

# NATS 3026 FORENSIC BIOLOGY

**Credit Points** 10

**Legacy Code** 401170

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

**Description** This subject is designed to extend your knowledge and understanding regarding forensic biology and its relevance to forensic investigations. You will gain experience and understanding regarding the recognition and collection of biologically relevant evidence (including blood, semen and saliva), through to the application of presumptive testing, confirmatory testing, DNA profiling methods and evidence reporting. There is a focus on front-end forensic biology work (item examination, presumptive testing, DNA recovery via swabbing and isolation of biological material) coupled with a theoretical understanding of the scientific principles that underpin current DNA analysis techniques, presumptive tests and DNA profiling results.

**School** Science

**Discipline** Forensic Science

**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/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 3 subject

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

**Equivalent Subjects** NATS 2017 - Forensic Analysis of Physical Evidence BIOS 3017 - Invertebrate Biology

## Restrictions

Successful completion of 120 credit points

## Learning Outcomes

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

1. Summarise the changes to the forensic analysis of biological evidence since the first forensic DNA profile was produced in 1985.
2. Examine a case scenario and determine which DNA marker/s should be used to analyse the biological evidence in order to maximise the useful genetic information obtained from a given sample.
3. Carry out basic experimental procedures relating to the forensic analysis of biological evidence.
4. Critically evaluate raw experimental data to identify issues commonly encountered in forensic biology laboratories and propose strategies to resolve such issues.
5. Interpret electropherogram data generated from the analysis of biological evidence and determine the STR genotype of the donor/s.
6. Calculate population genetic parameters and DNA match statistics under varying hypotheses.
7. Communicate findings and opinions in the manner required of an expert forensic witness.

## Subject Content

1. The history of forensic biology and DNA analysis.
2. Search techniques, presumptive tests and confirmatory tests for detecting and identifying biological evidence
3. Issues surrounding DNA contamination and its implications for DNA evidence.
4. Requirements for DNA sampling, collection, transportation, storage and continuity.
5. New and emerging developments in forensic biology including DNA analysis technology, genealogy and phenotyping.
6. Types of DNA markers utilised in forensic DNA analysis and the circumstances where each type might be analysed.
7. DNA profile interpretation and exploration of DNA match statistics.
8. Interpretation of DNA profiles and communication of DNA profile results to the court
9. Special topics in forensic biology e.g. disaster victim identification and the analysis of non-human DNA

## 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
Case Study	1,000 words	30	N	Group
Report	2,000 words	30	N	Individual
Quiz	1 hour each (20 questions)	40	Y	Individual

Prescribed Texts

- Butler, J.M. (2009) Fundamentals of Forensic DNA typing, Amsterdam: Academic Press/Elsevier

Teaching Periods

## Spring (2022)

### Hawkesbury

#### Day

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

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=NATS3026\\_22-SPR\\_HW\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=NATS3026_22-SPR_HW_D#subjects))

## Autumn (2023)

### Hawkesbury

#### On-site

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