

# Bachelor of Science (Biotechnology)

2019

Undergraduate

Understand the molecular basis of life and living systems with practical experience in gene technologies, vaccine development, agriculture, microbiology, environmental sciences and more.

Modern biotechnology is based on the application of cutting-edge technologies to target today's most urgent challenges and scientific issues in the areas of human health, adaptation of animals and plants, a changing climate and environment, food shortage, and renewable energy production.

The Biotechnology program offers a unique combination of the skills and technologies needed to understand the molecular basis of these challenges and how to address them. Technologies include functional genomics, nano and gene technologies, synthetic biology, molecular biology, lab-on-a-chip technology, environmental biotechnology, microbiology and immunology.

This program will stimulate your critical thinking and problem-solving skills to help you to be competitive in the rapidly growing and dynamic areas of modern biotechnology.

Studies over three years include Functional genomics and proteomics, gene technologies (advanced molecular biology), biochemistry, bioinformatics, environmental biotechnology, cell structure and function, chemistry, genetics and molecular biology, microbiology, immunology and more.

During your final year, you will have the choice of two majors: Molecular Biology or Microbiology.

## Career outlook

Biotechnologists use gene manipulation of plants, animals and micro-organisms to create new biological products for pharmaceutical, agricultural, diagnostic and environmental use.

They also develop diagnostic tools to detect diseases rapidly and conduct human stem cell research with the aim of treating or preventing illnesses.

There are a wide range of graduate opportunities as a result of the broad training and flexibility of the program.

Graduates are employed in research, diagnosis and technique development in public institutions such as the CSIRO, AQIS, police forensics, research institutes, biosecurity, universities and hospitals and in private industry (areas such as fermentation, food, biotechnology, cell products and vaccines).

With experience, graduates have gone on to become state and national leaders and involved in exciting projects such as the sequencing of the human genome.

## Professional recognition

Depending on the major area of study chosen, graduates can apply for professional membership of:

- The Australian Society for Microbiology
- The Australian Society for Biochemistry and Molecular Biology

## Pathways

Graduates of the RMIT Associate Degree in Applied Sciences biosciences stream with a grade point average (GPA) of at least 2.0 out of 4.0 may be able to receive credit of up to 1.5 years (equivalent to 144 credit points).

Graduates of the following programs with a GPA of at least 2.0 out of 4.0 may be able to receive credit of up to one year (equivalent to 96 credit points):

- Diploma of Laboratory Technology (Biotechnology)
- Diploma of Laboratory Technology (Pathology Testing)

If you have completed the first year of the Bachelor of Science (Biotechnology) program or an equivalent program with a grade point average (GPA) of at least 3.5 out of 4.0, you will be eligible to apply for transfer into the second year of the Bachelor of Science (Dean's Scholar, Biotechnology) (Honours) program.

## Industry connections

You will have the opportunity to work on research projects and practical activities, often undertaken in collaboration with industry.

The final year Science Project course will also provide you with the opportunity to develop an independent research project, which can involve an industry partner. Industry experts also guest lecture during the final year of the program.

## Program snapshot

Program code: BP226

### Duration

Full-time: 3 years  
Part-time may be available

### Location

City and Bundoora campuses

### Selection mode

ATAR (2018: 75.50)

### How to apply

Semester 1: VTAC  
[vtac.edu.au](http://vtac.edu.au)

Semester 2: Direct to RMIT  
[rmit.edu.au/programs/apply/direct](http://rmit.edu.au/programs/apply/direct)

### Fees

For local fee information:  
[rmit.edu.au/programs/fees](http://rmit.edu.au/programs/fees)

### Contact

Info Corner  
330 Swanston Street  
(cnr La Trobe Street)  
Melbourne VIC 3000  
Tel. +61 3 9925 2260

[rmit.edu.au/programs/bp226](http://rmit.edu.au/programs/bp226)

## Program structure

The biotechnology program includes genetics, molecular biology, bioinformatics, genomics and proteomics.

As part of the program you will learn about:

- gene technologies – shifting genes from one thing to another
- functional genomics – relating how a plant or animal reacts to what is going on
- molecular agriculture – developing new crops
- bioinformatics – accessing the world's databases of genetic codes
- immunology – serological diagnostic tests

You will also learn about the legal and ethical issues involved in biotechnology.

During your final year of study, you will have the opportunity to major in either molecular biology or microbiology.

The final year Science Project also gives you the opportunity to work on a small research project under the supervision of an academic staff member. You may have the opportunity to collaborate with an external organisation on this project.

### Molecular Biology major courses:

- Gene Technologies
- Functional Genomics and Proteomics
- Molecular Agriculture
- Protein Technologies

### Microbiology major courses:

- Medical Microbiology 1
- Medical Microbiology 2
- Environmental Biotechnology
- Immunology

|               |                             |   |                                     |                              |
|---------------|-----------------------------|---|-------------------------------------|------------------------------|
| <b>Year 1</b> | Chemistry Principles        | Cell Structure and Function                           | Scientific Skills and Communication | Plant Structure and Function |
|               | Chemistry for Life Sciences | Introduction to Microbiology, Immunology and Genetics | Animal Structure and Function       | Mathematics and Statistics   |
| <b>Year 2</b> | Microbiology                | Cell and Tissue Culture                               | Genetics and Molecular Biology      | Food Microbiology            |
|               | Biological Chemistry        | Bioinformatics  | Statistics and Epidemiology         | University elective          |
| <b>Year 3</b> | Science Project             | Industrial Microbiology                               | The Professional Scientist          | University elective          |
|               | Major course                | Major course  | Major course                        | Major course                 |

Compulsory courses
  Major courses
  University electives

*Please note: This is an example of the program structure. Courses may change and may not be available each semester.*