

SCI102 Biodiversity and Ecology**School:** School of Science, Technology and Engineering

2024 | Semester 2

UniSC Sunshine Coast

UniSC Moreton Bay

UniSC Fraser Coast

**BLENDED
LEARNING**

Most of your course is on campus but you may be able to do some components of this course online.

Please go to usc.edu.au 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. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – The learning materials will introduce you the diversity of life on Earth from microorganisms and fungi to plants and animals. You will explore the mechanism of biodiversity: evolution through natural selection. You also learn how different groups of organisms interact with and are dependent on each other on their habitats.	2hrs	Week 1	12 times
Laboratory 1 – The laboratory classes will expand your knowledge and enhance your understanding of the key concepts introduced in the learning materials. You will observe and describe specimens representing the variety of organisms. You will also develop practical skills including scientific drawing, microbial isolation techniques, and the use and construction of identification keys.	2hrs	Week 2	7 times
Tutorial/Workshop 1 – The tutorials will develop and put into practice your scientific vocabulary building, critical thinking and scientific writing skills. You will understand key concepts of evolution including speciation, extinction, selection and adaptation. You will develop and demonstrate knowledge of the processes and the mechanisms by which species are produced and multiple species co-exist.	2hrs	Week 1	5 times
Seminar – On campus seminar	1hr	Week 1	3 times

1.3. 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
- Field investigation skills
- Ecology and conservation of populations and communities

2. What level is this course?

100 Level (Introductory)

Engaging with discipline knowledge and skills at foundational level, broad application of knowledge and skills in familiar contexts and with support. Limited or no prerequisites. Normally, associated with the first full-time study 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?

COURSE LEARNING OUTCOMES		GRADUATE QUALITIES
On successful completion of this course, you should be able to...		Completing these tasks successfully will contribute to you becoming...
1	develop and demonstrate knowledge of the processes that lead to biodiversity and the nature and characteristics of global biodiversity	Knowledgeable
2	develop and put into practice the skills of scientific writing, scientific drawing and field investigation when undertaking tutorial, laboratory and field study exercises	Knowledgeable Empowered Engaged Sustainability-focussed
3	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	Creative and critical thinker Sustainability-focussed
4	develop a range of practical skills required to undertake microbiological, botanical and zoological investigations	Empowered

5. Am I eligible to enrol in this course?

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

5.1. Pre-requisites

Not applicable

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

ENS102

5.4. 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 Grading (GRD)

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

6.2. Details of early feedback on progress

You will receive feedback on your learning of tutorials and labs via weekly online quizzes starting from week 1.

6.3. Assessment tasks

DELIVERY MODE	TASK NO.	ASSESSMENT PRODUCT	INDIVIDUAL OR GROUP	WEIGHTING %	WHAT IS THE DURATION / LENGTH?	WHEN SHOULD I SUBMIT?	WHERE SHOULD I SUBMIT IT?
All	1	Quiz/zes	Individual	0%	Approx. 1 hr each	Refer to Format	Online Test (Quiz)
All	2	Written Piece	Individual	35%	Approx. 500-1000 words	Week 10	Online Submission
All	3	Practical / Laboratory Skills	Individual	35%	Approx. 1 hr each	Refer to Format	Online Test (Quiz)
All	4	Examination - Centrally Scheduled	Individual	30%	2hr	Exam Period	Exam Venue

All - Assessment Task 1: Tutorial quizzes

GOAL:	The formative tutorial quizzes test your knowledge of vocabulary related to biodiversity and ecology and your understanding of ecological processes and ecological interactions. The materials covered in tutorial quizzes will also be assessed in tasks 2, 3 and 4.		
PRODUCT:	Quiz/zes		
FORMAT:	Individual. You will complete online quizzes from each tutorial in weeks 1, 3, 5 and 7.		
CRITERIA:	No.	Learning Outcome assessed	
	1	Correct answers and your participation in your own learning	1 3

All - 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:	Written Piece		
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:	No.	Learning Outcome assessed	
	1	Knowledge of the processes that lead to biodiversity	1 2 3
	2	Description of the nature and characteristics of global biodiversity	1 3
	3	Analysis of ecological interactions	3
	4	Scientific writing – for a science audience	2

All - Assessment Task 3: Laboratory exercises

GOAL:	Demonstrate knowledge of the characteristics and taxonomy of a broad range of phyla, and practical techniques used to study them.		
PRODUCT:	Practical / Laboratory Skills		
FORMAT:	Individual. You will complete online quizzes from each lab exercise in weeks 2, 4, 6, 8, 10, 11 and 12.		
CRITERIA:	No.	Learning Outcome assessed	
	1	Scientific drawing standards including accurate scale bars, labeling required features accurately and appropriately labelled, drawn in pencil, appropriate format.	2 4
	2	Knowledge of the characteristics and taxonomy of a broad range of organisms including microorganisms, plants, invertebrates and vertebrates.	1
	3	Knowledge of population and community diversity.	1

All - 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:	Examination - Centrally Scheduled	
FORMAT:	Written exam including multiple choice and short answer questions based on directed readings, learning materials, tutorials, and laboratory classes.	
CRITERIA:	No.	Learning Outcome assessed
	1	Correctly answer multiple choice questions; provide comprehensive written responses to short answer questions using a scientific writing style. 1 2 3

7. Directed study hours

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. Student workload is calculated at 12.5 learning hours per one unit.

7.1. Schedule

PERIOD AND TOPIC	ACTIVITIES
Week 1	Learning Material: Course introduction; Origins and patterns of global biodiversity Tutorial: Evolution by natural selection
Week 2	Learning Material: Bacteria and archaea Laboratory: Microbial techniques, microscopes and scientific drawing
Week 3	Learning Material: Fungi and protists Tutorial: The role of ecology in the origin of new species
Week 4	Learning Material: Mosses and ferns Laboratory: Mosses and ferns
Week 5	Learning Material: Gymnosperms and angiosperms Tutorial: The role of genes in the origin of new species
Week 6	Learning Material: Invertebrates: Sponges and cnidaria Laboratory: Gymnosperms and angiosperms
Week 7	Learning Material: Invertebrates: Lophotrochozoa Tutorial: Extinction and evolution
Week 8	Learning Material: Invertebrates: Ecdysozoa Laboratory: Arthropods and lophotrochozoans
Week 9	Learning Material: Birds Tutorial: Where do all the species come from and how do they coexist?
week 10	Learning Material: Chordates Laboratory: Freshwater biodiversity
Week 11	Learning Material: Population and community ecology Laboratory: Classification and identification of vertebrates
week 12	Learning Material: Conservation of biodiversity Laboratory: Population and community diversity
Week 13	Seminar: Course synthesis and exam preparation

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

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

8.1. Prescribed text(s) or course reader

Please note that you need to have regular access to the resource(s) listed below. Resources may be required or recommended.

REQUIRED?	AUTHOR	YEAR	TITLE	EDITION	PUBLISHER
Recommended	Lisa A. Urry, Philippa Howden-Chapman, Lisa Early, Steven Alexander Wasserman, Jenny Ombler, Michael Lee Cain, Neil A. Campbell, Jane B. Reece, Peter V. Minorsky, Noel Meyers	2018	Campbell Biology	11th Edition	Pearson Australia
Recommended	Lisa A. Urry, Noel Meyers, Michael Lee Cain, Steven Alexander Wasserman, Peter V. Minorsky, Rebecca B. Orr, Karen Burke da Silva, Ann Parkinson, Lesley Lluca, Prasad Chunduri	2021	Campbell Biology	12th	Pearson Education Australia

8.2. Specific requirements

Lab coat and safety glasses required for laboratory classes.
Personal laptop computer required for Week 12 laboratory classes.

9. How are risks managed in this course?

Risk assessments have been performed for all laboratory classes and a moderate level of health and safety risk exists. Moderate risks are those associated with laboratory work such as working with chemicals and hazardous substances. You will be required to undertake laboratory induction training and it is also your responsibility 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 and to familiarise yourself with the University's general health and safety principles by reviewing the [online induction training 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 Canvas, are electronically checked through Turnitin. This software allows for text comparisons to be made between your submitted assessment item and all other work to which Turnitin has access.

10.2. Assessment: Additional Requirements

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 may 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 to negotiate an outcome.

10.4. SafeUniSC

UniSC is committed to a culture of respect and providing a safe and supportive environment for all members of our community. For immediate assistance on campus contact SafeUniSC by phone: [07 5430 1168](tel:0754301168) or using the [SafeZone](#) app. For general enquires contact the SafeUniSC team by phone [07 5456 3864](tel:0754563864) or email safe@usc.edu.au.

The SafeUniSC Specialist Service is a Student Wellbeing service that provides free and confidential support to students who may have experienced or observed behaviour that could cause fear, offence or trauma. To contact the service call [07 5430 1226](tel:0754301226) or email studentwellbeing@usc.edu.au.

10.5. Study help

For help with course-specific advice, for example what information to include in your assessment, you should first contact your tutor, then your course coordinator, if needed.

If you require additional assistance, the Learning Advisers are trained professionals who are ready to help you develop a wide range of academic skills. Visit the [Learning Advisers](#) web page for more information, or contact Student Central for further assistance: +61 7 5430 2890 or studentcentral@usc.edu.au.

10.6. Wellbeing Services

Student Wellbeing provide free and confidential counselling on a wide range of personal, academic, social and psychological matters, to foster positive mental health and wellbeing for your academic success.

To book a confidential appointment go to [Student Hub](#), email studentwellbeing@usc.edu.au or call 07 5430 1226.

10.7. AccessAbility Services

Ability Advisers ensure equal access to all aspects of university life. If your studies are affected by a disability, learning disorder mental health issue, injury or illness, or you are a primary carer for someone with a disability or who is considered frail and aged, [AccessAbility Services](#) can provide access to appropriate reasonable adjustments and practical advice about the support and facilities available to you throughout the University.

To book a confidential appointment go to [Student Hub](#), email AccessAbility@usc.edu.au or call 07 5430 2890.

10.8. 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
- Central Examinations
- Deferred Examinations
- Student Conduct
- Students with a Disability

For more information, visit <https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching>

10.9. Student Charter

UniSC is committed to excellence in teaching, research and engagement in an environment that is inclusive, inspiring, safe and respectful. The [Student Charter](#) sets out what students can expect from the University, and what in turn is expected of students, to achieve these outcomes.

10.10. General Enquiries

In person:

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

Tel: +61 7 5430 2890

Email: studentcentral@usc.edu.au

