BIOL12107 *Genomes, Genetics & Evolution*
Term 3 - 2023

Profile information current as at 26/04/2024 12:35 am

General Information

Overview
In this unit, your study will focus on the role of the genome in adaptive change in living organisms, particularly animals. This will help you bring together recent advances in our understanding of the genome and the impact of these on the traditional areas of zoology, particularly those involving evolutionary processes. This unit will provide you with a link between molecular biology and other areas of biology including genetics, evolution, taxonomy, embryology and behaviour. In the latter part of the unit, you will focus on various aspects of human evolution.

Details
Career Level: *Undergraduate*
Unit Level: *Level 2*
Credit Points: *6*
Student Contribution Band: *8*
Fraction of Full-Time Student Load: *0.125*

Pre-requisites or Co-requisites
Prerequisites Any one of the following: BIOH11005 Introductory Anatomy and Physiology BIOL11102 Life Science Laboratory BMSC11002 Human Body Systems 2 BMSC11008 Medical Anatomy and Physiology 2 BMSC11011 Human Anatomy and Physiology 2
Important note: Students enrolled in a subsequent unit who failed their pre-requisite unit, should drop the subsequent unit before the census date or within 10 working days of Fail grade notification. Students who do not drop the unit in this timeframe cannot later drop the unit without academic and financial liability. See details in the Assessment Policy and Procedure (Higher Education Coursework).

Offerings For Term 3 - 2023

- Online

Attendance Requirements
All on-campus students are expected to attend scheduled classes – in some units, these classes are identified as a mandatory (pass/fail) component and attendance is compulsory. International students, on a student visa, must maintain a full time study load and meet both attendance and academic progress requirements in each study period (satisfactory attendance for International students is defined as maintaining at least an 80% attendance record).

Website
This unit has a website, within the Moodle system, which is available two weeks before the start of term. It is important that you visit your Moodle site throughout the term. Please visit Moodle for more information.

Class and Assessment Overview

Recommended Student Time Commitment

Each 6-credit Undergraduate unit at CQUniversity requires an overall time commitment of an average of 12.5 hours of study per week, making a total of 150 hours for the unit.

Class Timetable

Regional Campuses
Bundaberg, Cairns, Emerald, Gladstone, Mackay, Rockhampton, Townsville

Metropolitan Campuses
Adelaide, Brisbane, Melbourne, Perth, Sydney

Assessment Overview

1. **Written Assessment**
Weighting: 30%
2. **Online Quiz(zes)**
Weighting: 20%
3. **Online Quiz(zes)**
Weighting: 50%

Assessment Grading

This is a graded unit: your overall grade will be calculated from the marks or grades for each assessment task, based on the relative weightings shown in the table above. You must obtain an overall mark for the unit of at least 50%, or an overall grade of 'pass' in order to pass the unit. If any 'pass/fail' tasks are shown in the table above they must also be completed successfully ('pass' grade). You must also meet any minimum mark requirements specified for a particular assessment task, as detailed in the 'assessment task' section (note that in some instances, the minimum mark for a task may be greater than 50%). Consult the University's Grades and Results Policy for more details of interim results and final grades.

CQUniversity Policies

All University policies are available on the CQUniversity Policy site.
You may wish to view these policies:

- Grades and Results Policy
- Assessment Policy and Procedure (Higher Education Coursework)
- Review of Grade Procedure
- Student Academic Integrity Policy and Procedure
- Monitoring Academic Progress (MAP) Policy and Procedure – Domestic Students
- Monitoring Academic Progress (MAP) Policy and Procedure – International Students
- Student Refund and Credit Balance Policy and Procedure
- Student Feedback – Compliments and Complaints Policy and Procedure
- Information and Communications Technology Acceptable Use Policy and Procedure

This list is not an exhaustive list of all University policies. The full list of University policies are available on the CQUniversity Policy site.

Previous Student Feedback

Feedback, Recommendations and Responses

Every unit is reviewed for enhancement each year. At the most recent review, the following staff and student feedback items were identified and recommendations were made.

Feedback from Feedback

Feedback

A number of students expressed gratitude for the support, for example, "Dana was fantastic. I could not survive a unit like this without her explanations, drawings and enthusiasm. "

Recommendation

Continue to provide all levels of support to students that use offered one on one meeting options to help with assignments or understanding difficult-to-grasp concepts.

Feedback from Feedback

Feedback

Additional support was offered to students with disability and working full-time. This included meetings outside of working hours and helping with meeting deadlines. This is also reflected in feedback "Dana is by far the best lecturer I have had whilst at CQU. Her flexibility and understanding of my position as a student in full time work allowed me to be comfortable and confident in my assessment and growth throughout the subject."

Recommendation

Continue to offer help to the most vulnerable students and encourage them continually to feel free to ask for that help.

Feedback from Feedback

Feedback

"Students would benefit from a residential school, learning from Dana face to face and applying knowledge in the lab."

Recommendation

Residential schools are not possible and this type of feedback started when I introduced videos about labwork and bioinformatics. This shows that the videos achieved intended interest among the students, with one more of them sating they consider career in bioinformatics. I will continue to encourage them to learn more about practical work without the need for residential school

Feedback from Feedback

Feedback

One student left feedback pointing at some ppt slides that were not covered in lecture. This refers to material removed from the lecture based on number of students feedback.

Recommendation

The PowerPoint will be updated to match the video.

Unit Learning Outcomes

On successful completion of this unit, you will be able to:

1. Use correct terminology to describe genetics, genomes and evolution
2. Discuss the concepts of heritability, mutation, development, Mendelian genetics, extranuclear and multi-allelic inheritance, the Hardy-Weinberg Law and related topics in quantitative genetics
3. Explain the mechanisms of change in the genome including the concepts of genetic disorders adaptation and speciation
4. Discuss behavioral and population genetics, socio-biology and ethics.

Alignment of Learning Outcomes, Assessment and Graduate Attributes

— N/A Level • Introductory Level • Intermediate Level • Graduate Level ◦ Professional Level ◦ Advanced Level

Alignment of Assessment Tasks to Learning Outcomes

Assessment Tasks	Learning Outcomes			
	1	2	3	4
1 - Written Assessment - 30%	•	•	•	•
2 - Online Quiz(zes) - 20%	•			
3 - Online Quiz(zes) - 50%	•	•	•	•

Alignment of Graduate Attributes to Learning Outcomes

Graduate Attributes	Learning Outcomes			
	1	2	3	4
1 - Communication	•	•	•	•
2 - Problem Solving				
3 - Critical Thinking		•		•
4 - Information Literacy	•		•	•
5 - Team Work				
6 - Information Technology Competence		•		
7 - Cross Cultural Competence				•
8 - Ethical practice				•
9 - Social Innovation				
10 - Aboriginal and Torres Strait Islander Cultures				

Textbooks and Resources

Textbooks

There are no required textbooks.

Additional Textbook Information
All learning resources necessary for the unit's completion are available on the unit's Moodle page. The lectures are based on the book 'Concepts of Genetics' authored by William S. Klug, Michael R. Cummings, Charlotte A. Spencer, Michael A. Palladino, and Darrell Killian. It's important to note that purchasing the book is optional.

IT Resources

You will need access to the following IT resources:

- CQUniversity Student Email
- Internet
- Unit Website (Moodle)

Referencing Style

All submissions for this unit must use the referencing styles below:

- Harvard (author-date)
- American Psychological Association 7th Edition (APA 7th edition)

For further information, see the Assessment Tasks.

Teaching Contacts

Dana Stanley Unit Coordinator
d.stanley@cqu.edu.au

Schedule

Week 1 - 06 Nov 2023

Module/Topic	Chapter	Events and Submissions/Topic
Introduction to cells, organelles and genetics		

Week 2 - 13 Nov 2023

Module/Topic	Chapter	Events and Submissions/Topic
Mutation, DNA repair and transposition		

Week 3 - 20 Nov 2023

Module/Topic	Chapter	Events and Submissions/Topic
Mendelian genetics		

Week 4 - 27 Nov 2023

Module/Topic	Chapter	Events and Submissions/Topic
Non-Mendelian genetics		

Vacation Week - 04 Dec 2023

Module/Topic	Chapter	Events and Submissions/Topic

Week 5 - 11 Dec 2023

Module/Topic	Chapter	Events and Submissions/Topic
Chromosome mapping		
Week 6 - 18 Dec 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Extranuclear inheritance		
Vacation Week - 25 Dec 2023		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Week 7 - 01 Jan 2024		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Developmental genetics		
Week 8 - 08 Jan 2024		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Genetics of behaviour; population and sociobiology		
Week 9 - 15 Jan 2024		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Genes meet social science - ethics and genetics		
Week 10 - 22 Jan 2024		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Evolutionary and conservation genetics		**Written Assessment** Due: Week 10 Friday (26 Jan 2024) 11:45 pm AEST
Week 11 - 29 Jan 2024		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Genomics, proteomics and bioinformatics		
Week 12 - 05 Feb 2024		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
Current research in genetics		**Online Quiz** Due: Week 12 Monday (5 Feb 2024) 12:05 am AEST
Exam Week - 12 Feb 2024		
Module/Topic	**Chapter**	**Events and Submissions/Topic**
		Examination Due: Exam Week Monday (12 Feb 2024) 9:00 am AEST

Assessment Tasks

1 Written Assessment

Assessment Type
Written Assessment

Task Description
Write an essay on Personalised Medicine. Personalised medicine, or precision medicine, is an approach to medical treatment that takes into account individuals' genetic, environmental, and lifestyle to customise medical interventions. This approach contrasts with the traditional one-size-fits-all model of medicine. This topic binds the knowledge from multiple lectures / topics we will cover in this term, which gives you the freedom to focus on a single aspect or to review the topic from multiple angles. You can chose to focus on genetic variation (looking at specific genes that determine persons' response to disease or to specific treatments), genomics (whole-genome sequencing to reveal all known genetic mutations and markers), disease risk assessment for preventative care, pharmacogenomics (is this drug going

to work for this person?), ethical considerations of this approach (only very wealthy people can afford this, privacy of the data etc) and even legal challenges in case of adverse response to unconventional personalised treatment. This topic should be exciting to research and learn more about.
Try to choose an innovative and informative title. The first part of the essay is an Abstract (~200-500 words) where you will summarise the purpose of your essay. Make sure you do not overly rely on online references, although it may be tempting. Cover the topic with peer-reviewed published scientific literature. You have full freedom in choosing the direction of your essay.
Recommended word length is 2000-3000 words, excluding references.
You will be given an opportunity to email a draft to the unit coordinator for feedback before you submit it. No marks will be given at the feedback stage, but you will get advice on how to improve your work.
Multiple videos on how to prepare this assignment are available on Moodle. The videos cover every aspect of essay writing, for example, what to cover, the structure, referencing and getting the most out of MS Word in terms of formatting and revisions. Additional support provided during assignment writing is also outlined on Moodle. Zoom sessions can be booked with the unit coordinator to discuss the assignment topic and get additional writing feedback.
The due date is set late in the term as per previous student Moodle feedback; however, it is advised that you aim to submit this assignment earlier if possible. You will get your marks within approximately two weeks from submission whenever you choose to submit.

Assessment Due Date
Week 10 Friday (26 Jan 2024) 11:45 pm AEST
Submit the essay before due date.

Return Date to Students
Week 12 Friday (9 Feb 2024)
We will aim to return the marked assessment to students in 2 weeks.

Weighting
30%

Minimum mark or grade
50%

Assessment Criteria
Details of assessment criteria will be provided in week 4 tutorial on Moodle. The criteria will include:

- Quality of the literature discussed (40%)
- Complexity of the content (20%)
- Presentation (20%)
- Clarity of expression (10%)
- Referencing (10%)

Additional particular details on each assessment criteria are available on Moodle.

Referencing Style

- Harvard (author-date)
- American Psychological Association 7th Edition (APA 7th edition)

Submission
Online

Submission Instructions
All submissions must be done in Moodle. Upload MS Word documents only, not PDF.

Learning Outcomes Assessed

- Use correct terminology to describe genetics, genomes and evolution
- Discuss the concepts of heritability, mutation, development, Mendelian genetics, extranuclear and multi-allelic inheritance, the Hardy-Weinberg Law and related topics in quantitative genetics
- Explain the mechanisms of change in the genome including the concepts of genetic disorders adaptation and speciation
- Discuss behavioral and population genetics, socio-biology and ethics.

2 Online Quiz

Assessment Type
Online Quiz(zes)

Task Description
Your second assessment is a 50 questions online multiple-choice quiz.

The questions in the quiz are randomly chosen from the weekly quizzes. You will have ONE practice attempts on each weekly quiz.
Before the online quiz assessment, an additional practice quiz will be provided one week before the quiz opens. This practice quiz will have the same 50 mock questions for all students, and its purpose is to prepare you for the quiz timing and structure.
Online Quiz Key Information:

- You will have ONE attempt
- You will have 60 minutes to finish the quiz. This is a bit over 1 minute per question.
- This quiz will be open for one day ONLY. The quiz will be open all day, 05/02/2024 (Monday, Week 12), from 12:05 AM until 11:55 PM.
- You must finish the quiz before the closing time, or all of your entries will be lost when the quiz closes.
- In the absence of an approved extension (through Moodle, with documentary evidence), there will be no late submissions for this assessment.

More information on quizzes will be in the Moodle welcome video.

Number of Quizzes
1

Frequency of Quizzes
Other

Assessment Due Date
Week 12 Monday (5 Feb 2024) 12:05 am AEST
The quiz will be open all day on Monday of week 12

Return Date to Students

The results will be immediately visible to students.

Weighting
20%

Minimum mark or grade
50%

Assessment Criteria
Each correct question will score one mark.

Referencing Style

- Harvard (author-date)
- American Psychological Association 7th Edition (APA 7th edition)

Submission
Online

Learning Outcomes Assessed

- Use correct terminology to describe genetics, genomes and evolution

3 Examination

Assessment Type
Online Quiz(zes)

Task Description
Complete an examination. The exam will be conducted online in the form of a Moodle Quiz.
A detailed video description of the exam will be provided on Moodle.

Important information:

- **Copying and pasting is not allowed**
- Moodle can detect everything copy-pasted in this quiz, including making hyperlinks visible to the unit coordinator.
- Additionally, your exam quiz will be placed through TURNITIN, and scores will be taken into account when marking.
- Excessively relying on online plagiarism will result in Academic Misconduct action. Please note that this is a real Exam and treat it as such.
- There is a clear distinction between the online QUIZ (Assessment 2) and The Examination (Assessment 3) despite

the fact that they are both given in the form of online quizzes. The Quiz (Assessment 2) is more terminology focused and in the form of multiple choice questions. The EXAM will contain the genetic problems, pedigrees, and mini-essay questions, which is more complex and requires thorough preparation.
- Please note that studying from PowerPoint slides **only** is unlikely to get you through the exam. PowerPoints are a simplified guide through the lecture and cannot cover the complexity of complex genetic concepts described in detail in video lectures.

Number of Quizzes
1

Frequency of Quizzes
Other

Assessment Due Date
Exam Week Monday (12 Feb 2024) 9:00 am AEST
The exam quiz will be open Monday from 9 am to 5 pm

Return Date to Students

The exam marks will be available at the release of the grades

Weighting
50%

Minimum mark or grade
50%

Assessment Criteria
The student is expected to demonstrate solid knowledge in genetics covered in lectures.

Referencing Style

- Harvard (author-date)
- American Psychological Association 7th Edition (APA 7th edition)

Submission
Online

Submission Instructions
Moodle quiz

Learning Outcomes Assessed

- Use correct terminology to describe genetics, genomes and evolution
- Discuss the concepts of heritability, mutation, development, Mendelian genetics, extranuclear and multi-allelic inheritance, the Hardy-Weinberg Law and related topics in quantitative genetics
- Explain the mechanisms of change in the genome including the concepts of genetic disorders adaptation and speciation
- Discuss behavioral and population genetics, socio-biology and ethics.

Academic Integrity Statement

As a CQUniversity student you are expected to act honestly in all aspects of your academic work.

Any assessable work undertaken or submitted for review or assessment must be your own work. Assessable work is any type of work you do to meet the assessment requirements in the unit, including draft work submitted for review and feedback and final work to be assessed.

When you use the ideas, words or data of others in your assessment, you must thoroughly and clearly acknowledge the source of this information by using the correct referencing style for your unit. Using others' work without proper acknowledgement may be considered a form of intellectual dishonesty.

Participating honestly, respectfully, responsibly, and fairly in your university study ensures the CQUniversity qualification you earn will be valued as a true indication of your individual academic achievement and will continue to receive the respect and recognition it deserves.

As a student, you are responsible for reading and following CQUniversity's policies, including the **Student Academic Integrity Policy and Procedure**. This policy sets out CQUniversity's expectations of you to act with integrity, examples of academic integrity breaches to avoid, the processes used to address alleged breaches of academic integrity, and potential penalties.

What is a breach of academic integrity?
A breach of academic integrity includes but is not limited to plagiarism, self-plagiarism, collusion, cheating, contract cheating, and academic misconduct. The Student Academic Integrity Policy and Procedure defines what these terms mean and gives examples.

Why is academic integrity important?
A breach of academic integrity may result in one or more penalties, including suspension or even expulsion from the University. It can also have negative implications for student visas and future enrolment at CQUniversity or elsewhere. Students who engage in contract cheating also risk being blackmailed by contract cheating services.

Where can I get assistance?
For academic advice and guidance, the Academic Learning Centre (ALC) can support you in becoming confident in completing assessments with integrity and of high standard.

What can you do to act with integrity?

Be Honest
If your assessment task is done by someone else, it would be dishonest of you to claim it as your own

Seek Help
If you are not sure about how to cite or reference in essays, reports etc, then seek help from your lecturer, the library or the Academic Learning Centre (ALC)

Produce Original Work
Originality comes from your ability to read widely, think critically, and apply your gained knowledge to address a question or problem