

# BIOS 3014 GENES, GENOMICS AND HUMAN HEALTH

**Credit Points** 10

**Legacy Code** 300820

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

**Description** A genome is all of the genetic information that makes us who we are. Beginning with an overview of the evolution of the human genome, this subject will introduce you to current concepts in gene regulation and how genetic variability is correlated with susceptibility to rare and common disease in individuals and populations. You will also gain practical experience in key methods and analyses of genetic variation and understand how such techniques are delivering new insights into the origins and treatment of human disease.

**School** Science

**Discipline** Genetics

**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 3 subject

**Pre-requisite(s)** BIOS 2018 Genetics

**Restrictions**

Successful completion of 120 credit points

## Learning Outcomes

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

1. Describe the structure of the human genome and common genetic variants in the genome
2. Explain the mechanisms by which the integrity of the human genome is maintained and relate errors in these pathways to human health
3. Compare and contrast the genetic basis of rare single-gene Mendelian disorders with common complex multi-gene disorders
4. Describe methods of genetic analysis as applied to single gene and multi-gene disorders
5. Evaluate the role of genetics in exploring the relationship between lifestyle, the environment, and common human diseases
6. Gather information, plan, complete and analyse experiments in molecular genetics

## Subject Content

1. Genetic variability in the genomes of modern and ancient human genomes and between populations of modern humans
2. The complexities of gene regulation in the era of genomics
3. Methods of genome and transcriptome sequencing and genotyping
4. A genomic view of human immunology
5. Translating genomics to an understanding of immune disease
6. Ethics and genomics
7. Methods in immunology

## 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/ Group Task	Mandatory
Critical Review	2000 words	30	N	Individual	N
Report	1500 words	40	N	Individual	N
Applied Project	2000 words	30	N	Group	N

Prescribed Texts

- Human Molecular Genetics, 4th Edition, 2011 Tom Strachan and Andrew Read, Garland Science

Teaching Periods

## Autumn (2025)

### Campbelltown

**On-site**

**Subject Contact** Graham Jones ([https://directory.westernsydney.edu.au/search/name/Graham Jones/](https://directory.westernsydney.edu.au/search/name/Graham%20Jones/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=BIOS3014\\_25-AUT\\_CA\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=BIOS3014_25-AUT_CA_1#subjects))

### Parramatta - Victoria Rd

**On-site**

**Subject Contact** Graham Jones ([https://directory.westernsydney.edu.au/search/name/Graham Jones/](https://directory.westernsydney.edu.au/search/name/Graham%20Jones/))

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