Cummings

NOTE: Recent earlier editions of this text are also suitable, but may not include all material of the above most recent edition.

8.2 Specific requirements

Nil

9. Risk management

Health and safety risks for this course have been assessed as low.

It is your responsibility as a student to review course material, search online, discuss with lecturers and peers, and understand the health and safety risks associated with your specific course of study. It is also your responsibility to familiarise yourself with the University's general health and safety principles by reviewing the [online Health Safety and Wellbeing training module for students](#), and following the instructions of the University staff.

10. What administrative information is relevant to this course?

10.1 Assessment: Academic Integrity

Academic integrity is the ethical standard of university participation. It ensures that students graduate as a result of proving they are competent in their discipline. This is integral in maintaining the value of academic qualifications. Each industry has expectations and standards of the skills and knowledge within that discipline and these are reflected in assessment.

Academic integrity means that you do not engage in any activity that is considered to be academic fraud; including plagiarism, collusion or outsourcing any part of any assessment item to any other person. You are expected to be honest and ethical by completing all work yourself and indicating in your work which ideas and information were developed by you and which were taken from others. You cannot provide your assessment work to others. You are also expected to provide evidence of wide and critical reading, usually by using appropriate academic references.

In order to minimise incidents of academic fraud, this course may require that some of its assessment tasks, when submitted to Blackboard, are electronically checked through SafeAssign. This software allows for text

comparisons to be made between your submitted assessment item and all other work that SafeAssign has access to.

10.2 Assessment: Additional requirements

Eligibility for Supplementary Assessment

Your eligibility for supplementary assessment in a course is dependent of the following conditions applying:

- The final mark is in the percentage range 47% to 49.4%
- The course is graded using the Standard Grading scale
- You have not failed an assessment task in the course due to academic misconduct

10.3 Assessment: Submission penalties

Late submission of assessment tasks will be penalised at the following maximum rate:

- 5% (of the assessment task's identified value) per day for the first two days from the date identified as the due date for the assessment task.
- 10% (of the assessment task's identified value) for the third day
- 20% (of the assessment task's identified value) for the fourth day and subsequent days up to and including seven days from the date identified as the due date for the assessment task.
- A result of zero is awarded for an assessment task submitted after seven days from the date identified as the due date for the assessment task.

Weekdays and weekends are included in the calculation of days late.

To request an extension, you must contact your Course Coordinator and supply the required documentation to negotiate an outcome.

10.4 Study help

In the first instance, you should contact your tutor, then the Course Coordinator. Additional assistance is provided to all students through Academic Skills Advisers. To book an appointment or find a drop-in session go to [Student Hub](#). Contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au

10.5 Links to relevant University policy and procedures

For more information on Academic Learning & Teaching categories including:

- Assessment: Courses and Coursework Programs
- Review of Assessment and Final Grades
- Supplementary Assessment
- Administration of Central Examinations
- Deferred Examinations
- Student Academic Misconduct
- Students with a Disability

Visit the USC website:

<http://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching>

10.6 General Enquiries

In person:

- USC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- USC South Bank** - Student Central, Building A4 (SW1), 52 Merivale Street, South Brisbane
- USC Gympie** - Student Central, 71 Cartwright Road, Gympie
- USC Fraser Coast** - Student Central, Student Central, Building A, 161 Old Maryborough Rd, Hervey Bay
- USC Caboolture** - Student Central, Level 1 Building J, Cnr Manley and Tallon Street, Caboolture

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au