

## **COURSE OUTLINE**

# SCI113 Discovering Science

School: School of Science, Technology and Engineering

# 2025 Semester 1

UniSC Sunshine Coast UniSC Moreton Bay UniSC Fraser Coast

BLENDED LEARNING You can do this course without coming onto campus, unless your program has specified a mandatory onsite requirement.

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

Science and the study of the universe has always inspired awe and fascination. Whether on the grand scale of big ideas, sub atomic scales or the intricate complexities of life, the urge to discover new frontiers drives us as a species. This course will spark your curiosity and engage you in the world of scientific inquiry. During lab and field activities you will explore your skills of investigation, presenting data and critical analysis and apply these across disciplines through 'Big Idea' modules that introduce you to the cutting edge of science, research and technology.

# 1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
<b>Learning materials</b> – Pre-recorded conceptual videos and associated activity	1hr	Week 1	13 times
Tutorial/Workshop 1 – On campus workshop	2hrs	Week 2	6 times
Laboratory 1 – On campus lab	3hrs	Week 1	7 times
Seminar – On campus seminar	1hr	Week 1	3 times

# 1.3. Course Topics

- · Philosophy of science and technology
- Hypotheses, theories and evidence
- Big Ideas from the Big Bang to DNA
- Investigative methods in science, laboratories / field trips
- Inquiry based modules; Biology, Chemistry, Maths, Biotechnology, Ecology, Food and Biosecurity.
- Scientific communication
- · Ethics and sustainability
- Future frontiers for science

# 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?

COU	RSE LEARNING OUTCOMES	GRADUATE QUALITIES
Ons	successful completion of this course, you should be able to	Completing these tasks successfully will contribute to you becoming
1	Demonstrate foundational scientific knowledge in core disciplines (biology, chemistry, math, biotechnology, ecology, food and biosecurity)	Knowledgeable
2	Apply the methods of science to collect, accurately record, interpret and draw conclusions from observational and experimental data to solve different real world problems	Creative and critical thinker Empowered
3	Explain the role and relevance of science in society and consider the impact of solutions to current and future real world problems	Ethical Sustainability-focussed
4	Communicate scientific results, information and arguments to a range of audiences, for a range of purposes and using a variety of modes.	Engaged

# 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

Not applicable

## 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

Early feedback and guidance on task 1 is the subject of the week 2 tutorial. Draft feedback on the scientific report will be available from the teaching staff prior to submission.

# 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	Oral and Written Piece	Group	20%	Proposal: 1 PowerPoint slide; single paragraph of accompanying text (5%) Submission: 5 PowerPoint slides with accompanying audio or text (15%)	Refer to Format	Online Submission
All	2	Quiz/zes	Individual	40%	30 minute quizzes; 10 multiple choice questions each (4 x 10% each)	Throughout teaching period (refer to Format)	Online Submission
All	3	Report	Individual	40%	2000 words	Refer to Format	Online Assignment Submission with plagiarism check

# All - Assessment Task 1: Narrated PowerPoint

GOAL:	This task will develop your collaboration skills in presenting scientific ideas and research, culminati submission. Key to the exercise is working with other science students in investigating the applicat discipline in a Mission to Mars and engaging the audience in your chosen field of study. This submengaging and creative but also scientifically rigorous and concise.	tion of a field or
PRODUCT:	Oral and Written Piece	
FORMAT:	Submit: Proposal: Week 2; Submission; Week 5. In groups of no more than four you will investigate the planet Mars. Choose one of the core science disciplines (biology, chemistry, mathematics, biologod and biosecurity) offered at USC and consider how the discipline may be applied to a single at How will we get there? What spacecraft, fuels or trajectories may be used? How will humans survive will we grow food or obtain water? What basic ecology could we potentially find, if any? Are there are concern that you feel may be relevant to the mission? What biosecurity concerns are there? You will storm in your group the foundational knowledge required for the mission in your chosen discipline, are search occurring in this field and a summary of the issues faced and possible solutions for these then initially provide a single PowerPoint slide as a proposal (week 2; one per group) then submit to assessment (5 PowerPoint slides and accompanying audio or text) via Canvas (week 5; one per grinstructions and guidance will be provided via Canvas.	technology, ecology, spect of the mission. the the spaceflight? How any other issues of I research and brain some of the interesting issues. Your group will the completed
CRITERIA:	No.	Learning Outcome assessed
	Demonstrate foundational scientific knowledge in a core discipline: use of correct terminology, specific field content and applications	14
	2 Explain the role and relevance of the chosen discipline to the proposed mission to Mars and its potential application in solving current and future real world problems	3
	produce the control of the control o	3
	and its potential application in solving current and future real world problems  Communicate scientific information and areas of emerging research to an audience of	

# All - Assessment Task 2: Laboratory / Tutorial Quizzes

GOAL:	The purpose of the quizzes is to formatively assess foundational knowledge across the breadth of conference of the quizzes will be based on the laboratory at the questions covered duringeach week's content. You will link this knowledge to the addressing of world - highlighting further applications that may arise from research in this area.	ind tutorial manual and
PRODUCT:	Quiz/zes	
FORMAT:	The format for this task will be in the form of 4 separate quizzes assessing each of the specific disc during the course.:Week 2 - Science Basics. Week 5 - Maths and Chemistry. Week 8 - Biology and Biotechnology, Food and Biosecurity. Each quiz will be open for two weeks from the opening date a approximately 30 minutes to complete; you will be permitted three (3) attempts at each quiz.	d Ecology. Week 11 -
CRITERIA:	No.	Learning Outcome assessed
	Demonstrate foundational depth and breadth of knowledge in the scientific disciplines presented during the course.	1
	2 Apply the methods of science to answer questions and to explain the role and relevance of the scientific disciplines presented during the course	2
	3 Explain and consider the impact of solutions to current and future real world problems	3
	4 Demonstrate the interdependence between scientific fields	13
GENERIC SKILLS:		

#### All - Assessment Task 3: Scientific Report

GOAL:	In this task you will consider the findings from one of the lab sessions held in weeks 1, 3, 5, 7, 9 or report based on the results obtained. This will allow you to complete the process of a scientific inquitional knowledge in a core science discipline (either biology, chemistry, math, biotechnolog biosecurity) through written communication and interpretation of scientific results.	uiry and to demonstrate
PRODUCT:	Report	
FORMAT:	Submit in Week 13. The format for this paper will be a general 'IMRaD' report template reflecting the incorporated in scientific papers. It will be written individually in your own words. Additional instruct be provided via Canvas and during class. Title - Brief and specific. Introduction - The purpose of the provide a brief rationale of why the research was conducted, some background and a statement of You should also detail the extent of current knowledge and include references from the scientific litter should also state what your research question / hypothesis is and explain why the project is of interfunction - A logical, concise sequence of the materials and methods used that a fellow scientist continued the exact procedure as the one used. Results - The results section shows all the relevant findings from the examined. You should present a summary of the data generated (summaries belong in results; the should be included in the appendix); these should be achieved by the presentation of tables and/or titles), with written text before the figure / table that refers the reader to particular results that provid consistencies, comparisons, anomalies etc. While you may state basic trends, you must not interp	tions and guidance will the introduction is to of purpose for the paper. terature. The introduction trest. Materials and ould follow to carry out from the lab session to raw data (data sheets) or graphs (full standalone de an indication of trends,
	in any way. This is what the discussion is for! Discussion - Is the most important section of your repare discussed in light of your original purpose as stated in the introduction using appropriate reference interpretations. You must interpret the outcomes and explain the processes that led to the results of explain the variability in the results? Did the study achieve the objectives stated? Did the study cond What were the limitations of the study and how could they be improved? Summary - conclusions - within the research for both the scientific community and wider society? Referencing - In text and reference specific discipline	port, where the results ences to support your obtained. What factors ncur with others or not? what is the relevance of
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# 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.

# 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

There are no required/recommended resources for this course.

# 8.2. Specific requirements

Nil

# 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:

- 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: <a href="mailto:0754301168">0754301168</a> or using the <a href="mailto:SafeZone">SafeZone</a> app. For general enquires contact the SafeUniSC team by phone <a href="mailto:0754563864">0754563864</a> or email <a href="mailto:safe@usc.edu.au">safe@usc.edu.au</a>.

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 <a href="mailto:0754301226">0754301226</a> or email <a href="mailto:studentwellbeing@usc.edu.au">studentwellbeing@usc.edu.au</a>.

#### 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 <u>Learning Advisers</u> web page for more information, or contact Student Central for further assistance: +61 7 5430 2890 or <u>studentcentral@usc.edu.au</u>.

# 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 <a href="https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching">https://www.usc.edu.au/explore/policies-and-procedures#academic-learning-and-teaching</a>

#### 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 <u>Student Charter</u> 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