

MASTER OF GENOME ANALYTICS

monash.edu/master-genome-analytics



**Genome
sequencing is
revolutionising
the future of
healthcare.**

Become an expert analyst and help lead the change, with a Master of Genome Analytics at Monash University.

Our new Master of Genome Analytics – the only course of its kind in Australia - will provide you with expert training in bioinformatics, genetics, and genomics, to help you future proof your career in the analysis of everything from microbiomes to cancer to infectious diseases and more.

The program's multidisciplinary structure and focus on industry and clinical application will provide you with hands on experience to prepare you for your career. You will be part of a unique graduate cohort able to meet the growing demand for expertise in the analysis of genome sequence data.

As a graduate of this degree, you will become a holistically-trained expert, workplace-ready, and equipped with the knowledge and skills to help revolutionise the future of healthcare.

COURSE INTRODUCTION

Through the identification of predispositions to disease, the origin of infertility and birth defects, and other genetic disorders, genome analysis is saving lives - but it could be saving many more.

With continued improvements in DNA sequencing technology, genome-based diagnosis and health management, the healthcare system stands at the gateway to a future where diseases are diagnosed early and precise treatments provided. However, in the absence of enough specialist genome analysts, we cannot translate and expand the discoveries from genome sequencing to the healthcare system, and ultimately improve health.

We need diligent, detail-oriented health and science graduates who are driven by the opportunity to better understand the genetic contributions to disease, to consider a new focus in their careers and study our highly specialised Master of Genome Analytics.

We will train you in specific technical and professional skills so that you are equipped to help the world take the next crucial steps in diagnostics and genomic medicine. Our course's multidisciplinary structure and focus on application in industry and clinical environments, will prepare you to turn theory into real-world outcomes and set you up for an outstanding professional career.



AT A GLANCE:

CAMPUS

Clayton campus

DURATION

2 years full time
4 years part time

COURSE INTAKES

July
February (for students with a related undergraduate degree)

CAREER OUTCOMES

There are many possible career choices in the rapidly changing field of genome analytics.

Some options include careers in:

- **Diagnostic laboratories**
- **Medical and pharmaceutical research**
- **Private and public biotechnology companies**
- **Hospitals**
- **Universities**
- **CSIRO**

COURSE STRUCTURE

The course is structured in four parts.

- **Part A. Genomics foundation studies**
- **Part B. Core studies in genomics**
- **Part C. Specialist studies**
- **Part D. Advanced practice**

Each part is 24 points.

All students complete Parts B and C. Depending upon prior qualifications, you may receive credit for specific units in Part A and/or Part D for relevant qualifications at undergraduate or graduate levels, respectively.

Note: If you are eligible for credit for prior studies, you may elect not to receive the credit.

Part A. Genomics Foundation Studies

In these studies you will develop an understanding of cell biology, genome structure and function, the genetic basis of disease, and the use of genetics in medicine in preparation for Part B.

Part B. Core Studies in Genomics

These studies will develop your understanding of sequence function within the genome, the technology of genome sequencing and the assessment of sequence quality, the analysis of genomic data, and introduce and develop expertise in the bioinformatics approaches used in genome analysis.

Part C. Specialist Studies

In this specialisation you will develop competency in the use of bioinformatics software used for variant interpretation in diagnostic genomics. You will gain training in variant classification, examine the ethical issues relevant to genomic information, and an understanding of the accreditation requirements for a career in the field. You will examine diagnostic datasets, developing the expertise necessary for a career in genome curation.

Part D. Advanced practice

In this part you will undertake either a research thesis or professional development and application that will permit advanced practice of knowledge. The first option is a research thesis based in the field of genomics. Students wishing to use this master's course as a pathway to a higher degree by research should take this option. The second option consists of coursework focused on the application of genomic approaches to the study of cancer, disease surveillance, and the microbiome together with advanced case studies or an internship in a commercial or hospital based laboratory applying genomics approaches.

COURSE MAP

YEAR 1 July-Nov	Genomics Foundation Studies (Part A, 24 credit points) The Dynamic Cell (6) Human Genetics (6) Medical and Forensic Genetics (6) Advanced Genetics and Biotechnology (6)				
YEAR 1 Feb-June	Core Studies in Genomics (Part B, 24 points) Genomics and its Applications (6) Sequencing Technologies (6)		Specialist Studies (Part C, 24 credit points) Genome Curation (12)		
YEAR 2 July-Nov	Applied Bioinformatics (6) Genome Function (6)		Case Studies in Genomics (12)		
YEAR 2 Feb-June	Advanced Specialist Studies (Part D, 24 credit points)				
	Research Pathway Students undertake a 24-point scholarly Genomic Research Thesis	OR	Coursework and Advanced Case Studies Pathway Disease Surveillance and the Microbiome (6) Cancer Genomics (6) Advanced Case Studies (12)	OR	Coursework and Internship Pathway Disease Surveillance and the Microbiome (6) Cancer Genomics (6) Internship (12)

GET IN TOUCH

Sci.genomeanalytics@monash.edu

WHO YOU'LL BE WORKING WITH:

- Associate Professor Robert Bryson Richardson (Course Director)
- Dr Hendrika Duivenvoorden (Course Coordinator)
- Associate Professor Francine Marques
- Associate Professor Sefi Rosenbluh
- Professor Ian Smyth
- Professor Catherine Mills
- Dr Jeremy Barr
- Dr Mike McDonald
- Dr Kay Hodgins
- Dr Matt McGee
- Dr Jiangning Song



ENTRY REQUIREMENTS

MINIMUM ENTRY REQUIREMENTS

ENTRY LEVEL 1:

96 points to complete

Duration: 2 years full-time, 4 years part-time

Commences: July

An Australian Bachelor degree (or equivalent) with at least first year Biology, or related discipline studies and at least 60% (credit) average overall, or qualification and experience that the faculty leading the specialisation considers to be equivalent.

ENTRY LEVEL 2:

72 points to complete

Duration: 1.5 years full-time, 3 years part-time

Commences: February

An Australian undergraduate degree (or equivalent) in a cognate discipline including genetics, bioinformatics, biomedical sciences, or molecular biology with at least 60% (credit) average, or qualification/ experience or satisfactory substitute that the faculty considers to be equivalent.

ADDITIONAL SELECTION CRITERIA

ENGLISH LANGUAGE:

Monash minimum: Level A, that is: IELTS: 6.5 overall (no band lower than 6.0);

or TOEFL Paper-based test: 550 with a TWE of 4.5;

or TOEFL Internet-based test: score of 79 overall with minimum scores: Writing: 21, Listening: 12, Reading: 13 and Speaking: 18;

or Equivalent approved English test.

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