

BIOS 1012 CELL BIOLOGY

Credit Points 10

Legacy Code 300816

Coordinator Gabriel Perrone ([https://directory.westernsydney.edu.au/search/name/Gabriel Perrone/](https://directory.westernsydney.edu.au/search/name/Gabriel%20Perrone/))

Description Cells are the most basic form of all life, and underlying normal cell function are the molecules used to build complex cellular structures, generate energy, and propagate dynamic life. The unit will study the fundamental processes through which key biomolecules, including lipids, carbohydrates, amino acids and nucleic acids are manipulated to generate and store energy, and build a broad array of important biological macromolecules including DNA, membranes and proteins. To sustain life, cells respire for energy and replicate for growth and sexual reproduction. Accordingly the unit will examine cellular respiration, transcription, translation, mitosis, meiosis, transmission and how genes are inherited and modified providing insight into the phenomena of life. The role of DNA technologies in the fields of medicine, biotechnology and environmental science will provide students with real world applications.

School Science

Discipline Biochemistry and Cell Biology

Student Contribution Band HECS Band 2 10cp

Check your HECS Band contribution amount via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 1 subject

Equivalent Subjects BIOS 1013 - Cell Biology BIOS 1007 - Biology B - Cellular Processes BIOS 1004 - Biology 1 BIOS 1014 - Cell Biology (WSTC)

Assumed Knowledge

Basic understanding of biology and chemistry.

Learning Outcomes

On successful completion of this subject, students should be able to:

1. Describe a range of cell structures and shapes, and cellular organelles
2. Describe the broader role of organelles in cellular function and explain the importance of compartmentalisation
3. Describe the structure and chemical characteristics of the five major groups of molecules important to cellular life (water, carbohydrates, lipids, proteins, nucleic acids) and relate this structure to function in cellular processes
4. Explain why the different forms of cellular division are required for cellular function and the consequences when cellular processes fail to function properly
5. Explain how cells obtain energy, and how they use energy for driving reactions
6. Apply and transfer biological principles to other contexts such as chemical systems
7. Describe a range of DNA technologies in a variety of fields
8. Demonstrate skills in a range of experimental techniques e.g. microscopy, pipetting, biological techniques, calculations, recording data, interpreting and plotting data, writing reports

Subject Content

Structural organisation of cells
Molecular components of cells
Membrane structure and function
Energy and metabolism
Cell communication
How cells divide
Sexual reproduction and meiosis
Patterns of inheritance
DNA: The genetic material
Genes and how they work
Control of gene expression
DNA Technologies

Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Item	Length	Percent	Threshold	Individual/ Group Task
Learning Modules	Each week	20	N	Individual
Online and In-Lab Practical activities	Various 1-3 hours	15	N	Individual
Practical Examination	2 hours	25	N	Individual
Final Exam	2 hours	40	N	Individual

Prescribed Texts

- Raven, P.H., Johnson, G.B., Mason, K.A., Losos, J.B. and Singer, S.R. 2016. Biology 11th ed. New York, McGraw-Hill ISBN: (print only text) 9781259188138 ISBN (Print + Connect access card) 9781743769
- Raven, P.H., Johnson, G.B., Mason, K.A., Losos, J.B. and Singer, S.R. 2020. Biology 12th ed. New York, McGraw-Hill ISBN: ISBN10: 1260169618; ISBN13: 9781260169614

Teaching Periods

Spring Campbelltown

Day

Subject Contact Gabriel Perrone ([https://directory.westernsydney.edu.au/search/name/Gabriel Perrone/](https://directory.westernsydney.edu.au/search/name/Gabriel%20Perrone/))

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=BIOS1012_22-SPR_CA_D#subjects)

Hawkesbury

Composite

Subject Contact Gabriel Perrone ([https://directory.westernsydney.edu.au/search/name/Gabriel Perrone/](https://directory.westernsydney.edu.au/search/name/Gabriel%20Perrone/))

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=BIOS1012_22-SPR_HW_C#subjects)

Day

Subject Contact Gabriel Perrone ([https://directory.westernsydney.edu.au/search/name/Gabriel Perrone/](https://directory.westernsydney.edu.au/search/name/Gabriel%20Perrone/))

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=BIOS1012_22-SPR_HW_D#subjects)

Parramatta - Victoria Rd

Day

Subject Contact Gabriel Perrone ([https://directory.westernsydney.edu.au/search/name/Gabriel Perrone/](https://directory.westernsydney.edu.au/search/name/Gabriel%20Perrone/))

View timetable (https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=BIOS1012_22-SPR_PS_D#subjects)