

PHYSICS

UNDERGRADUATE HANDBOOK

2017



THE UNIVERSITY OF
AUCKLAND
Te Whare Wānanga o Tāmaki Makaurau
NEW ZEALAND

SCIENCE

Welcome to the Department of Physics

A physics degree opens the door to a range of opportunities, and our vibrant research programme illustrates a variety of topics tackled by physicists – and physics students.



Students in many fields need a sound understanding of the physical world. We offer a comprehensive range of courses in physics, and potential specialisations in geophysics, medical physics and imaging technologies and photonics.

A physics degree provides students with the skills they need to succeed, and our graduates are found in a host of interesting jobs in New Zealand and around the world.

We are the largest and best-ranked university physics programme in New Zealand*. Our students work in a supportive and stimulating environment and learn from some of New Zealand's leading scientists. Auckland physicists are inventing new kinds of lasers, creating innovative technologies to diagnose illnesses in living tissue, understanding the earth's changing climate, searching for planets around distant stars, and understanding the connections between discoveries in particle physics and the Big Bang, and much, much more.

We are happy to hear from prospective students – please get in touch if you have any questions about studying physics at Auckland.

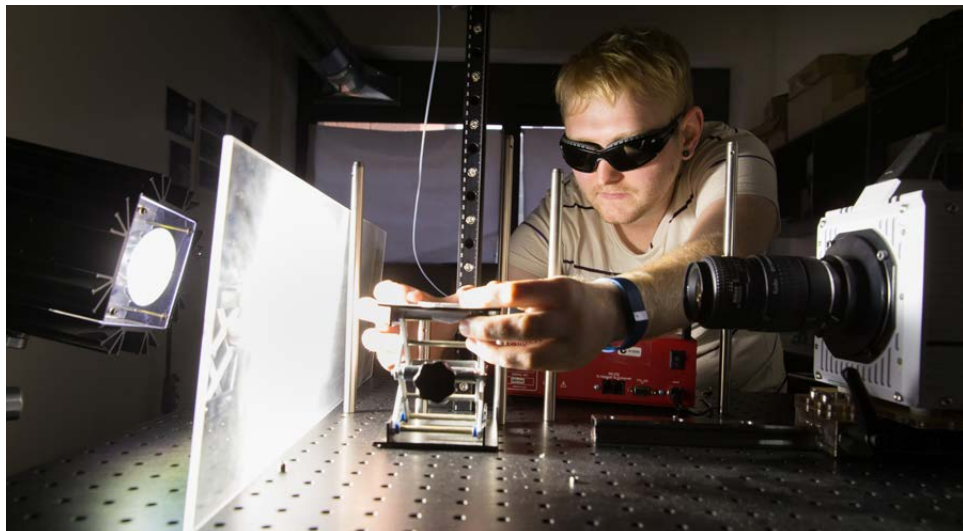
PROFESSOR RICHARD EASTHER
Head of Department

*See www.science.auckland.ac.nz/excellence



Bachelor of Science in Physics

Are you interested in mechanics, waves or quantum physics? What about meteorology and wind? Photons, fibre optics and telecommunications? The stars? Then you're someone who will get a lot out of physics. With a physics degree you can plot a learning pathway to enter a career that will take you places you've never been before.



3

The average number of years it takes to complete a Bachelor of Science degree



You can choose either a single or double major



Preparation for school leavers

Students interested in physics who have not achieved a Level 3 standard in NCEA Physics are advised to enrol in PHYSICS 91F and 92F before attempting PHYSICS 120 and 150.

For course planning and enrolment, go to www.science.auckland.ac.nz/student-centre

For more information on postgraduate study in Physics, visit www.physics.auckland.ac.nz/pg

Complementary majors

A double major is strongly recommended as it will enhance your career options by providing a broader base of skills and knowledge.

PHYSICS +

- Applied Mathematics
- Computer Science
- Earth Science
- Geophysics
- Mathematics
- Statistics

www.science.auckland.ac.nz/doublemajors

Planning your major

BSc									
Year 1	PHYSICS 120	PHYSICS 121	MATHS 108, 110 or 150	MATHS 208 or 250					Also recommended are: PHYSICS 140, CHEM 110 or 120.
	With appropriate prerequisites can also be filled by Stage II or III.								
Year 2	PHYSICS 201	PHYSICS 202	PHYSICS 203	MATHS 253				GEN ED	All italicised Stage I & II courses are recommended preparation for Stage III. Also recommended are PHYSICS 244 and 245, and MATHS 260
					Any Stage				
Year 3	PHYSICS 390 or 391	PHYSICS 315-371, GEOPHYS 330-361	PHYSICS 315-371, GEOPHYS 330-361	PHYSICS 315-371, GEOPHYS 330-361				GEN ED	
	Stage III Science				Stage II or III Science				

1. Courses in a minimum of three subjects listed in the BSc Schedule.
2. At least 180 points (12 courses) must be above Stage 1.
3. Up to 30 points (2 courses) may be taken from outside the Faculty. 30 points (2 courses) must be taken from the appropriate General Education Schedules for BSc students.
4. 30 points (2 courses) must be taken from the appropriate General Education Schedules for BSc students.
5. At least 75 points must be at Stage III, of which 60 points must be in the majoring subject.

**The Medical Physics and Imaging Technology pathway requires BIOSCI 107 and MEDSCI 142 in Year 1, MEDSCI 205 and 206 in Year 2 and MEDSCI 309 in Year 3.*

ELECENG 210 in Year 2 and ELECENG 209 and 303 in Year 3 are recommended for the Photonics pathway.

To view regulations for majors, and course descriptions, see www.calendar.auckland.ac.nz
BSc degree requires: 360 points (24 x 15 point courses). Each box represents one 15 point course.
It is recommended that students enrol in 8 courses each year.

Undergraduate Physics Courses

Course code	Course title
Stage I	
PHYSICS 102	Basic Concepts of Physics
PHYSICS 107/107G	Planets, Stars and Galaxies
PHYSICS 120	Advancing Physics 1
PHYSICS 121	Advancing Physics 2
PHYSICS 140	Digital Fundamentals
PHYSICS 160	Physics for the Life Sciences
Stage II	
PHYSICS 201	Classical and Thermal Physics
PHYSICS 202	Electromagnetism
PHYSICS 203	Relativity and Quantum Physics
PHYSICS 244	Electronics and Imaging
PHYSICS 245	Frontiers of Physics
GEOPHYS 213	The Geophysical Environment
Stage III	
PHYSICS 315	Classical and Statistical Physics
PHYSICS 325	Electromagnetism
PHYSICS 326	Optics and Laser Physics
PHYSICS 340	Electronics and Signal Processing
PHYSICS 350	Quantum Mechanics and Atomic Physics
PHYSICS 354	Condensed and Soft Matter Physics
PHYSICS 356	Particle Physics and Astrophysics
PHYSICS 371	Special Topics in Physics
PHYSICS 390	Experimental Physics 1
PHYSICS 391	Experimental Physics 2
GEOPHYS 330	Physics of the Earth
GEOPHYS 331	Physics of the Atmosphere and Ocean
GEOPHYS 339	Special Topics in Geophysics
GEOPHYS 361	Fundamentals and Applications of Geophysical Exploration

For course descriptions, go to www.physics.auckland.ac.nz/ugcourses

Careers in Physics



"I've pretty much always wanted to be involved with science, just wanting to discover things.

"Areas such as Astrophysics and Quantum Physics is what I'm enjoying most at the moment. Since starting my degree, I've become interested in the idea of science as a whole, how it's perceived by the public and how it can improve relations between the government, media and the scientific community.

"I am studying Physics and Maths with the hope of continuing my study into Postgraduate Study and eventually research. I was lucky enough to win the University of Auckland Scholarship which has helped my time studying at Auckland."

Caleb Gemmell is studying a Bachelor of Science majoring in Physics and Mathematics

Disclaimer

Although every reasonable effort is made to ensure accuracy, the information in this document is provided as a general guide only for students and is subject to alteration. All students enrolling at the University of Auckland must consult its official document, the University of Auckland Calendar, to ensure that they are aware of and comply with all regulations, requirements and policies.

Aircraft Maintenance Engineer

Air quality management

Astronomer/Astrophysics

Atmospheric Scientist

Computing

Exploration geophysics

Industrial noise control

Industrial process control

Land Surveyor

Light Technician

Medical Physicist

Meteorology

Neurophysiology Technologist

Oceanographer

Optical Instrument Repair

Own businesses in the field

Physicist

Radiation monitoring

Research

Risk Analysis/Insurance/Finance

Security Systems Technician

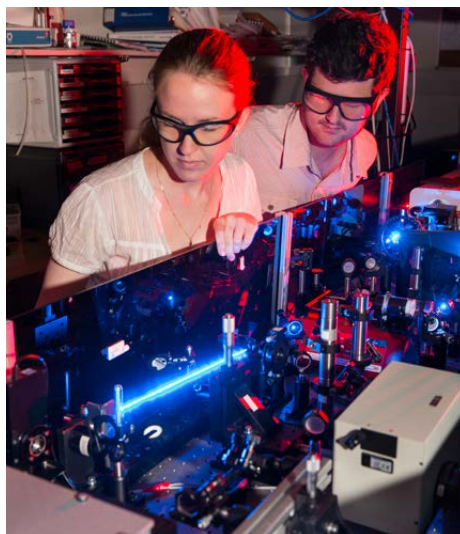
Sound Technician

Teacher

Telecommunications

Traffic/Roading Engineer

Water resource management





Helpful information

Academic dates	www.auckland.ac.nz/dates
Academic Integrity Course	www.auckland.ac.nz/academic-integrity
Accommodation	www.accommodation.auckland.ac.nz
Buy coursebooks	www.science.auckland.ac.nz/resource-centre
Career Development and Employment Services	www.auckland.ac.nz/careers
Course advice and degree planning in Science	www.science.auckland.ac.nz/student-centre
General education	www.auckland.ac.nz/generaleducation
How to apply	www.apply.auckland.ac.nz
How to enrol	www.auckland.ac.nz/enrolment
International students	www.international.auckland.ac.nz
Māori and Pacific students	www.science.auckland.ac.nz/tuakana
Need help?	www.askauckland.ac.nz
Rainbow Science Network for LGBTI students	www.science.auckland.ac.nz/rainbowsience
Scholarships and awards	www.scholarships.auckland.ac.nz
Support for students	www.science.auckland.ac.nz/support

Applications close on December 8 for Semester One.

Questions about physics? Email physics@auckland.ac.nz



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