COURSE OUTLINE

SCI212 Genetics

School: School of Science, Technology and Engineering

2026 | Trimester 2

UniSC Sunshine Coast
UniSC Moreton Bay

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 unisc.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

Genetics is integral to biology because organisms are a product of both genetics and their environment. This central tenet is the basis of the course. You learn the foundations of how genes are transmitted and inherited (the rules of inheritance) and how these rules are modified. You apply this knowledge to analyse scenarios using techniques to understand the mode of inheritance and solve genetics problems. This course helps you to better understand areas as diverse as evolution, medical counselling and ethics, the biology of development, the dynamics of populations and molecular biology.

1.2. How will this course be delivered?

ACTIVITY	HOURS	BEGINNING WEEK	FREQUENCY
BLENDED LEARNING			
Learning materials – Learning materials (online) will introduce the concepts of genetics and genomics.	2hrs	Week 1	12 times
Laboratory 1 – On campus experiment-based practicals to be conducted in wet labs	2hrs	Week 1	6 times
Laboratory 2 – On campus computer-based practicals	2hrs	Week 2	6 times
Tutorial/Workshop 1 – On campus tutorial/workshop	2hrs	Week 12	Once Only

1.3. Course Topics

- Overview of genetics. Nature of genetic materials and review of basic concepts
- Principle of heredity
- Advanced modes of inheritance, linkage analysis and gene mapping
- Genetic variation and phenotype
- Gene strcuture, function, expression and regulation
- Evolution and population genetics
- Microbial genetics/ genomics
- Quantitative genetics
- Beyond the genome: Cytoplasmic inheritance and epigenetics
- Genome and genomics
- Applied genetics with a focus on cancer genetics/genomics
- Methods and tools in genetics and genomics

2. What level is this course?

200 Level (Developing)

Building on and expanding the scope of introductory knowledge and skills, developing breadth or depth and applying knowledge and skills in a new context. May require pre-requisites where discipline specific introductory knowledge or skills is necessary. Normally, undertaken in the second or third full-time year of an undergraduate programs.

3. What is the unit value of this course?

12 units

4. How does this course contribute to my learning?

COURSE LEARNING OUTCOMES On successful completion of this course, you should be able to...		GRADUATE QUALITIES Completing these tasks successfully will contribute to you becoming...
1	Demonstrate and apply foundational knowledge of:the central role of genetics in biology organisms being a product of their genetics & environment the transmission and inheritance of genes within populations to genetics problems	Knowledgeable
2	Solve a wide range of problems in genetics concerning different species, by using techniques to process genetic data from scenarios analysing the data to determine modes of inheritance and genetic mapping predicting phenotypes based on a hypothesis	Creative and critical thinker
3	Communicate your solutions to genetics problems to specialist audiences according to conventions	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

SCI100 or LFS100 or LFS103 or SCI102

5.2. Co-requisites

Not applicable

5.3. Anti-requisites

Not applicable

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

Not applicable

5.5. Microcredential Information

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

Open book online quizzes will help you to learn and revise and build your confidence for the final exam.

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	30%	20-30 mins	Throughout teaching period (refer to Format)	Online Submission
All	2	Report	Individual	50%	1-2 pages (300 approx depending on the prac)	Throughout teaching period (refer to Format)	Online Submission
All	3	Examination - not Centrally Scheduled	Individual	20%	2 hours	Week 12	In Class

All - Assessment Task 1: Online weekly quizzes

GOAL:	To learn and revise Course topics to build foundational knowledge and practice techniques when solving problems
PRODUCT:	Quiz/zes
AUTHORSHIP STATEMENT:	
FORMAT:	Lecturers and tutors will model the problem solving approaches for these open book online quizzes that you do in your own time. These help you to learn and revise and build your confidence for the final exam. They are automatically assessed and the correct answers are provided online after you complete the quiz. The lecturer goes through a review of any quiz on request.
CRITERIA:	

No.		Learning Outcome assessed
1	Demonstrate and apply foundational knowledge of: the central role of genetics in biology	1 2
2	organisms being a product of their genetics & environment	1 2
3	the transmission and inheritance of genes within populations to genetics problems	1 2
4	Solve a wide range of problems in genetics concerning different species, by: using techniques to process genetic data from scenarios	1 2 3
5	analysing the data to determine modes of inheritance and genetic mapping	1 2 3
6	predicting phenotypes based on a hypothesis	1 2 3

GENERIC SKILLS:	

All - Assessment Task 2: Practical reports

GOAL:	To communicate laboratory activities and findings that demonstrates application of foundational knowledge and problem solving skills.
PRODUCT:	Report
AUTHORSHIP STATEMENT:	
FORMAT:	Weekly. These reports are about your laboratory-based activities. They include drawings, observations, data analysis, cytology, probabilities, simulations, and virtual laboratories. Depending on the activity, the reports will vary between 1-2 pages. Your lecturer will provide advice on how to present each report in relation to the nature of the particular practical activity.

CRITERIA:

No.		Learning Outcome assessed
1	Demonstrate and apply foundational knowledge of: the central role of genetics in biology	1 2
2	organisms being a product of their genetics & environment	1 2
3	the transmission and inheritance of genes within populations to genetics problems	1 2
4	Solve a wide range of problems in genetics concerning different species, by: using techniques to process genetic data from scenarios	1 2 3
5	analysing the data to determine modes of inheritance and genetic mapping	1 2 3
6	predicting phenotypes based on a hypothesis and communicate your solutions to genetics problems to specialist audiences according to conventions	1 2 3

GENERIC SKILLS:

All - Assessment Task 3: Final exam

GOAL:	To demonstrate and apply foundational genetics knowledge to solve problems and communicate solutions according to conventions.
PRODUCT:	Examination - not Centrally Scheduled
AUTHORSHIP STATEMENT:	
FORMAT:	A combination of short answers, and short essays

CRITERIA:

No.		Learning Outcome assessed
1	Demonstrate and apply foundational knowledge of: the central role of genetics in biology	1 2
2	organisms being a product of their genetics & environment	1 2
3	the transmission and inheritance of genes within populations to genetics problems	1 2 3
4	Solve a wide range of problems in genetics concerning different species, by: using techniques to process genetic data from scenarios	1 2 3
5	analysing the data to determine modes of inheritance and genetic mapping	1 2 3
6	predicting phenotypes based on a hypothesis and communicating your solutions to genetics problems to specialist audiences according to conventions	1 2 3

GENERIC SKILLS:

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

You need regular access to the resource(s) below. Many texts are available as ebooks through the Library at no additional cost.

REQUIRED?	AUTHOR	YEAR	TITLE	EDITION	PUBLISHER
Recommended	William S Klug,William S. Klug,Michael R. Cummings,Charlotte A. Spencer,Michael A Palladino,Darrell Killian	2020	Essentials of Genetics, Global Edition	Latest Edition (if available)	Pearson UK

8.2. Specific requirements

Laboratory coat, safety glasses, closed in footwear

9. How are risks managed in this course?

Risk assessments have been performed for all studio and laboratory classes and a low level of health and safety risk exists. Some risk concerns may include equipment, instruments, and tools; as well as manual handling items within the laboratory. It is your responsibility to review course material, search online, discuss with lecturers and peers and understand the 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:
(a) The final mark is in the percentage range 47% to 49.4%; and
(b) The course is graded using the Standard Grading scale

10.3. Assessment: Submission penalties

Late submissions may be penalised up to and including the following maximum percentage of the assessment task's identified value, with weekdays and weekends included in the calculation of days late:
(a) One day: deduct 5%;
(b) Two days: deduct 10%;
(c) Three days: deduct 20%;
(d) Four days: deduct 40%;
(e) Five days: deduct 60%;
(f) Six days: deduct 80%;
(g) Seven days: A result of zero is awarded for the assessment task.

The following penalties will apply for a late submission for an online examination:
Less than 15 minutes: No penalty
From 15 minutes to 30 minutes: 20% penalty
More than 30 minutes: 100% penalty

10.4. 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

10.5. 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.

10.6. General Enquiries

For course-specific questions, contact your teaching staff or Course Coordinator.

For other enquiries or to access support, please contact Student Central:

- UniSC Student Central
- UniSC Adelaide Student Central