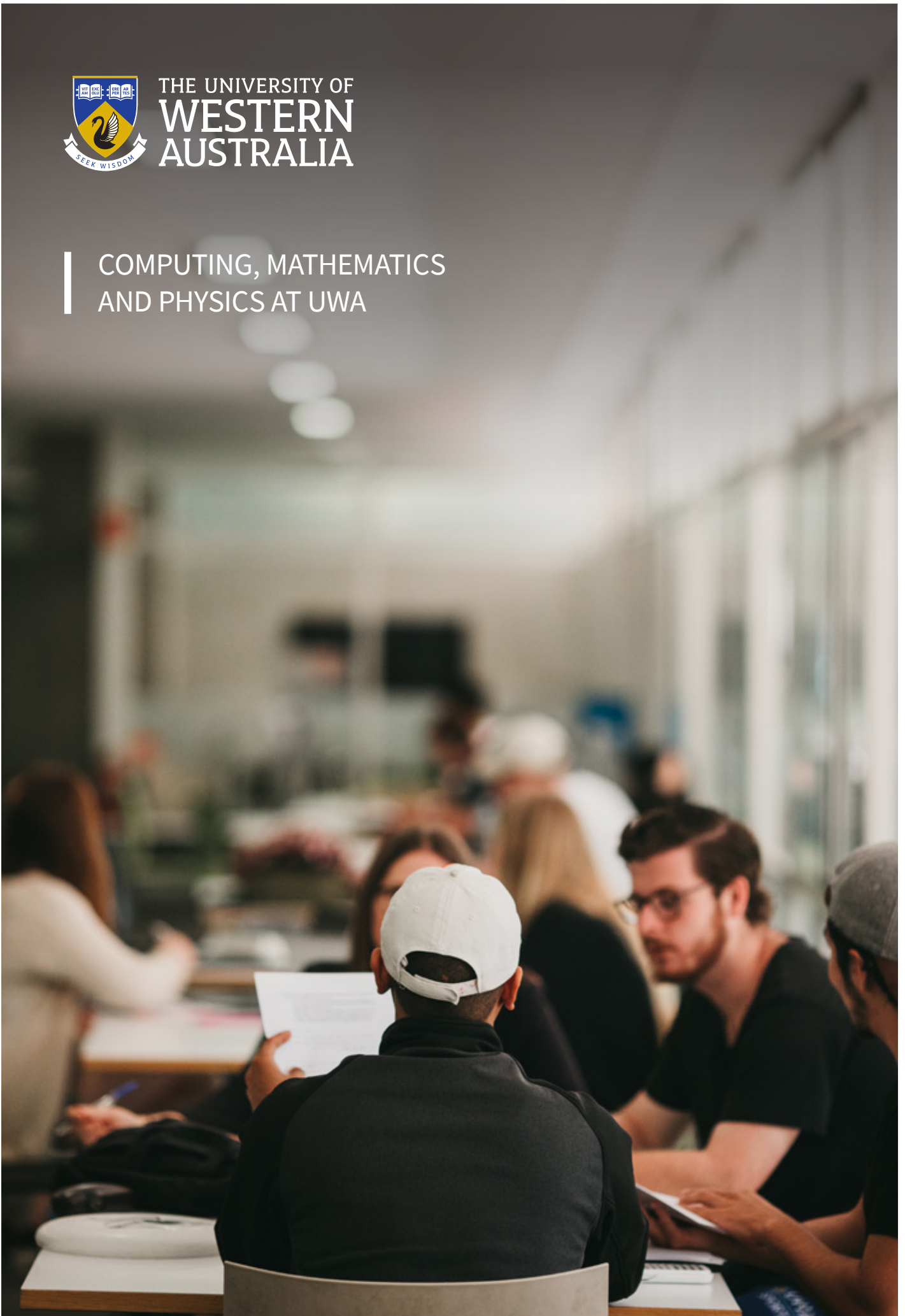




THE UNIVERSITY OF
**WESTERN
AUSTRALIA**

| COMPUTING, MATHEMATICS
AND PHYSICS AT UWA



Welcome to our community

The School of Physics, Mathematics and Computing gives you a broad education to develop skills to tackle the fast-paced changes in today's world.

Our courses equip you with practical and theoretical expertise to develop effective and efficient analysis, visualisation, interpretation and technological skills.

The mathematical sciences majors we offer provide the knowledge you need for complicated problem-solving while preparing you to take the leap into an interesting and rewarding career.

Global reputation

UWA is ranked among the top 1% of universities in the world and is part of the elite Group of Eight research intensive Australian universities. Our Faculty has a rich heritage of over 100 years of achievement and as a student you will benefit from close interaction with our leading researchers and their links to industry.

Flexible learning

UWA's flexible course structure means that you can combine our mathematical sciences majors with another major within your undergraduate bachelor's degree.

Given that graduates with mathematics and technology skills are in high demand across a range of sectors, I encourage you to explore our mathematical sciences majors to discover how they can enhance your undergraduate studies and broaden your career opportunities.

Welcome to our Faculty.

Professor John Dell
Executive Dean, Faculty of Engineering
and Mathematical Sciences

ACKNOWLEDGEMENT

The University of Western Australia acknowledges that it is situated on Noongar land and that Noongar people remain the spiritual and cultural custodians of their land and continue to practise their values, languages, beliefs and knowledge.

CONTENTS

Why choose UWA?	3	Data Science	7
Facilities	4	Mathematics and Statistics	8
Bachelor of Science / Bachelor of Philosophy	5	Physics	9
Computer Science	6	Postgrad	10
		International	11

Study at an
internationally
recognised
university



UWA's Department of Physics was
awarded 5 out of 5 in
Excellence of Research



UWA Mathematics
graduate awarded
2018 Fields Medal

Facilities

UWA brings together heritage architecture and state-of-the-art teaching and research facilities to provide you with an ideal learning environment.

Clough Engineering Student Centre

Open 24/7, this hub for students mixes areas for group learning with spaces for quiet study. Featuring a large self-study communal area and a meeting room, as well as a kitchen and flatscreen TVs.

Makers Lab

The UWA Makers group runs this space where students can design and create their own projects using digital fabrication equipment such as 3D printers, laser cutters, CNC mills and more.

Computer labs

UWA has 11 computer labs for students open 24/7, including high-performance machines for numerical modelling.

The Monadelphous Integrated Learning Centre

A collaboration between UWA and engineering group Monadelphous, this centre acts as a learning environment based on a simulated professional workplace. It features design studios, prototype and testing workshops, breakout offices, a boardroom, Wi-Fi and data-projection facilities, and a tearoom.

Robotics and Automation Lab

The lab homes all types of autonomous mobile robots, including intelligent driving and walking robots, autonomous underwater vehicles, and unmanned aerial vehicles.

UWA Physics Common Room

A study and social hub for Physics students. Located on level two of the Physics Building, Room 219 houses the newly renovated UWA Physics Common Room. The room is a central space for study and relaxation.



Opening soon: EZONE UWA Student Hub

The EZONE UWA Student Hub is a new space that will transform the way we educate students and engage with industry and the community. Bringing together engineering and mathematical science disciplines, this investment into Western Australia's knowledge economy will provide an unparalleled student experience and deliver outstanding graduates across our disciplines.

ezone.uwa.edu.au

Bachelor of Science

study.uwa.edu.au/science

The Bachelor of Science focuses on understanding and improving the natural world through systematic observation, experimentation, modelling and calculation. The Bachelor of Science gives you the opportunity to harness the skills and knowledge necessary to make a real contribution to the global challenges facing humanity.

ATAR
80

DURATION
3
YEARS
FULL TIME

INTAKE
FEBRUARY
AND JULY

CRICOS Code: 068914G

Bachelor of Philosophy (Honours)

ATAR
98

DURATION
4
YEARS
FULL TIME

INTAKE
FEBRUARY
AND JULY

study.uwa.edu.au/bphil

The Bachelor of Philosophy (Honours) is an inspiring, holistic four-year degree comprising a three-year bachelor's degree (chosen from UWA's Arts, Biomedical Science, Commerce or Science) and a fourth year of honours. The innovative curriculum provides an individually designed academic program focused on your chosen area of specialisation, coupled with unparalleled access to UWA's leading researchers and research facilities, international exchange programs, professional skills-development

workshops and a network of talented peers and alumni. Bachelor of Philosophy (Hons) students can study any undergraduate major on offer at the University, as long as they have met any prerequisite requirements for the major.

The research-intensive focus ensures you have the skills to identify and solve complex problems, independently manage and lead projects, and communicate incisively across a range of platforms. During the course you will study abroad at one of UWA's

international partner institutions, expanding your connections among the international community. The cross-cultural learning this experience fosters is invaluable in today's globalised workplace where intercultural knowledge is highly regarded.

CRICOS Code: 068916E

Computer Science

From search engines to smartphones, computer science involves the theory and design behind the intelligent systems and computers that transform the way we live, work and communicate.

Learn the theoretical, algorithmic, implementation and systems principles that underpin computer languages and networks. You'll also discover how to develop new technologies and advanced programming.

Computing software and systems are becoming more prevalent, revolutionising the way we live, work and communicate.

If you'd like to develop new computing technologies or specialise in enterprise level programming, systems, software engineering or research careers, consider Computer Science.

This major can also set you apart and complement your engineering studies, as knowledge of developing computer programs is particularly attractive to employers.

Subject prerequisites

- Mathematics Methods ATAR
- OR Mathematics Applications ATAR with additional Mathematics units taken in the first year

Accreditation

The Computer Science major is professionally accredited by the Australian Computer Society (ACS)

Popular study combinations

- Computer Science and Engineering Science
- Computer Science and Data Science
- Computer Science and Finance
- Computer Science and Mathematics and Statistics
- Computer Science and Physics

Course structure

Level 1 Core units

- Software Engineering with Java
- Relational Database Management Systems

Level 2 Core units

- Systems Programming
- Data Structures and Algorithms

Level 3 Core units

- Algorithms, Agents and Artificial Intelligence
- Computer Networks
- Graphics and Animation
- Professional Computing
- Complementary units

Students nominating Computer Science as their degree-specific major in the Bachelor of Science or Bachelor of Philosophy (Honours) course must also study:

- Discrete Structures
- Cybersecurity
- Mathematics Foundations: Methods (for students who do not have Mathematics: Methods ATAR or higher)

Career opportunities

Destinations for graduates include large software development houses such as Google, Microsoft, Motorola and Thales, as well as smaller computing, mining and resources, and consulting companies. You may also undertake further studies in software engineering, data science, electrical engineering and electronic engineering, as well as honours and research degrees.

Further study options

You may apply for entry to honours in Computer Science, the Master of Data Science and the Master of Information Technology. Research opportunities in Computer Science are also available.

uwa.edu.au/study/computer-science



Data Science

As one of the most rapidly growing fields in information technology, data science unearths value and meaning from data to help businesses and organisations across the globe.

This major focuses on data and scientific computation. Through a combination of practical and theoretical units, you'll develop an understanding of how to use technology for efficient and effective data collection, conversion, analysis, visualisation and interpretation.

You'll learn how to integrate new technologies to create science, engineering and business systems, and how to design useful and usable software.

Subject prerequisites

- Mathematics Applications ATAR

Popular study combinations

- Data Science and Computer Science
- Data Science and Engineering Science
- Data Science and Finance
- Data Science and Mathematics and Statistics
- Data Science and Accounting

Course structure

Level 1 Core units

- Computational Thinking with Python
- Relational Database Management Systems

Level 2 Core units

- Computer Analysis and Visualisation
- Systems Programming

Level 3 Core units

- Agile Web Development
- Data Warehousing
- High Performance Computing
- Professional Computing

Complementary units

Students nominating Data Science as their degree-specific major in the Bachelor of Science or Bachelor of Philosophy (Honours) course must also study:

- Analysis of Experiments
- Cybersecurity
- Statistics for Science
- Mathematics Fundamentals (for students who do not have Mathematics Methods ATAR or higher)

Career opportunities

As organisations around the world implement data-analytics programs, the demand for data scientists will only increase.

Opportunities exist in areas such as energy and resources engineering, bioinformatics and biochemistry, computational physics and astronomy, transportation, health, finance, marketing, geophysics, geographic information systems and biomechanics.

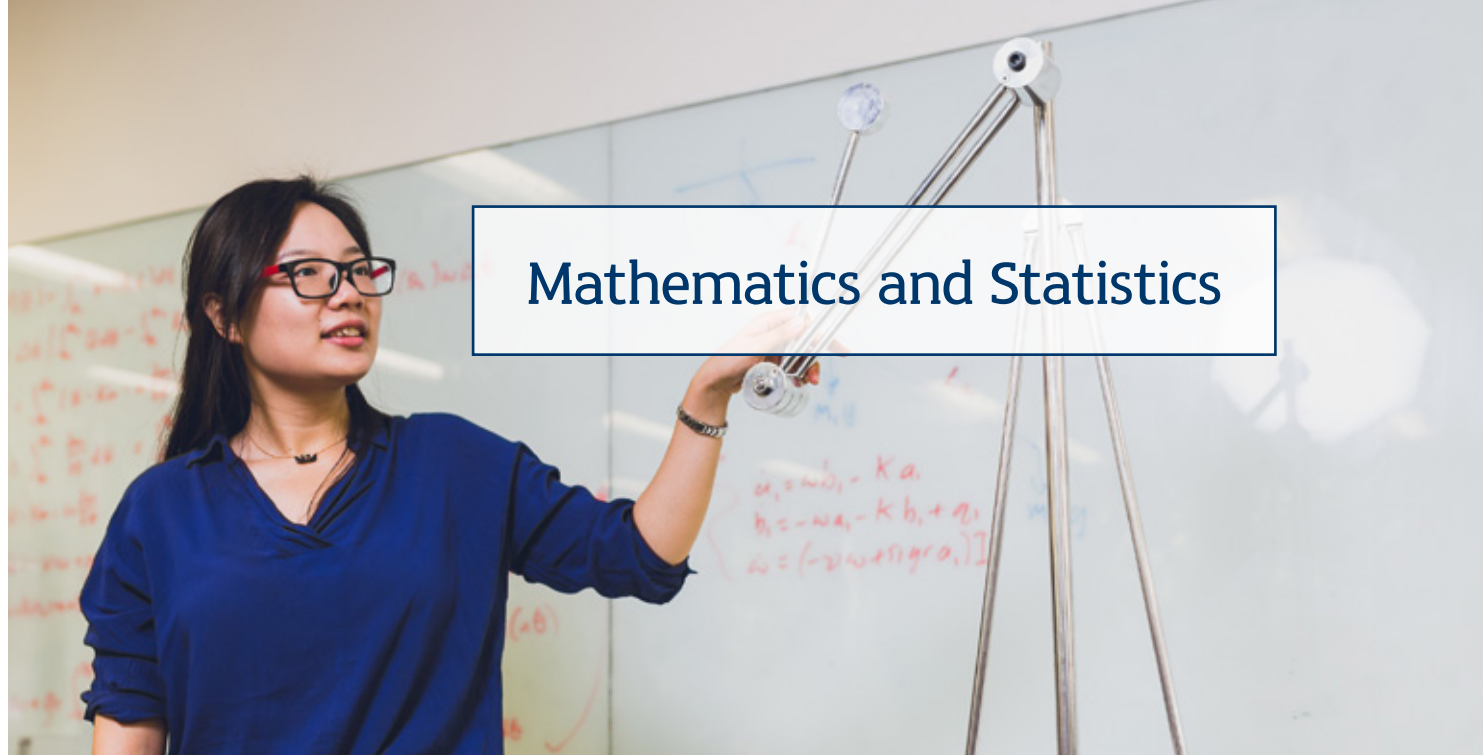
Accreditation

The Data Science major is professionally accredited by the Australian Computer Society (ACS).

Further study options

You may apply for entry to honours and the Master of Data Science after completing the requirements of this major.

uwa.edu.au/study/data-science



Mathematics and Statistics

Mathematics is humanity's most powerful tool for comprehending the universe and is essential for many fields of modern endeavours such as science, technology, engineering and finance.

Mathematics and Statistics is a broadbased major that equips you with the mathematical tools and techniques of at least two of the three disciplines of pure mathematics, applied mathematics and mathematical statistics.

Subject prerequisites

- Mathematics Specialist ATAR and Mathematics Methods ATAR
- OR Mathematics Methods ATAR and an additional mathematics unit taken in the first year

Popular study combinations

- Mathematics and Statistics and Engineering Science
- Mathematics and Statistics and Physics
- Mathematics and Statistics and Computer Science
- Mathematics and Statistics and Finance
- Mathematics and Statistics and Chemistry

Course structure

Level 1 Core units

- Multivariable Calculus
- Mathematical Theory and Methods

Level 2 Core units

Choose TWO of the following:

- Fundamentals of Probability with Applications
- Introduction to Applied Mathematics
- Introduction to Pure Mathematics

Level 3 Core units

Choose FOUR of the following:

- Network Science

Applied Mathematics

- Complex Systems
- Nonlinear Dynamics and Chaos
- Scientific and Industrial Modelling

Pure Mathematics

- Algebraic Structures and Symmetry
- Geometry
- Topology and Analysis

Statistics

- Random Processes and their Applications
- Spatial Statistics and Modelling
- Statistical Science

Complementary units

Students nominating Mathematics and Statistics as their degree-specific major in the Bachelor of Science or Bachelor of Philosophy (Honours) course must also study:

- Communicating Science

Career opportunities

Demand for Mathematics graduates is growing and outstripping supply. With this major, employment opportunities can be found in a wide range of areas including finance (banks, insurance companies and investment analysis), government organisations (CSIRO, Australian Bureau of Statistics, Defence Science Technology Organisation, Bureau of Meteorology), public service (state and federal), teaching (primary, secondary and tertiary levels) and other industries such as computing, engineering, research and statistical consulting firms.

Further study

You can apply for entry to honours or a postgraduate course in Data Science or Information Technology. Research opportunities in Mathematics and Statistics are also available.

uwa.edu.au/study/mathematics



Physics

Physics examines the world around us at the most fundamental level, from the origin and fate of the universe to the behaviour of matter on subatomic-length scales, and everything in between.

The knowledge acquired through the study of physics is the driving force behind most new technologies, from radars to lasers, transistors to quantum computers, and electron microscopes to advanced medical imaging scanners.

This major gives you access to the frontiers of modern physics via a focus on mathematical skills. These skills are required to access modern physics, including the key pillars of relativity and quantum physics with applications to atomic, nuclear and particle physics, condensed matter physics, photonics and astrophysics.

Subject prerequisites

- Mathematics Specialist ATAR, Mathematics Methods ATAR and Physics ATAR
- OR Mathematics Methods ATAR plus an additional mathematics unit taken in the first year, and Physics ATAR or an additional physics bridging unit taken in the first year

Popular study combinations

- Physics and Engineering Science
- Physics and Mathematics and Statistics
- Physics and Computer Science
- Physics and Chemistry
- Physics and Finance

Course structure

Level 1 Core units

- Physics for Scientists and Engineers
- Modern Physics

Level 2 Core units

- Quantum Physics and Electromagnetism
- The Physics of Particles

Level 3 Core units

- Quantum Mechanics and Atomic Physics
- Electrodynamics and Relativity

Plus two of the following:

- Mathematical Physics
- Frontiers in Modern Physics
- Advanced Quantum Mechanics
- Astrophysics and Space Science

Complementary units

Students nominating Physics as their degree-specific major in the Bachelor of Science or Bachelor of Philosophy (Honours) course, or as their second major in other degree courses, must also study:

- Multivariable Calculus
- Mathematical Theory and Methods
- Advanced Mathematical Methods

Accreditation

The Physics major is accredited by the Australian Institute of Physics.

Career opportunities

The Physics major opens doors to many career choices. As a Physics graduate your strong problem-solving and critical-thinking abilities will be in demand from employers in industry, government, and the business and finance sectors.

Your discipline-specific skills are particularly valued in teaching, research and high-tech industries. Graduates with a strong mathematics and physics background have opportunities in the resources sector modelling big data sets. Further studies will lead to careers in research or academia.

Further study options

Students with a Physics major can pursue further studies in honours or at postgraduate level.

Further study options include the Master of Physics – specialising in one of the following professional streams: Astronomy and Astrophysics, Computational Physics, Experimental Physics, Medical Physics or Theoretical Physics.

uwa.edu.au/study/physics

Postgraduate Study Options

Master of Data Science

DURATION
1.5-2
YEARS

INTAKE
FEBRUARY
JULY

COURSEWORK OR
COURSEWORK
AND
DISSERTATION

UWA course code: 62530
CRICOS code: 093310E

study.uwa.edu.au/mds

The Master of Data Science provides students with the knowledge and skills to understand and apply appropriate analytical methodologies to transform the way an organisation achieves its objectives;

to deal effectively with large data management tasks, to master the statistical and machine learning foundations on which data analytics is built; and to evaluate and communicate the effectiveness of new technologies.

Requirements

- (a) a bachelor's degree completed with the equivalent of a UWA weighted average mark of at least 65 per cent; and

- (b) prior studies in mathematics equivalent to at least Mathematics Applications ATAR.

The course duration may be reduced to 1.5 years for students who have completed prior studies in a related area. Recognition of prior learning and/or application for credit (advanced standing) will be assessed by the University on a case-by-case basis at the time of application.

Master of Physics

DURATION
1.5-2
YEARS

INTAKE
FEBRUARY
JULY

COURSEWORK OR
COURSEWORK
AND
DISSERTATION

UWA course code: 53560
CRICOS code: 087902

study.uwa.edu.au/m/physics

The Master of Physics consists of an equal combination of advanced coursework and a research project and dissertation.

The research project is undertaken as part of an internationally recognised research group. You develop a combination of high-level research, analytical and problem-solving skills that are highly valued by industry and government employers.

Specialisations

Choose from the following specialisations:

- Astronomy and Astrophysics
- Computational Physics
- Experimental Physics
- Medical Physics
- Theoretical Physics

Professional accreditation

The Master of Physics – Medical Physics is accredited by The Australasian College of Physical Scientists and Engineers in Medicine (ACPSEM).

Requirements

- (a) (i) a relevant bachelor's degree, or an equivalent qualification, as recognised by UWA; and
(ii) the equivalent of a UWA weighted average mark of at least 65 per cent; or
(b) a relevant honours degree, or an equivalent qualification, as recognised by UWA.

Note: Minimum course duration: 1.5 years full-time comprising 72 credit points of taught units and 24 points of admission credit.¹ Maximum course duration: Two years full-time comprising 96 points of taught units.²

1. Students with a bachelor's degree or major in an area of study related to their specialisations may be granted up to 24 points credit in recognition of prior learning.

2. Students requiring more than 72 credit points will receive course advice specifying additional units.

Master of Information Technology

DURATION
1.5-2
YEARS

INTAKE
FEBRUARY
JULY

MODE OF STUDY:
COURSEWORK

UWA course code: 62510
CRICOS code: 083866G

study.uwa.edu.au/m/info-technology

The course is designed for students and professionals who have a tertiary degree and who seek to develop specialist skills in computing and software engineering. It is ideal for students and professionals who wish to change direction or expand their skill set to pursue a career in IT.

Graduates of this course have the knowledge and skills to anticipate the changing direction of IT and evaluate and communicate the effectiveness of new technologies in order to help an organisation achieve its goals and objectives.

The course has a strong emphasis on the application of contemporary and emerging technologies, including cloud and high-performance computing, agile web development and software project design and management.

Requirements

- (a) a bachelor's degree completed with the equivalent of a UWA weighted average mark of at least 65 per cent; and
- (b) prior studies in mathematics equivalent to at least Mathematics Applications ATAR

The course duration may be reduced to 1.5 years for students who have completed prior studies in a related area. Recognition of prior learning and/or application for credit (advanced standing) will be assessed by the University on a case-by-case basis at the time of application.

International Students

Set yourself apart with a UWA degree. Our courses are designed to equip you with the skills and knowledge to succeed locally, nationally and internationally.

You are an international student if you are:

- a temporary resident (visa status) of Australia,
- a permanent resident (visa status) of New Zealand, or
- a resident or citizen of any other country

Important Information

Fee Calculator: fees.uwa.edu.au/Calculator

Courses: study.uwa.edu.au/international

Email: international@uwa.edu.au

Phone: (08) 6488 1000

English language requirement:

IELTS (Academic) overall score minimum of 6.5, no band less than 6.0 (must include Academic Reading and Writing modules). For the most up-to-date information visit study.uwa.edu.au/elc



THE UNIVERSITY OF
**WESTERN
AUSTRALIA**



Phone

Speak to a Future Students
Adviser 8.30am–5pm (WST)
Monday to Friday
131 UWA (131 892)



Email

Email your
enquiries to
future-students@uwa.edu.au



askUWA

Find answers to our
FAQs anytime
ask.uwa.edu.au



Web chat

Chat with a Future Students
Adviser 2.30–4.30pm (WST)
Monday to Friday



[universitywa](https://www.facebook.com/universitywa)



[uwanews](https://twitter.com/uwanews)



[universitywa](https://www.instagram.com/universitywa)



[universitywa](https://www.youtube.com/universitywa)



[uwastudents](https://www.snapchat.com/universitywa)