



UNSW Course Outline

BABS2204 Genetics - 2024

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General Course Information

Course Code : BABS2204

Year : 2024

Term : Term 3

Teaching Period : T3

Is a multi-term course? : No

Faculty : Faculty of Science

Academic Unit : School of Biotechnology and Biomolecular Sciences

Delivery Mode : Multimodal

Delivery Format : Standard

Delivery Location : Kensington

Campus : Sydney

Study Level : Undergraduate

Units of Credit : 6

Useful Links

[Handbook Class Timetable](#)

Course Details & Outcomes

Course Description

Genetics is the study of inheritance and is an exciting and rapidly expanding discipline with applications in medicine, biotechnology, agriculture, and many other fields. This course provides an overview of the key concepts in genetics including gene structure and transmission, genetic variation and evolution, and regulation of gene expression. Lectures and laboratory experiments

are used to demonstrate genetic theory and its application and provide an introduction to real-world research in genetics and genomics.

This course is run in parallel with an advanced version, BABS2264, which includes a research project that students complete in addition to the scheduled practical component. The advanced course is designed for students who plan to pursue research careers in genomics or related disciplines.

Assumed knowledge: BABS1201/DPST1051: Molecules, cells and genes

Course Aims

This course will introduce students to theoretical concepts in genetics and genomics as well as different societal applications. The practical component of the course is designed to reinforce the core genetics concepts covered in lectures and provide students with hands-on experience in some of the current experimental techniques and methods routinely used in the field. The individual project allows students to develop and carry out an independent project providing an opportunity to experience authentic genomics research.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Describe ideas in genetics and genomics using contemporary concepts, principles and procedures.
CLO2 : Critically interpret and evaluate scientific literature on genetic and genomic topics.
CLO3 : Critically evaluate experimental techniques and methods routinely used in genetics and genomics.
CLO4 : Analyse and interpret experimental results.
CLO5 : Communicate key findings from genetic and genomic experiments to an educated audience.

Course Learning Outcomes	Assessment Item
CLO1 : Describe ideas in genetics and genomics using contemporary concepts, principles and procedures.	<ul style="list-style-type: none">• Tutorial Quizzes• Course Project• Final Exam
CLO2 : Critically interpret and evaluate scientific literature on genetic and genomic topics.	<ul style="list-style-type: none">• Course Project
CLO3 : Critically evaluate experimental techniques and methods routinely used in genetics and genomics.	<ul style="list-style-type: none">• Tutorial Quizzes• Final Exam• Course Project
CLO4 : Analyse and interpret experimental results.	<ul style="list-style-type: none">• Tutorial Quizzes• Final Exam
CLO5 : Communicate key findings from genetic and genomic experiments to an educated audience.	<ul style="list-style-type: none">• Course Project

Learning and Teaching Technologies

Moodle - Learning Management System

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Tutorial Quizzes Assessment Format: Individual	30%	
Course Project Assessment Format: Individual Short Extension: Yes (2 days)	30%	
Final Exam Assessment Format: Individual	40%	

Assessment Details

Tutorial Quizzes

Assessment Overview

There will be a short quiz held every two weeks at the start of the practical class, starting in Week 3. There will be three quizzes in total during the term (in Weeks 3, 5, and 8). This assessment task is designed to provide you with feedback on how you are progressing in the course regularly. These quizzes may contain multiple-choice and short-answer questions based on the material covered during lectures and practical classes. You will have 20 min to complete the quiz and each quiz is worth 10% of the final course total. Feedback will be released online once the quiz has closed. Additional general feedback will also be provided during Q&A sessions. Additional information on quizzes will be provided in the course.

Course Learning Outcomes

- CL01 : Describe ideas in genetics and genomics using contemporary concepts, principles and procedures.
- CL03 : Critically evaluate experimental techniques and methods routinely used in genetics and genomics.
- CL04 : Analyse and interpret experimental results.

Assignment submission Turnitin type

This is not a Turnitin assignment

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

For more information on Generative AI and permitted use please see [here](#).

Course Project

Assessment Overview

This assessment task is unique to BABS2204 students. For this task, you will be provided with an initial draft for a critical review of a contemporary genetics topic that was generated using AI. You will need to correct any misinformation and justify your modifications supported by appropriate references. The final critical review should be 750 words and should be written at a level that can be understood by a student in BABS2204. Brief justifications for the modifications

should be provided separately. This assessment is due in Week 9. Additional information about the task, including assessment criteria, will be provided during the course. Marks and feedback will be provided within 10 working days of the due date.

Course Learning Outcomes

- CL01 : Describe ideas in genetics and genomics using contemporary concepts, principles and procedures.
- CL02 : Critically interpret and evaluate scientific literature on genetic and genomic topics.
- CL03 : Critically evaluate experimental techniques and methods routinely used in genetics and genomics.
- CL05 : Communicate key findings from genetic and genomic experiments to an educated audience.

Assignment submission Turnitin type

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

Generative AI Permission Level

Generative AI Software-based Assessments

This assessment is designed for you to use generative AI as part of the assessed learning outcomes. Please refer to the assessment instructions for more details.

For more information on Generative AI and permitted use please see [here](#).

Final Exam

Assessment Overview

This examination typically consists of multiple-choice and short-answer questions that will assess knowledge obtained in lectures and practical classes throughout the term. The exam will be two hours long and will be scheduled during the formal examination period. Mark/grade will be released to students on the official results release date. Feedback is available through inquiry with the convenor.

Course Learning Outcomes

- CL01 : Describe ideas in genetics and genomics using contemporary concepts, principles and procedures.
- CL03 : Critically evaluate experimental techniques and methods routinely used in genetics and genomics.
- CL04 : Analyse and interpret experimental results.

Assignment submission Turnitin type

This is not a Turnitin assignment

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.

For more information on Generative AI and permitted use please see [here](#).

General Assessment Information

Grading Basis

Standard

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 9 September - 15 September	Lecture	Lecture A: Course introduction, The genetics revolution - Paul Waters Lecture B: Genomics: New questions - Paul Waters Lecture C: Large scale genetic change - Paul Waters
	Laboratory	(1) Introduction to informatics tools (2) Introduction to the assignment
Week 2 : 16 September - 22 September	Lecture	Lecture A: Review of inheritance - Paul Waters Lecture B: Model species - Paul Waters Lecture C: Q&A + Quiz 1 review - Paul Waters
	Laboratory	(1) Epigenetics 1 (2) Hypothesis testing
Week 3 : 23 September - 29 September	Lecture	Lecture A: Gene interactions 1 - Paul Waters Lecture B: Gene interactions 2 - Paul Waters Lecture C: Regulation of gene expression - Paul Waters
	Laboratory	(1) Epigenetics 2 (2) Recombination and gene mapping 1
Week 4 : 30 September - 6 October	Lecture	A: Public holiday Lecture B: Complex traits 1 - Mark Tanaka Lecture C: Q&A + Quiz 2 review - Paul Waters
	Laboratory	(1) Epigenetics 3 (2) Recombination and gene mapping 2
Week 5 : 7 October - 13 October	Lecture	Lecture A: Complex traits 2 - Mark Tanaka Lecture B: PCR techniques - Dhanushi Abeygunawardena, Joel Brame Lecture C: Genomes and genomics 1 - Dhanushi Abeygunawardena, Joel Brame
	Laboratory	(1) Fingerprinting (2) Using microsatellites to identify parentage
Week 7 : 21 October - 27 October	Lecture	Lecture A: Genomes and genomics 2 - Dhanushi Abeygunawardena, Joel Brame Lecture B: Genomes and genomics 3 - Dhanushi Abeygunawardena, Joel Brame Lecture C: Q&A + Quiz 3 review - Paul Waters
	Laboratory	Identification of plant material 1
Week 8 : 28 October - 3 November	Lecture	Lecture A: Human genetics - Emily Oates Lecture B: Population genetics 1 - Mark Tanaka Lecture C: Population genetics 2 - Mark Tanaka
	Laboratory	(1) Identification of plant material 2 (2) Collect class data for allele frequencies
Week 9 : 4 November - 10 November	Lecture	Lecture A: Evolution of genes and traits 1 - Paul Waters Lecture B: Evolution of genes and traits 2 - Paul Waters Lecture C: Q&A - Paul Waters
	Laboratory	(1) Identification of plant material 3 (2) Allele frequencies in the class
Week 10 : 11 November - 17 November	Lecture	Lecture A: Evolution of genes and traits 3 - Paul Waters Lecture B: Evolution of genes and traits 4 - Paul Waters Lecture C: Final lecture - Paul Waters
	Laboratory	Bioinformatics

Attendance Requirements

Please note that lecture recordings are not available for this course. Students are strongly encouraged to attend all classes and contact the Course Authority to make alternative arrangements for classes missed.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Paul Waters				Lectures and pracs	Yes	Yes
	Joel Brame				Lectures and pracs	Yes	No

Other Useful Information

Academic Information

Upon your enrolment at UNSW, you share responsibility with us for maintaining a safe, harmonious and tolerant University environment.

You are required to:

- Comply with the University's conditions of enrolment.
- Act responsibly, ethically, safely and with integrity.
- Observe standards of equity and respect in dealing with every member of the UNSW community.
- Engage in lawful behaviour.
- Use and care for University resources in a responsible and appropriate manner.
- Maintain the University's reputation and good standing.

For more information, visit the [UNSW Student Code of Conduct Website](#).

Academic Honesty and Plagiarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.

Further information about referencing styles can be located at <https://student.unsw.edu.au/referencing>

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage. At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.

Further information about academic integrity, plagiarism and the use of AI in assessments can be located at:

- The [Current Students site](#),
- The [ELISE training site](#), and
- The [Use of AI for assessments](#) site.

The Student Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: <https://student.unsw.edu.au/conduct>

Submission of Assessment Tasks

Penalty for Late Submissions

UNSW has a standard late submission penalty of:

- 5% per day,
- for all assessments where a penalty applies,
- capped at five days (120 hours) from the assessment deadline, after which a student cannot submit an assessment, and
- no permitted variation.

Any variations to the above will be explicitly stated in the Course Outline for a given course or assessment task.

Students are expected to manage their time to meet deadlines and to request extensions as early as possible before the deadline.

Special Consideration

If circumstances prevent you from attending/completing an assessment task, you must officially apply for special consideration, usually within 3 days of the sitting date/due date. You can apply by logging onto myUNSW and following the link in the My Student Profile Tab. Medical documentation or other documentation explaining your absence must be submitted with your application. Once your application has been assessed, you will be contacted via your student email address to be advised of the official outcome and any actions that need to be taken from there. For more information about special consideration, please visit: <https://student.unsw.edu.au/special-consideration>

Important note: UNSW has a “fit to sit/submit” rule, which means that if you sit an exam or submit a piece of assessment, you are declaring yourself fit to do so and cannot later apply for Special Consideration. This is to ensure that if you feel unwell or are faced with significant

circumstances beyond your control that affect your ability to study, you do not sit an examination or submit an assessment that does not reflect your best performance. Instead, you should apply for Special Consideration as soon as you realise you are not well enough or are otherwise unable to sit or submit an assessment.

Faculty-specific Information

Additional support for students

- [The Current Students Gateway](#)
- [Student Support](#)
- [Academic Skills and Support](#)
- [Student Wellbeing, Health and Safety](#)
- [Equitable Learning Services](#)
- [UNSW IT Service Centre](#)
- Science EDI Student [Initiatives](#), [Offerings](#) and [Guidelines](#)