

Biology A/T

Biology is the scientific study of living organisms and their environment. The course will enhance your understanding of the natural world and the place of people and other organisms within it. Studying this course will help you improve your skills in data collection and analysis, communication, and interpersonal and ethical understanding.

Rationale

Why would you do this course?

Biology is perfect for students intending to pursue careers in areas such as medicine, physiology, nursing, paramedical or medical sciences, conservation management, marine biology, ecology, zoology, botany, genetics, biochemistry, forestry and natural resource management.

Beyond the classroom, this subject offers you:

- Excursions, including fieldwork
- Guest speakers
- STEM camp
- ICAS competition
- ANU Science Education Day



Learner dispositions

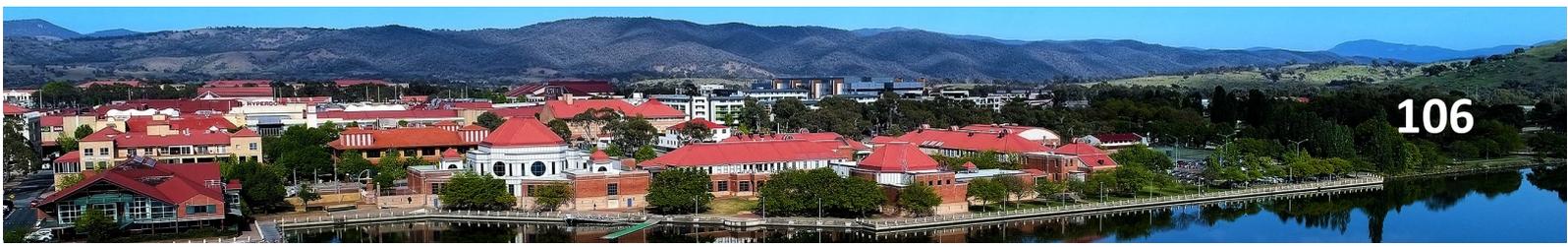
What type of person usually studies this course?

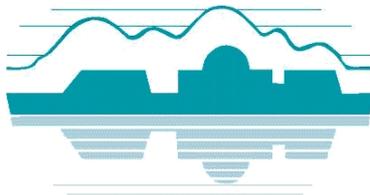
Learners who study biology typically have a curiosity or love of the natural world and how living things, including themselves, work. They enjoy spending time in the natural world and exploring the hidden workings of life by peering down a microscope. They like to get their hands dirty and question the things that they see and hear. Students who study biology must be willing to do work outside of class and develop effective study routines.

Readiness

What courses or previous experience would make a student ready to study this subject at LTC?

You are ready to study this subject if you have succeeded in maths and science in high school. A student in Level 1 Year 10 Science and Maths, or at least a C average in Level 2 Year 10 Science and Maths would be ready for senior secondary biology. You are also ready to study biology if you have the determination and resilience to push yourself when concepts become difficult, and study outside of class on a regular basis.





Content and Assessment Overview

In Year 11, students start by thinking about the big picture: the interconnectedness of all living things in tangled ecosystems, which combine to make up our fragile global biosphere. They then zoom in to investigate the components and processes of life from molecules up to cells, tissues, and organ systems. In Year 12, students focus in on the processes involved in the inheritance of traits across generations, from DNA to the evolution of all living things from a single common ancestor. They then switch gears to investigate how organisms respond to the challenges of a dynamic world and what these challenges mean for the health of human societies.

Across both years, students conduct field and laboratory work to collect data, which they analyse and interpret, then communicate with each other through written, visual and verbal representations. They discuss the ways in which biological understanding has developed through the course of human history, how this understanding affects the lives of everyday Australians and consider how the knowledge of Indigenous Australians can be used to improve modern biological practices.

Unit Breakdown and Course Pattern

Year 11: Units 1 and 2

Year 12: Units 3 and 4

In Units 1 and 2, students build on prior learning to develop their understanding of relationships between structure and function in a range of biological systems, from ecosystems to single cells and multicellular organisms.

Unit 1: Students analyse abiotic and biotic ecosystem components and their interactions, using classification systems for data collection, comparison and evaluation.

Unit 2: Students investigate the interdependent components of the cell system and the multiple interacting systems in multicellular organisms.

In Units 3 and 4, students examine the continuity of biological systems and how they change over time in response to external factors. They examine and connect system interactions at the molecular level to system change at the organism and population levels.



Unit 3: Students investigate mechanisms of heredity and how inheritance patterns can be explained, modelled and predicted; they connect these patterns to population dynamics and apply evolutionary thinking to examine changes in populations.

Unit 4: Students investigate system change and continuity in response to changing external conditions and pathogens; they investigate homeostasis and the transmission and impact of infectious disease at cellular and organism levels; and they consider the factors that encourage or reduce the spread of infectious disease at the population level.

Types of assessment items:

- Investigation reports
- Research posters and models
- Presentations, videos and podcasts
- Essays and journalistic pieces
- Exams

For more information, visit the BSSS website, speak to the SLC of **Science/PE**, or visit the LTC website:

http://www.ltc.act.edu.au/Learning/unit_outlines

