



COURSE OUTLINE

LFS100 Cell Biology

Course Coordinator: Ann Parkinson (aparkins@usc.edu.au) **School:** School of Health and Behavioural Sciences

2022 | Semester 1

USC Sunshine Coast
USC Moreton Bay
USC 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 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

Cell Biology explores the cellular foundation of life in animals, including humans, plants and microorganisms. You will explore the connection between the structure and function of cells, aspects of their evolution, and their organisation into the primary tissues of organisms. The course offers you the opportunity to develop and demonstrate the skills important for scientific experimentation and investigation in the fields of science and biomedical science, including practical laboratory skills and science communication. It provides a strong foundation for further studies in physiology, molecular biology and genetics relevant to sciences broadly, including biomedicine.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – Online learning Materials	2hrs	Week 1	13 times
Tutorial/Workshop 1 – Small class tutorial with interactive and collaborative learning	2hrs	Week 1	7 times
Tutorial/Workshop 2 – Weekly workshop to engage with the theory content and work through problems on the topics presented	1hr	Week 1	13 times
Laboratory 1 – Science wetlab with practical skill development	3hrs	Week 2	6 times

1.3. Course Topics

- Comparative structure and function of eukaryotic and prokaryotic cells
- Cell membrane structure and function
- Introductory cell metabolism
- Cell Communication
- The cell cycle and cell division
- Genetics and patterns of inheritance
- Introductory molecular biology
- Animal cell and tissues, structure and function
- Plant cells and tissues, structure and function

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 Describe the basic structure and function of cells in living organisms.	Knowledgeable
2 Apply knowledge of cell structures and functions to solve problems.	Knowledgeable Creative and critical thinker
3 Research, critically evaluate, and ethically present appropriate and relevant literature about cells in a creative and informative way.	Knowledgeable Creative and critical thinker Ethical
4 Demonstrate the procedures for observing and recording biological specimens using compound light microscopy.	Knowledgeable Empowered
5 Present results of an experiment in a standard scientific format.	Knowledgeable Creative and critical thinker

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. Pre-requisites

Not applicable

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

SCI103 or LFS101 or LFS103

5.4. Specific assumed prior knowledge and skills (where applicable)

Not applicable

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

This course will provide you with early feedback on your learning of cell biology topics and scientific skills. This feedback will be in the form of in-class feedback on a formative class preparation task in week 2, and subsequent in-class feedback on summative class preparation tasks from week 2 onwards. In addition, there are weekly formative online quizzes throughout semester and a summative quiz in week 3. You can use the feedback provided to identify if you require additional support for your learning of cell biology.

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	Portfolio	Individual and Group	40%	Multiple components, including: preparation and participation in practical classes, 3 hour duration; online quizzes and questions - responses will take 15 – 25 minutes per week; graphing assignment – approximately 30 minutes; the online practical exam in week 13 – 90 minutes duration.	Throughout teaching period (refer to Format)	Online Assignment Submission with plagiarism check and in class
All	2	Artefact - Creative, and Written Piece	Individual or Group	20%	Wk 4 Checkpoint approx 50 words; Week 10 complete CSi approx 500 words	Week 10	Online Assignment Submission with plagiarism check
All	3	Examination - Centrally Scheduled	Individual	40%	2 hours	Exam Period	Exam Venue

All - Assessment Task 1: Theoretical and Practical Portfolio

GOAL:	For you to engage in the theoretical and practical components of the course regularly and actively, to facilitate your learning.
PRODUCT:	Portfolio
FORMAT:	A series of assignments consisting of: written responses to questions; online quiz questions including MCQ and short responses; data calculations, graphing and interpretation of data, scientific drawing and scale bar calculations; solving of problems. The assessments will include 6 x practical preparation and participation (6%; weeks 2,4,6,8,10 and 12); 3 x online quizzes (9%; weeks 3, 7 and 12); graphing assignment (5%, week 7); and will culminate in the practical exam in the Week 13 Workshop 1 (20%). Further detail will be provided on Canvas.

CRITERIA:	No.	Learning Outcome assessed	
	1	Participation in laboratory classes to learn about cells, and develop skills of microscopy and scientific method	1 2 4 5
	2	Description of structures and functions of cells	1
	3	Application of cell biology knowledge to solve problems	2
	4	Demonstration and understanding of light microscopy skills	4
	5	Presentation of data in a standard scientific format	5

All - Assessment Task 2: Cell Specific Investigation (CSi) Assignment

GOAL:	This task is designed to help you explore the world of cells and how they are important for life. You will gain skills in searching for relevant academic literature and communicating in scientific language. You will revise various concepts in cell biology and how they are important for your chosen cell type. In addition, if you elect to complete the CSI in a group you will gain experience in working in a team.		
PRODUCT:	Artefact - Creative, and Written Piece		
FORMAT:	<p>Submit: Weeks 4, 10. You will work as either an individual or in a group of 2-3 students to produce a 500 word written piece with an accompanying diagram describing the structure and function of a cell.</p> <p>In week 4 you will individually choose your cell and give a brief description of the cell (2-3 sentences and a reference, 50 words); submit to Canvas for formative feedback.</p> <p>In Week 10 you will submit your written assignment with in-text references and reference list to Turnitin (text matching software for plagiarism checking) for a Self Audit. You will download your Turnitin originality report and check for any matching text and make any changes, as appropriate, to your text.</p> <p>You will then submit the Final CSi document - written piece and diagram to Canvas in week 10.</p> <p>Further instructions, resources and a rubric will be available on Canvas.</p>		
CRITERIA:	No.		Learning Outcome assessed
	1	Description of the structure and function of the cell using appropriate and relevant scientific literature	1 2 3
	2	Integration of cell biology concepts discussed in the theory modules specific to your chosen cell	1 2
	3	Adherence to instructions on presentation and formatting, including referencing.	3
	4	Description of the cell using appropriate scientific and academic language.	1 3
	5	Compliance with academic integrity when citing literature	3

All - Assessment Task 3: End of semester Examination

GOAL:	To assess your understanding of and ability to apply knowledge of the theory of cell biology presented in the course.
PRODUCT:	Examination - Centrally Scheduled
FORMAT:	A comprehensive, two hour final examination, consisting of multiple choice and short answer style questions. Further details will be provided on Canvas.

CRITERIA:

No.		Learning Outcome assessed
1	Description of structure and function of cells	1
2	Demonstration of the connection between structure and function of cells	1 2
3	Demonstration of structure and function of tissues in animals and plants	1 2
4	Application of knowledge of cell biology theory to solve problems	2

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. Directed study hours may vary by location. Student workload is calculated at 12.5 learning hours per one unit.

7.1. Schedule

PERIOD AND TOPIC	ACTIVITIES
Week 1: Cell structure and Function (Part 1)	Online Learning Materials and Weekly Lectorial: Cell structure and function of Eukaryotic and Prokaryotic cells Workshop 1: Course introduction, scientific drawing and scale bar calculations
Week 2: Cell structure and Function (Part 2)	Online Learning Materials and Weekly Lectorial: Cell structure and function of Eukaryotic and Prokaryotic cells Laboratory 1: An introduction to the cell using compound light microscopy
Week 3: Cell membrane structure and function	Online Learning Materials and Weekly Lectorial: Cell membrane structure and function Workshop 2: Preparing results from experimental data; graphing exercises; Concept revision: cell structure and function
Week 4: Introduction to cell metabolism	Online Learning Materials and Weekly Lectorial: Introduction to cell metabolism Laboratory 2: Osmosis in cells
Week 5: Cell communication	Online Learning Materials and Weekly Lectorial: Cell communication Workshop 3: Concept revision cell membrane structure and function and cell metabolism
Week 6: The cell cycle and cell division	Online Learning Materials and Weekly Lectorial: The cell cycle and cell division. Laboratory 3: Enzyme activity (catalase) in liver tissue
Week 7: Genetics I – Mendel and the Gene Idea	Online Learning Materials and Weekly Lectorial: Genetics I – Mendel and the Gene Idea Workshop 4: Using a Rubric for assessment and Cycle Revision
Week 8: Genetics II – The chromosomal basis of inheritance	Online Learning Materials and Weekly Lectorial: Genetics II – The chromosomal basis of inheritance Laboratory 4: Garlic root tip squash chromosomes in mitosis) and Reebop genetics
Week 9: Introduction to Molecular Biology – DNA to Protein	Online Learning Materials and Weekly Lectorial: Introduction to Molecular Biology – DNA to Protein Workshop 5: Assessment preparation - using Turnitin in Canvas and Concept revision - Genetics and DNA activities
Week 10: Animal cells and tissues	Online Learning Materials and Weekly Lectorial: Animals tissues Laboratory 5: Animal cells and tissues
Week 11: Plant cells and tissues	Online Learning materials and Weekly Lectorial: Plants cells and tissues Workshop 6: Concept revision animal and plant cells and tissues; assessment preparation week 13 Practical Exam
Week 12: Case studies in eukaryotic and prokaryotic cells	Online Learning Materials and Weekly Lectorial: applications to cell function Laboratory 6: Plant Cells and Tissues
Week 13: Semester Review	Weekly Lectorial: Review of the semester's learning materials to prepare for Task 3 Final Examination Workshop 7: Task 1 Practical Exam

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
Required	Urry LA, Meyers N, Cain ML, Wasserman SA, Minorsky PV, Orr RB, Burke da Silva K, Parkinson A, Lluca L and Chunduri P	2021	Campbell Biology	(12th Ed)	Pearson
Required	LISA URRY (A. & MEYERS, NOEL & CAIN, MICHAEL, L. ET AL.), Noel Meyers, Michael Cain, Steven Wasserman, Peter Minorsky, Jane Reece	2019	Cell Biology LFS100 (Custom Edition)	(11th Ed)	Pearson
Required	n/a	2022	LFS100 Workbook - Tutorial and Lab manual	n/a	n/a

8.2. Specific requirements

You must wear a lab coat, enclosed shoes, and safety glasses during laboratory classes. You must either purchase and bring to lab classes a copy of the LFS100 Cell Biology Workbook: Workshop and Laboratory manual. A bound copy of the workbook will be available for purchase from Mail and Print Services (MaPS), or alternatively print the manual and bind it yourself.

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

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 may be penalised at the following maximum rate (the rates are cumulative):

- 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. SafeUSC

USC 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 SafeUSC by phone: [07 5430 1168](tel:0754301168) or using the [SafeZone](#) app. For general enquires contact the SafeUSC team by phone [07 5456 3864](tel:0754563864) or email safe@usc.edu.au.

The SafeUSC 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
- Administration of Central Examinations
- Deferred Examinations
- Student Academic Misconduct
- Students with a Disability

Visit the USC website: <https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching>

10.9. Student Charter

USC 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:

- **USC Sunshine Coast** - Student Central, Ground Floor, Building C, 90 Sippy Downs Drive, Sippy Downs
- **USC Moreton Bay** - Service Centre, Ground Floor, Foundation Building, Gympie Road, Petrie
- **USC SouthBank** - 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