

# BIOS 2026 MOLECULAR BIOLOGY

**Credit Points** 10

**Legacy Code** 300817

**Coordinator** Liza Cubeddu ([https://directory.westernsydney.edu.au/search/name/Liza Cubeddu/](https://directory.westernsydney.edu.au/search/name/Liza%20Cubeddu/))

**Description** Molecular biology is central to many fields of the biomedical and natural sciences, and includes genetics, immunology, cell biology, biochemistry, and forensics. Through comparative studies of different organisms, this subject will describe fundamental concepts and methods in the study of DNA and RNA and the application of molecular biology in advanced fields such as genomics. Subjects will include DNA replication; transcriptional, post-transcriptional and epigenetic regulation of gene expression; microarrays, and an introduction to bioinformatics. Practical work will provide opportunities to become familiar with the methods of molecular biology, with an emphasis on the development of problem solving and analytical skills

**School** Science

**Discipline** Biochemistry and Cell Biology

**Student Contribution Band** HECS Band 2 10cp

Check your fees via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/fees/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 2 subject

**Pre-requisite(s)** BIOS 2014 OR  
BIOS 2018 OR  
BIOS 2021

**Equivalent Subjects** BIOS 3020 - Molecular Biology BIOS 3015 - Human Molecular Biology

## Learning Outcomes

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

1. Structure of DNA, genes and chromatin.
2. Key processes of DNA replication and protein synthesis including transcription and translation
3. Transcriptional and post-transcriptional regulation of RNA; epigenetics, polyadenylation, RNA splicing and RNA interference.
4. Analysis of DNA and RNA; Polymerase chain reaction (PCR), DNA sequencing, reverse transcriptase PCR, cloning, microarray analysis, and introductory bioinformatics.
5. Techniques of molecular biology; including laboratory practicals and skills in the design, analysis and interpretation of experiments.

## Subject Content

Structure of DNA, genes and chromatin.

Key processes of DNA replication and protein synthesis including transcription and translation

Transcriptional and post-transcriptional regulation of RNA; epigenetics, polyadenylation, RNA splicing and RNA interference.

Analysis of DNA and RNA; Polymerase chain reaction (PCR), DNA sequencing, reverse transcriptase PCR, cloning, microarray analysis, and introductory bioinformatics.

Techniques of molecular biology; including laboratory practicals and skills in the design, analysis and interpretation of experiments.

## 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.

| Type                                                 | Length      | Percent | Threshold | Individual/<br>Group Task |
|------------------------------------------------------|-------------|---------|-----------|---------------------------|
| Online Multiple Choice Quiz (Online Problem Solving) | 1 hour      | 15      | N         | Individual                |
| Laboratory Practical Component and Critical Analysis | 1,500 words | 45      | Y         | Individual                |
| Final Examination                                    | 2 hours     | 40      | Y         | Individual                |

Prescribed Texts

- Michael M. Cox, Jennifer A. Doudna, Michael O'Donnell, (2015) Molecular Biology- Principles and Practice, 2nd Edition W. H. Freeman, New York