MONASH University

BACHELOR OF APPLIED DATA SCIENCE

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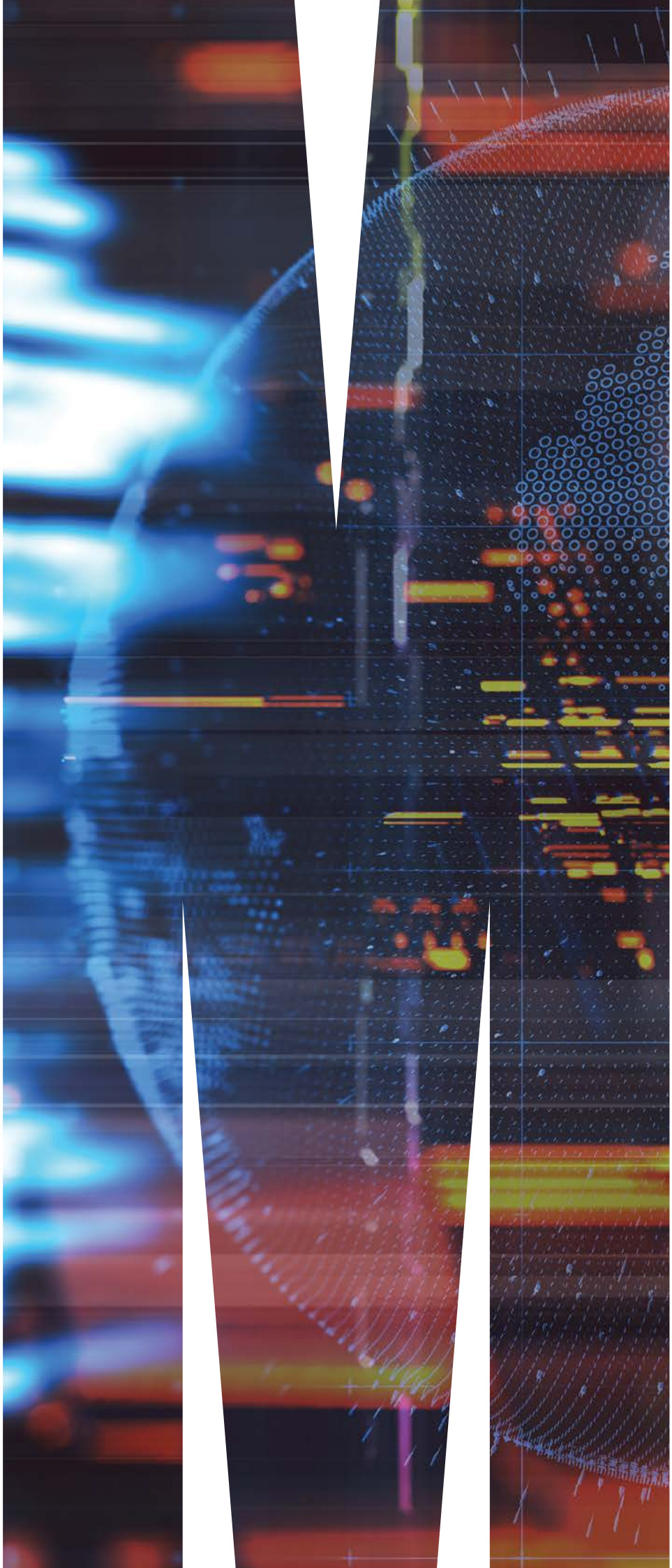
ADVANCED (HONOURS)

study.monash



GROUP OF EIGHT AUSTRALIA

We are excited to bring the Bachelor of Applied Data Science, and the Bachelor of Applied Data Science (Honours) to Monash University.

Research and analysis with big datasets are making a positive impact on our daily lives across a very wide range of disciplines.

Our Applied Data Science programs deal with the challenges that large bodies of data present to research, industries, and society.

These courses represent a key component of broader cross-faculty data science initiatives at Monash.

Data Science is one of the hottest topics in technology and is a highly in-demand field, but there is a shortage of skilled, qualified data scientists worldwide.

Our world-class staff and teaching environment will provide you with a globally recognised education and the skills to make a difference in the world of Data Science.

Professor Jordan Nash
Dean of Science

Data science helps organisations drive insights from the massive amounts of data collected in every industry, from media and entertainment to professional services and finance.

The importance of data science is growing as a field that enables further innovation. For this reason, graduates are in-demand by industry and government.

Our courses take an interdisciplinary approach to data science to ensure you have both the technical and domain-specific skills to succeed in your career.

We encourage you to join Monash and learn rom the strongest group of data scientists of any university in the Asia-Pacific region. Prepare yourself for a future at the forefront of this emerging field.

Professor Ann Nicholson
Dean, Faculty of Information Technology

CAREERS

"In this data-dominated era, everything and everyone produces a digital paper trail. If businesses want to gain an edge, they need to be able to tap into those large, elusive data sets to make better decisions about how products are built, markets are found, clients and employees are supported, and sales are generated. Hence the need for data scientists."

– Forbes

Upon successful completion of the degree, possible careers for graduates could include:

- Data architect
- Data mining engineer
- Data scientist
- Business intelligence analyst
- Quantitative analyst

In a range of industries, including:

- Banking, finance and insurance
- Biotechnology and pharmaceuticals
- Cybersecurity
- Digital humanities
- Energy, natural resources, and utilities
- Engineering and robotics
- Marketing
- Robotics
- Sport
- Urban planning and transport

PREREQUISITES

BACHELOR OF APPLIED DATA SCIENCE

VCE

English: Units 3 and 4: a study score of at least 30 in English (EAL) or 25 in English other than EAL.

Maths: Units 3 and 4: a study score of at least 25 in Mathematical Methods (any) or Specialist Mathematics.

IB

English: At least 4 in English SL or 3 in English HL or 5 in English B SL or 4 in English B HL.

Maths: At least 4 in Mathematics SL or 3 in Mathematics HL or 3 in Further Mathematics HL.

Our VTAC Subject Adjustment Bonus

This rewards students studying more than one of the following Year 12 science subjects; Algorithms (HESS), Biology, Chemistry, Environmental Science or Physics – this could improve your ranking and eligibility by providing additional points towards your ATAR aggregate.

If you're interested in mastering big data and helping others to understand it, this is the course for you. This program of study will provide you with the skills necessary to solve a wide range of problems.

This is a specialist course which will develop your technical know-how in being able to approach data challenges.

Through selected streams, you'll develop your passion for the physical sciences, sociological or anthropological studies, business or engineering. Working in groups and on individual projects, you'll bring together key skills in IT and mathematics, and apply these to real-life projects.

Course structure

BACHELOR OF APPLIED DATA SCIENCE

YEAR 1 Semester 1	**ADS1001** Data challenges 1	**MAT1830** Discrete mathematics for computer science	**MTH1020** Analysis of change or MTH1030 Techniques for modelling or MTH1035 Techniques for modelling (advanced)	Applied studies*
Semester 2	**ADS1002** Data challenges 2	**FIT1045** Algorithms and programming fundamentals in python	**MTH1030** Techniques for modelling or MTH1035 Techniques for modelling (advanced) or MTH2010 Multivariable calculus or MTH2015 - Multivariable calculus (advanced)	Applied studies*
YEAR 2 Semester 1	**ADS2001** Data challenges 3	**FIT1008** Introduction to computer science or **MTH2222** Mathematics of uncertainty	**MTH2019** Multivariate mathematics for data science or MTH2021 Linear algebra with applications or MTH2025 Linear algebra (advanced)	Applied studies*
Semester 2	**ADS2002** Data challenges 4	**FIT2086** Modelling for data analysis	**MTH2051** Introduction to computational mathematics or FIT1008 Introduction to computer science	Applied studies*
YEAR 3 Semester 1	Free elective	Free elective	**MTH3241** Random processes in the sciences and engineering OR MTH3320 Computational linear algebra	**MTH3330** Optimisation and operations research
Semester 2	**ADS3001** Advanced data challenges (12 points)		**FIT3154** Advanced data analysis	**FIT3181** Applied deep learning

A	Data challenges
B	Techniques for data science
C	Applied studies (Anatomy and developmental biology, Applied and statistical mathematics, Astronomy, Biochemical science, Biological science and genetics, Business analytics, Business information systems, Chemical sciences, Computer systems engineering, Crime and society, Cybersecurity, Digital media, Discrete mathematics, Drugs and society: an introduction to pharmacology, Earth and atmospheric sciences, Economics, Geography and the environment, Interactive media, Introduction to the microbial world, Introduction to molecular and cell biology, Introduction to physiology, Language and society, Marketing science, Mobile apps development, Physics, Social research and Software development.)*
D	Free elective

PREREQUISITES

BACHELOR OF APPLIED DATA SCIENCE ADVANCED (HONOURS)

VCE

English: Units 3 and 4:
a study score of at least
30 in English (EAL) or
25 in English other than EAL.

Maths: Units 3 and 4:
a study score of at least 30 in
Mathematical Methods (any)
or Specialist Mathematics

IB

English: At least 4 in English SL or
3 in English HL or 5 in English B SL
or 4 in English B HL.

Maths: At least 5 in Mathematics
SL or 4 in Mathematics HL or
4 in Further Mathematics HL.

This is an advanced degree program for those passionate about Data Science.

This four-year specialist course brings together studies in IT and mathematics in a series of interdisciplinary problem-solving challenges.

Research and analysis into big data have the capacity to make a positive impact on our daily lives. This degree will give you the skills necessary to provide solutions to a wide range of problems.

Through selected streams, you'll develop your passion for the physical sciences, sociological or anthropological studies, business or engineering. Working in groups and on individual projects, you'll bring together key skills in IT and mathematics, and apply these to real-life projects.

Course structure

BACHELOR OF APPLIED DATA SCIENCE ADVANCED (HONOURS)

YEAR 1 Semester 1	**ADS1001** Data challenges 1	**MAT1830** Discrete mathematics for computer science	**MTH1020** Analysis of change or MTH1030 Techniques for modelling or MTH1035 Techniques for modelling (advanced)	Applied studies*
Semester 2	**ADS1002** Data challenges 2	**FIT1045** Algorithms and programming fundamentals in python	**MTH1030** Techniques for modelling or MTH1035 Techniques for modelling (advanced) or MTH2010 Multivariable calculus or MTH2015 - Multivariable calculus (advanced)	Applied studies*
YEAR 2 Semester 1	**ADS2001** Data challenges 3	**FIT1008** Introduction to computer science or **MTH2222** Mathematics of uncertainty	**MTH2019** Multivariate mathematics for data science or MTH2021 Linear algebra with applications or MTH2025 Linear algebra (advanced)	Applied studies*
Semester 2	**ADS2002** Data challenges 4	**FIT2086** Modelling for data analysis	**MTH2051** Introduction to computational mathematics or FIT1008 Introduction to computer science	Applied studies*
YEAR 3 Semester 1	Free elective	Free elective	**MTH3241** Random processes in the sciences and engineering OR MTH3320 Computational linear algebra	**MTH3330** Optimisation and operations research
Semester 2	**ADS3001** Advanced data challenges (12 points)		**FIT3154** Advanced data analysis	**FIT3181** Applied deep learning
YEAR 4 Semester 1	**ADS4001** Research methods	**ADS4010** Frontiers of data science	Free elective	Free elective
YEAR 4 Semester 1	**ADS4100** Industry research project (24 points)			

A	Data challenges
B	Techniques for data science
C	Applied studies (Anatomy and developmental biology, Applied and statistical mathematics, Astronomy, Biochemical science, Biological science and genetics, Business analytics, Business information systems, Chemical sciences, Computer systems engineering, Crime and society, Cybersecurity, Digital humanities, Discrete mathematics, Drugs and society: an introduction to pharmacology, Earth and atmospheric sciences, Geography and the environment, Interactive media, Introduction to the microbial world, Introduction to molecular and cell biology, Introduction to physiology, Language and society, Marketing science, Mobile apps development, Physics, Social research and Software development.)*
D	Advanced practice
E	Free elective

MONASH University

FURTHER INFORMATION

MONASH UNIVERSITY
monash.edu

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monash.edu/study/international

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YOUR ESSENTIAL GUIDE TO MONASH SCIENCE

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