

## Course Outline

### Code: LFS100 Title: Cell Biology

<b>School:</b>	Health & Sport Sciences
<b>Teaching Session:</b>	Semester 1
<b>Year:</b>	2019
<b>Course Coordinator:</b>	Dr Ann Parkinson Email: <a href="mailto:aparkins@usc.edu.au">aparkins@usc.edu.au</a> Tel: (07) 5430 2825
<b>Course Moderator:</b>	Dr Fraser Russell Email: <a href="mailto:frussell@usc.edu.au">frussell@usc.edu.au</a> Tel: (07) 5459 4665

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

This course will introduce you to foundational theories, concepts and practices in biology. Cell Biology explores the cellular basis of life in both eukaryotic and prokaryotic organisms. The course deals with the basic biological concepts and principles with emphasis on the structure and function of the different cells responsible for life. In addition to the biology content covered, the course offers you the opportunity to enhance skills in scientific methods particular to biology, including laboratory skills and science communication skills.

##### 1.2 Course topics

Topics covered include:

- Comparative cell structure and function
- Cell replication
- Introductory cell metabolism
- Genetics and patterns of inheritance
- Introductory molecular biology
- Animal and plant tissue structure and function
- Cell communication
- Aspects of the applications of cell biology in the 21st century, including medicine, horticulture, and industry, are also explored

#### 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?

<b>Specific Learning Outcomes</b> On successful completion of this course, you should be able to:	<b>Assessment tasks</b> You will be assessed on the learning outcomes in task/s:	<b>Graduate Qualities or Professional Standards mapping</b> Completing these tasks successfully will contribute to you becoming:
Describe the basic principles of cell biology related to the structure and function of prokaryotic and eukaryotic cells.	Tasks 1, 2, 3	Knowledgeable.
Research, organise, communicate and present information about cell diversity in a creative and informative way.	Task 2	Creative and critical thinkers. Ethical.
Demonstrate the procedures for observing and recording biological specimens using compound light microscopy.	Task 1	Knowledgeable.
Present results of an experiment in a standard scientific format.	Task 1	Knowledgeable. Creative and critical thinkers.

#### 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

LFS101 or SCI103

##### 5.5 Specific assumed prior knowledge and skills (where applicable)

N/A

#### 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

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 3 onwards. In addition, there is a summative online quiz in week 3/4 of semester. You can use the feedback provided to identify if you require additional support for your learning of cell biology.

### 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	Tutorial and Practical class Portfolio	Individual	40	≅ 1500 words (cumulative)	Weeks 3-13	In class/ Blackboard
2	CSI Assignment	Individual or Group	20	Checkpoint ≅ 500 words DSA report response	Weeks 4, 9 & 10	Blackboard
3	End of Semester Examination	Individual	40	2 hours	Centrally scheduled exam period	Examination venue
			100%			

#### Assessment Task 1: Tutorial and Practical Portfolio 40%

<b>Goal:</b>	For you to actively engage in the theoretical and practical components of the course in order to facilitate your learning.														
<b>Product:</b>	1A, B and C contain various exercises and activities stemming from the lectures, laboratory and tutorial classes 1D is a written invigilated practical examination														
<b>Format:</b>	<p>During semester you will engage in lectures, tutorial and lab classes, completing pre-, in-class and post- exercises associated with the classes. Exercises include: online modules and quizzes, graphing of data, scientific drawings, and calculations, interpretations of biological data, preparatory questions, and scientific writing exercises. The 1C quizzes can be attempted multiple times during the times they are available, with your highest score recorded. Open and Close times will be published on Blackboard. Assessment 1A and 1B culminate in the 1D invigilated practical examination (open book – own LFS100 Workbook). You will receive both formative and summative feedback on these activities during semester.</p> <table border="0" style="width: 100%;"> <tr> <td style="width: 60%;"><b>1A: Preparation &amp; Participation, 10%</b></td> <td style="width: 20%; text-align: center;"><b>Weeks 3 - 12</b></td> <td style="width: 20%; text-align: center;"><b>In Class</b></td> </tr> <tr> <td><b>1B: Graphing assignment, 5%</b></td> <td style="text-align: center;"><b>Weeks 7</b></td> <td style="text-align: center;"><b>In Class</b></td> </tr> <tr> <td><b>1C: Theory quizzes x 3; 3%, 3% &amp; 4%</b></td> <td style="text-align: center;"><b>Weeks 5, 8 &amp; 13</b></td> <td style="text-align: center;"><b>Blackboard</b></td> </tr> <tr> <td><b>1D: Practical Exam, 15%</b></td> <td style="text-align: center;"><b>Week 13</b></td> <td style="text-align: center;"><b>In class</b></td> </tr> </table> <p>Further details, including a course assessment checklist, will be provided on Blackboard in the specific assessment areas.</p>			<b>1A: Preparation &amp; Participation, 10%</b>	<b>Weeks 3 - 12</b>	<b>In Class</b>	<b>1B: Graphing assignment, 5%</b>	<b>Weeks 7</b>	<b>In Class</b>	<b>1C: Theory quizzes x 3; 3%, 3% &amp; 4%</b>	<b>Weeks 5, 8 &amp; 13</b>	<b>Blackboard</b>	<b>1D: Practical Exam, 15%</b>	<b>Week 13</b>	<b>In class</b>
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<b>Criteria:</b>	<p>You will be assessed on the following:</p> <ul style="list-style-type: none"> <li>• satisfactory completion of pre-and post-class activities associated with the tutorials and laboratory, classes</li> <li>• completion of online modules</li> <li>• level of successful completion of tutorial and practical exercises,</li> <li>• active participation in class.</li> <li>• correct answers to questions</li> <li>• making appropriate scientific drawings and graphs</li> <li>• accuracy in calculations</li> <li>• level of interpretation of data</li> </ul>														

**Assessment Task 2: Cell Specific Investigation (CSI) Assignment 20%**

<b>Goal:</b>	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.
<b>Product:</b>	A $\approx$ 50 word CSI Checkpoint; A 500 word written assignment; and response to your Draft Safe Assign report.
<b>Format:</b>	<p>You will work as either an individual or in a group of 2-3 students to produce a 500 word written assignment describing the structure and function of a chosen cell (from a list provided on Blackboard).</p> <p>In <b>week 4</b> you will choose your cell and give a brief description of the cell (2-3 sentences and a reference, <math>\approx</math> 50 words); <b>submit to Blackboard</b> for formative feedback.</p> <p>In <b>week 9</b> you will submit your written assignment with in-text references and reference list to Blackboard Draft SafeAssign (text matching software for plagiarism checking). By <b>week 10</b> you will download the SafeAssign originality report and check for any matching text and make changes as appropriate to your text.</p> <p>You will submit the final document in <b>week 10 (Blackboard)</b>.</p> <p>Further details will be available on Blackboard.</p>
<b>Criteria:</b>	<p>The CSI assignment will be assessed on the following:</p> <ul style="list-style-type: none"> <li>· Successful completion of the CSI Checkpoint</li> <li>· Description of your chosen cell using scientifically appropriate information</li> <li>· Integration of cell biology lecture concepts with the chosen cell type</li> <li>· Scientific writing style, correct grammar, vocabulary and spelling</li> <li>· Adherence to instructions, presentation and formatting</li> <li>· Ethical use of literature</li> </ul>

**Assessment Task 3: End of semester Examination, 40%**

<b>Goal:</b>	The goal of the examination is to assess your understanding of and ability to apply knowledge of the cell biology content of the course.
<b>Product:</b>	Written invigilated examination.
<b>Format:</b>	<p>A comprehensive, two hour final examination, consisting of multiple choice and short answer style questions. The examination is closed book.</p> <p>Further details and revision questions will be provided on Blackboard.</p>
<b>Criteria:</b>	<p>You will be assessed on the following:</p> <ul style="list-style-type: none"> <li>• Demonstration of knowledge of the theoretical content</li> <li>• Ability to provide correct answers to questions on the theoretical content sourced from the course lectures, tutorials, laboratory classes and readings</li> <li>• Ability to apply knowledge from lectures and readings to problems</li> </ul>

## 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 week.

Location:	Directed study hours for location:
Sippy Downs	2 x 1-hour lecture per week 1 x 2-hour tutorial class per fortnight (odd weeks of semester, commencing week 1) 1 x 2-hour laboratory class per fortnight (even weeks of semester, commencing week 2) Weekly online activities as directed
Fraser Coast	2 x 1-hour lecture per week 1 x 2-hour tutorial class per fortnight (odd weeks of semester, commencing week 1) 1 x 2-hour laboratory class per fortnight (even weeks of semester, commencing week 2) Weekly online activities as directed

### 7.2 Course content

Week # / Topic #	What key concepts/content will I learn?
1	Tutorial 1: Course introduction, scientific drawing and scale bars Topic 1 Lecture: Course introduction. What do cells look like? Cell structure and function of Eukaryotic & Prokaryotic cells
2	Lab 1: Introduction to light microscopy Topic 1 Lecture (cont.): What do cells look like? Cell structure and function of Eukaryotic & Prokaryotic cells
3	Tutorial 2: Preparing results from experimental data; graphing exercises; concept revision: cell structure and function Topic 2 Lecture: How cells are contained: cell membrane structure and function
4	Lab 2: Osmosis in cells Topic 3 Lecture: How cells make energy: Introduction to cell metabolism.
5	Tutorial 3: concept revision Cell membrane structure and function and cell metabolism. CAVE visit – 3D immersive visualisation of the cell membrane Topic 4 Lecture: How cells reproduce: Eukaryotes: the cell cycle, mitosis, cytokinesis, meiosis; Bacteria and binary fission.
6	Lab 3: enzymes and cell metabolism Topic 5 Lecture: How cells are arranged in animals: animal cells and tissues <b>Online Lecture modules:</b> Scientific Communication – Paraphrasing, referencing and avoiding plagiarism ; Hints and Tips for the CSI assignment
7	Tutorial 4: How to use a rubric; concept revision: cell division; modelling exercises on mitosis and meiosis Topic 6 Lecture: How cells are arranged in plants- cells, tissues and organs
8	Lab 4: Animal Cells and Tissues – <b>online</b> - public holiday No Lecture: Public Holiday
9	Tutorial 5: Review of Draft SafeAssign report; Concept revision: animal and plant tissues Topic 7 Lecture: Genetics I: Why do you look like your parents? How characteristics are inherited through genes
10	Lab 5: Plant Cells and Tissues – <b>online</b> - public holiday Topic 8 Lecture: Genetics II: Why do you look like your parents? (cont.)

11	Tutorial 6: Concept revision: genetics & DNA exercises. Topic 9 Lecture: From gene to protein: the molecular basis of inheritance
12	Lab 6: Chromosomes & Genes Topic 10 Lecture: How cells communicate: cell signalling, plant & animal hormones, and neural communication
13	Tutorial 7: Practical Exam Lecture: Semester Review

Please note that the course content 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
Urry, L.A., Meyers, N., Cain, M.L., Wasserman, S.A., Minorsky, P.V. and Reece, J.B.	2018	<i>Campbell Biology</i> (11 <sup>th</sup> Ed, Australian and New Zealand Version)	Pearson: Melbourne
LFS100 Cell Biology Custom Publication 3 <sup>rd</sup> Edition Urry, L.A., Meyers, N., Cain, M.L., Wasserman, S.A., Minorsky, P.V. and Reece, J.B.	2018	<i>Campbell Biology</i> (11 <sup>th</sup> Ed, Australian and New Zealand Version)	Pearson: Melbourne

### 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 Cell Biology Workbook: Tutorial and Laboratory manual, or alternatively print out the manual from Blackboard. The workbook will be available for purchase from Mail and Print Services (MaPS).

## 9. Risk management

Risks in this course are associated with that of a PC1 laboratory. Risk assessments have been performed for each experiment. There is a moderate level of health and safety risk. You must wear a lab coat, enclosed shoes, and safety glasses during laboratory classes as directed. Materials safety data sheets (MSDS) are available at relevant laboratory class.

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:

- a) The final mark is in the percentage range 47% to 49.4%
- b) The course is graded using the Standard Grading scale
- c) 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](mailto: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](mailto:studentcentral@usc.edu.au)