PHYSICS

PROSPECTUS 2020

COLLEGE OF SCIENCE

1920~2020

Swansea University
Prifysgol Abertawe

Contents

PHYSICS IS
1ST
FOR TEACHING
IN THE UK
(National Student Survey, 2018)

YEAR IN
Industry
PAGE 18

NUMBER 1 IN THE UK
for Student Experience
[The Times/Sunday Times Good University Guide 2018]

Welcome to
THE COLLEGE OF SCIENCE

It's fantastic that you are considering Swansea University as your next step towards a bright future and career. As Head of Science, I wanted to tell you how important every member of our community is: if you join us, you'll be able to play an important role in the world-changing work we do.

We are proud to welcome people into our 'family' from many backgrounds and from around the world. Science moves forward where there is diversity and we encourage many perspectives, voices and hearts to become involved in our activities as we become one of the most creative, welcoming and recognised centres of science globally.

During your time with us we will do everything we can to help you thrive and flourish; giving you the knowledge, skills and outlook for a fulfilling career and a good life. You'll meet people – fellow students and staff – who will have a life-long impact on you and you'll be encouraged to share your knowledge with others, too.

In this brochure, you'll find specific information on your specialist subject. You'll see that you'll be taught by world-leading researchers and teachers who are committed to your education. You'll read about the range of jobs and careers your education will open up for you and the high success rate our students have in finding the future that is right for them. Reading about this is all very interesting, but please do come and visit us, too, so you can get a sense of the excitement and excellence that is part of our DNA.

Professor Matt Jones,
Head of the
College of Science

TOP
IN THE UK
FOR TEACHING
(value-added) – shows how effectively students are taught
[Guardian University Guide 2019]

TOP
PHYSICS DEPARTMENT
IN WALES
(The Times and Sunday Times Good University Guide, 2018)

Innovative Teaching
BY WORLD-CLASS RESEARCHERS

Welcome and thank you for considering studying with us in the Department of Physics at Swansea University. Our degree programmes allow you to explore diverse physics topics stretching from the foundations of the universe to advanced medical diagnostics and imaging.

Studying physics at Swansea and earning your degree will equip you with a broad intellectual knowledge base and the required skills to bring that base to life. Physics lies at the heart of almost all new technological developments and that creates a high demand for physicists across a wide range of career pathways. To enable you to pursue your career, you will learn skills such as numeracy, critical thinking, problem solving, high level computation, team working, communication, statistical and critical analysis, mathematical modelling and practical skills. Other key aspects of your development will be research as well as organisational and interpersonal skills.

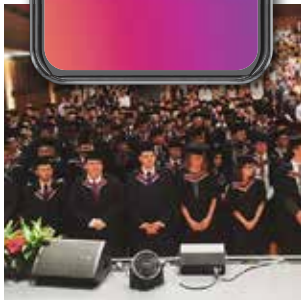
To ensure the best experience and outcome in your studies, our learning community is built built around fully supporting you through university. We have recently created more common space in physics for students to study, collaborate and interact with academic and research staff. We have also collaborated with our students in an innovative curriculum re-design, to make learning physics more integrated and inclusive.

These changes resulted in the department being ranked #1 in Teaching Satisfaction, #1 in Student Experience and #2 in Overall Satisfaction in the 2018 NSS as well as being ranked #13 in the 2019 Guardian League Table.

At Swansea, you will be taught by world-leading researchers who bring physics to life with real-world experiences and the latest developments in the field. Our research links offer valuable insights and opportunities, such as traveling to CERN for an "insiders" tour.

To further refine your interests and future opportunities, you will also be able to take advantage of our research labs that collaborate with industry and with our physics alumni network. We look forward to welcoming you at one of our open days where you can see all the great things happening in physics at Swansea for yourself.

Professor Ken Meissner



@swanscience
@gwyddontawe
@swanseaphysics
@swanseaphysoc

FOLLOW US AND KEEP UP TO DATE WITH ALL THINGS SCIENCE

1ST IN THE UK

for Satisfaction with Teaching, Organisation & Management, Student Experience and Student Voice

(National Student Survey 2018)

Our students really enjoy their time studying physics at Swansea. In fact, in the 2018 NSS scores (available on the Unistats website) we scored **100% overall satisfaction.**

Student satisfaction compared:

Swansea	**100%**
Cardiff	95%
Aberystwyth	94%
Bristol	90%
Southampton	86%
Exeter	79%

(Source: Unistats website, accessed April 2019)

PHYSICS COURSES

F300
BSc PHYSICS
(3 years)

F301
BSc PHYSICS WITH INTEGRATED FOUNDATION YEAR
(4 years)

F303
MPhys PHYSICS
(4 years)

F302
BSc PHYSICS WITH A YEAR ABROAD
(4 years)

F304
MPhys PHYSICS WITH A YEAR ABROAD (5 years)

F478
BSc PHYSICS WITH A YEAR IN INDUSTRY
(4 years)

F30Y
MPhys PHYSICS WITH A YEAR IN INDUSTRY
(5 years)

F341
BSc THEORETICAL PHYSICS
(3 years)

F340
MPhys THEORETICAL PHYSICS
(4 years)

F636
BSc THEORETICAL PHYSICS WITH A YEAR IN INDUSTRY (4 years)

F857
MPhys THEORETICAL PHYSICS WITH A YEAR IN INDUSTRY
(5 years)

F3F5
BSc PHYSICS WITH PARTICLE PHYSICS AND COSMOLOGY
(3 years)

Physics Facilities AT SINGLETON CAMPUS

Physics students benefit from a recent £4.2m investment in science labs at Singleton Park Campus.

'Science North' is a social learning space where Physics students can work together and take time out between lectures.

ACCREDITATION

Our degree schemes are accredited by the Institute of Physics following an independent and rigorous assessment. Accredited degree programmes contain a solid academic foundation in physics knowledge and key skills, and prepare graduates to address the needs of employers. The accreditation criteria requires evidence that graduates from accredited programmes meet defined sets of learning outcomes, including subject knowledge, technical ability and transferable skills.

Singleton Park Campus is set in mature parkland and botanical gardens, overlooking Swansea Bay beach.

ENTERTAINMENT, LEISURE & SERVICES ON CAMPUS

- Sports Village
- Library
- Clothing Store
- Post Office
- Bank
- Taliesin Arts Centre
- Coffee shops
- Bar
- Supermarket
- Travel Agent

HEALTH, SAFETY & WELLBEING

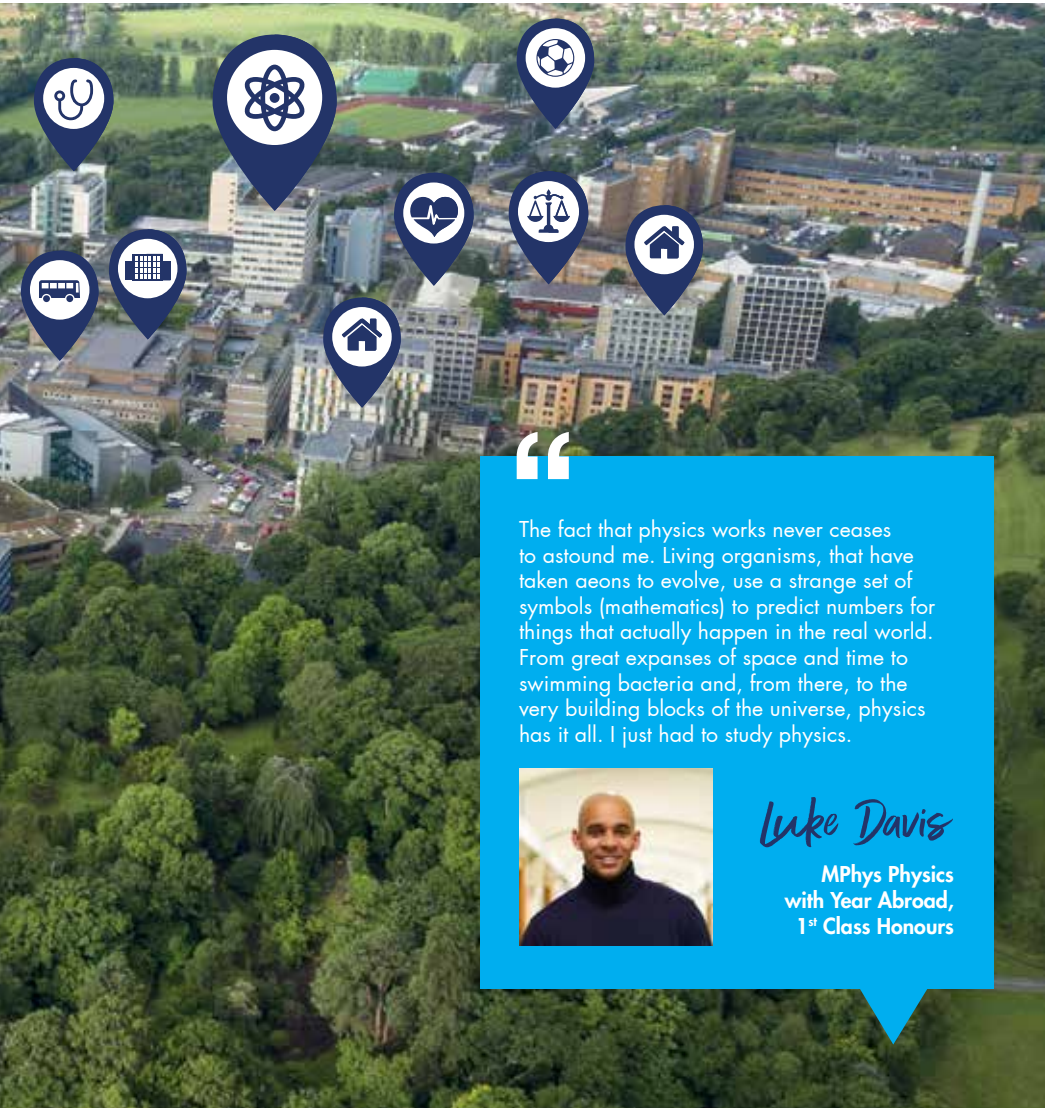
- Doctors
- Dentist
- 24 Hour wardens
- Nursery
- International Student Advisory Service
- Mosque
- Chaplaincy
- Campuslife (disability, welfare, wellbeing and money support services)

See for yourself

check out our virtual tour around campus!


FULTON
COFFEE

- HUMAN AND HEALTH SCIENCES
- LAW AND CRIMINOLOGY
- SCIENCE
- ARTS AND HUMANITIES
- MEDICINE
- PHYSICS
- STUDENT ACCOMMODATION
- SINGLETON PARK LIBRARY
- MYUNI HUB
- TALIESIN ARTS & EGYPT CENTRE
- 24HR BUS (Term Time)
- FULTON HOUSE
- SPORTS VILLAGE
- BEACH



The fact that physics works never ceases to astound me. Living organisms, that have taken aeons to evolve, use a strange set of symbols (mathematics) to predict numbers for things that actually happen in the real world. From great expanses of space and time to swimming bacteria and, from there, to the very building blocks of the universe, physics has it all. I just had to study physics.

Luke Davis

MPhys Physics with Year Abroad, 1st Class Honours

UCAS CODE: F300
3 YEARS FULL TIME
TYPICAL OFFER: AAB – BBB

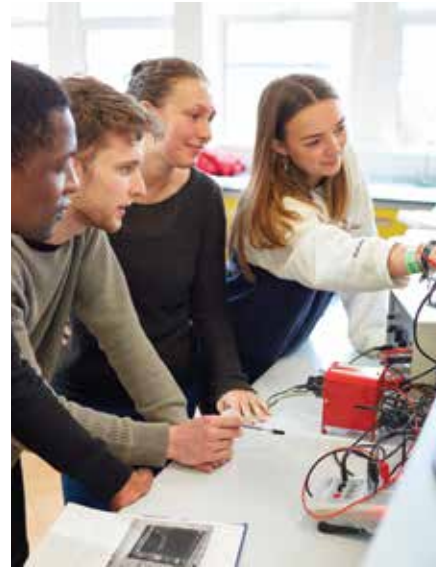
BSc PHYSICS

This degree is suitable for those who are interested in a broad range of topics in physics and who match our entry requirements of AAB – BBB.

In Year 1, modules include Dynamics, Oscillations and Waves; Astronomy and Cosmology; Physics of Fields and Matter; Essential Skills for Physicists; the Quantum World; Mathematics for Physicists; and Laboratory Physics, which can be studied in English or Welsh.

In Year 2, modules include Statistical Physics; Physics Simulation; Quantum Mechanics; Mathematical Methods in Physics; Condensed Matter Physics; Electromagneticism and Special Relativity; Particle Physics; and Further Laboratory Physics, which can be studied in English or Welsh.

In Year 3, you will study modules covering Quantum Mechanics; Atomic Physics; Condensed Matter Physics; Quantum Optics; Particle Physics; Nuclear Physics; as well as research skills and a project in English or Welsh. We offer exceptional project supervision. You can work with our researchers as part of your final year project and possibly contribute as a co-author on a published paper. There are also optional modules, such as General Relativity; Cosmology; Modern Laser Systems; Astrophysics; and Teaching Physics via a School Placement.



> “My final year research project has been my highlight – I’m investigating quantum computing, working closely with a research specialist in this area. The skills I have developed have directly contributed to me being offered a position on Barclays’ graduate scheme.”
>
> **James Alfieri,**
> **BSc Physics (2018)**

UCAS CODE: F301
4 YEARS FULL TIME
TYPICAL OFFER: CCD

BSc PHYSICS

WITH INTEGRATED FOUNDATION YEAR

This degree is suitable for those who have an interest in a broad range of topics in physics and need the extra support of a foundation year. The modules you study are the same as the BSc Physics, but you will do an extra year at the beginning of the course.

The foundation year is taught by the same academics and in the same environment as the remainder of the degree, and progression onto the BSc course is seamless. Students can also choose the 4-year Master's programme after the BSc 2nd year, grades permitting.

More information about foundation years: **www.swansea.ac.uk/science/study/foundation-year**

TEACHER TRAINING

Did you know that you can now train to be a secondary teacher at Swansea University?

Once you've finished your BSc course, you can progress to study a PGCE here at the University and become a qualified physics teacher.

Visit **www.swansea.ac.uk** to find out more.

"I didn't reach my full potential at sixth form so I went to Swansea via the foundation route. In my first years at Swansea I realised my priority was my studies and slowly started to build my grades higher and higher. This gave me a strong work ethic going into my second and third year, allowing me to obtain very high grades consistently across a variety of modules."

Nathan Pine, BSc Physics, 1st Class Honours

UCAS CODE: F303
4 YEARS FULL TIME
TYPICAL OFFER: AAA – AAB

MPhys PHYSICS

This is a four-year integrated Master's course and is suitable for those who intend to become professional physicists.

In Year 1, your modules include Dynamics, Oscillations and Waves; Astronomy and Cosmology; Physics of Fields and Matter; Essential Skills for Physicists; the Quantum World; Mathematics for Physicists; and Laboratory Physics, which can be studied in English or Welsh.

In Year 2, modules include Statistical Physics; Physics Simulation; Quantum Mechanics; Mathematical Methods in Physics; Condensed Matter Physics; Electromagneticism and Special Relativity; Particle Physics; and Further Laboratory Physics, which can be studied in English or Welsh.

In Year 3, you will study modules covering Quantum Mechanics; Atomic Physics; Condensed Matter Physics; Quantum Optics; Particle Physics; Nuclear Physics; General Relativity; Computational Physics; and Mathematical Methods in Physics. There are also optional modules, such as Cosmology; Astrophysics; Advanced Research in Physics; and Teaching Physics via a School Placement.

In Year 4, you can choose from a range of advanced modules such as Quantum Field Theory; Advanced Particle Physics; Modern Laser Systems; Atomic and Quantum Optics; Phase Transitions and Critical Phenomena; Quantum Information Processing; Nano Bio-photonics; and Magnetic Resonance Physics, NMR Spectroscopy and MRI. You will also conduct a cutting-edge research project, with the opportunity to do this with the Swansea Antihydrogen group in CERN.

"I'm now in the final stage of my MPhys project researching into the capability of using Raman spectroscopy to detect bowel cancer. It's been great to work with the academic supervisor, Professor Peter Dunstan, the research group and a colorectal cancer consultant and surgeon. I'm now looking forward to starting my career at the Wales Audit Office."

Meleri Pryse,
MPhys Physics (2018)

UCAS CODE: F341
3 YEARS FULL TIME
TYPICAL OFFER: AAB – BBB

BSc THEORETICAL PHYSICS

This course will suit students who enjoy focussing more on the theoretical and mathematical aspects of physics.

In Year 1, your modules include Dynamics, Oscillations and Waves; Astronomy and Cosmology; Physics of Fields and Matter; Essential Skills for Physicists; the Quantum World; Mathematics for Physicists; and Laboratory Physics, which can be studied in English or Welsh.

In Year 2, modules include Statistical Physics; Physics Simulation; Quantum Mechanics; Mathematical Methods in Physics; Condensed Matter Physics; Electromagneticism and Special Relativity; Particle Physics; Foundations of Astrophysics; Probing the Nano-scale; and Laboratory Group Projects, which can be undertaken in English or Welsh.

In Year 3, you will study modules covering Quantum Mechanics; Atomic Physics; Condensed Matter Physics; Theoretical Physics; General Relativity; Atomic Physics and Quantum Optics; Particle Physics and Frontiers of Nuclear Physics. You will also have options to study Teaching Physics via a School Placement, and Advanced Research in Physics, both of which can be undertaken in English or Welsh.

UCAS CODE: F340
4 YEARS FULL TIME
TYPICAL OFFER: AAA – AAB

MPhys THEORETICAL PHYSICS

This course will suit students who enjoy the more theoretical aspects of physics and who want to become a professional theoretical physicist.

In Year 1, your modules include Dynamics, Oscillations and Waves; Astronomy and Cosmology; Physics of Fields and Matter; Essential Skills for Physicists; the Quantum World; Mathematics for Physicists; and Laboratory Physics, which can be studied in English or Welsh.

In Year 2, modules include Statistical Physics; Physics Simulation; Quantum Mechanics; Mathematical Methods in Physics; Condensed Matter Physics; Electromagneticism and Special Relativity; Particle Physics; Foundations of Astrophysics; Probing the Nano-scale; and Laboratory Group Projects, which can be undertaken in English or Welsh.

In Year 3, you will study modules covering Quantum Mechanics; Atomic Physics; Condensed Matter Physics; General Relativity; Atomic Physics and Quantum Optics; Particle Physics; Frontiers of Nuclear Physics; Computational Physics; and mathematical Models in Physics. You will also have options to study Cosmology; Foundations of Astrophysics; Nanothechnology; and Teaching Physics via a School Placement, which can be undertaken in English or Welsh.

In Year 4, you will choose from modules such as Quantum Field Theory; Modern Laser Systems; Atomic and Quantum Optics; Phase Transitions and Critical Phenomena; Quantum Information Processing; Nano Bio-photonics; and Magnetic Resonance Physics, NMR Spectroscopy and MRI. This year will include a full semester working on a research project in areas such as quantum chronodynamics, stochastic dynamics, string theory, and lattice field theory, all with expert supervision.

UCAS CODE: F3F5
3 YEARS FULL TIME
TYPICAL OFFER: AAB – BBB

BSc PHYSICS WITH PARTICLE PHYSICS AND COSMOLOGY

This course is suitable for students who have a particular interest in astrophysics, cosmology and particle physics.

In Year 1, your modules include Dynamics, Oscillations and Waves; Astronomy and Cosmology; Physics of Fields and Matter; Essential Skills for Physicists; the Quantum World; Mathematics for Physicists; and Laboratory Physics, which can be studied in English or Welsh.

In Year 2, modules include Statistical Physics; Physics Simulation; Quantum Mechanics; Mathematical Methods in Physics; Condensed Matter Physics; Electromagneticism and Special Relativity; Particle Physics; Foundations of Astrophysics; and further Laboratory Physics and Group Projects, which can be studied in English or Welsh.

In Year 3, you will study modules covering Quantum Mechanics; Atomic Physics; Condensed Matter Physics; General Relativity; Cosmology; Quantum Optics; Particle Physics and Frontiers of Nuclear Physics as well as research skills and a research project in English or Welsh.

'Tarantula Nebula' by Adam Sayer – image was taken as part of a third year undergraduate experiment.

YEAR IN INDUSTRY SCHEMES

F478
BSc PHYSICS WITH A YEAR IN INDUSTRY
Entry Requirements:
AAB – BBB (4 years)

F30Y
MPhys PHYSICS WITH A YEAR IN INDUSTRY
Entry Requirements:
AAA – ABB (5 years)

F636
BSc THEORETICAL PHYSICS WITH A YEAR IN INDUSTRY
Entry Requirements:
AAB – BBB (4 years)

F857
MPhys THEORETICAL PHYSICS WITH A YEAR IN INDUSTRY
Entry Requirements:
AAA – ABB (5 years)

Our Year in Industry degree schemes incorporate an industrial placement with a sector relevant employer or organisation and can be taken either locally, nationally or overseas. This not only helps you apply your knowledge but also to develop links with potential future employers. Previous placements have been at McLaren and Rolls Royce.

For further information about our courses and different entry requirements, please visit our website at:
www.swansea.ac.uk/physics

YEAR ABROAD SCHEMES

F302
BSc PHYSICS WITH A YEAR ABROAD
(4 years)

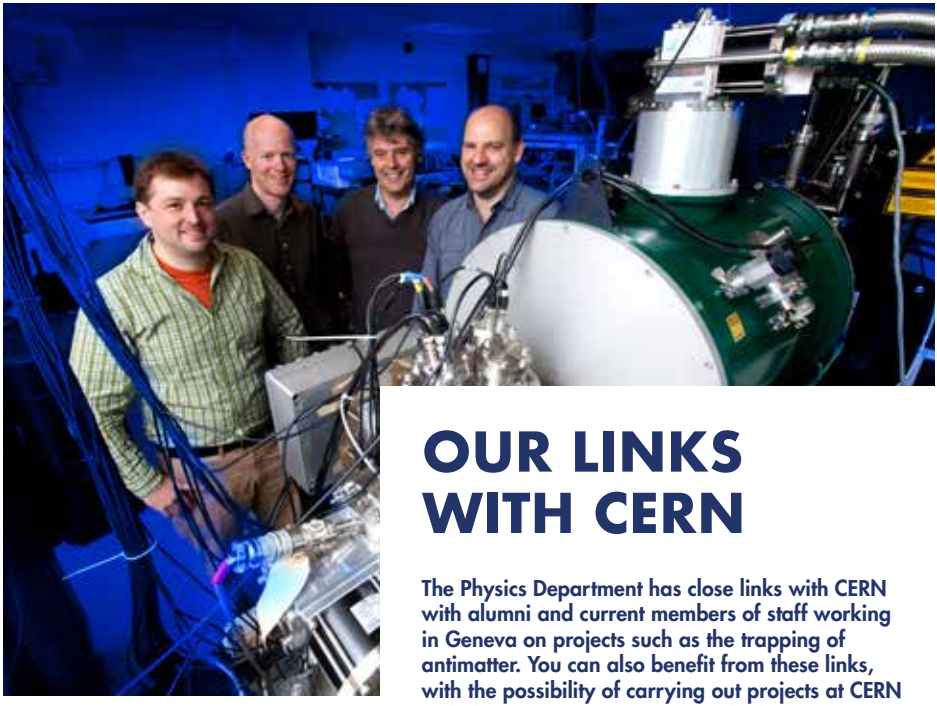
F304
MPhys PHYSICS WITH A YEAR ABROAD
(5 years)

On our Year Abroad schemes, you get the opportunity to spend a year abroad at one of our partner institutions. The year abroad usually takes place after your second year. This is a marvellous opportunity to experience a different culture and, depending on the destination, to develop valuable language skills. Find out more about studying abroad:
www.swansea.ac.uk/international/opportunities

SEMESTER IN *Texas*

MPhys students now have the opportunity to study a semester abroad at the University of Houston in Texas. You can apply to study your first term of your third year of study on an exchange programme at the University of Houston.

You don't have to pay any additional fees (just your normal Swansea University fees) and will benefit from meeting new people, living in another country and experience different teaching. You'll get pre-departure help and information from our Go Global team and we'll check in with you during your time away and help with any support you may need.



OUR LINKS WITH CERN

The Physics Department has close links with CERN with alumni and current members of staff working in Geneva on projects such as the trapping of antimatter. You can also benefit from these links, with the possibility of carrying out projects at CERN with the Swansea University Antihydrogen Group stationed there.

One of our most famous alumni is Professor Lyn Evans, who led the international project to build the Large Hadron Collider at CERN.

In recent years, an annual trip to CERN has been organised by our student-led Physics Society.

SCHOLARSHIPS AND BURSARIES

Swansea University awards a number of Excellence Scholarships to UK students* who achieve AAA at A-Level (or equivalent) worth £3000 over three years; Merit Scholarships to students who achieve AAB at A-Level (or equivalent) worth £2000 over three years.

Visit **www.swansea.ac.uk/scholarships** for the latest information and terms and conditions.

*EU students may also be eligible for these scholarships, please check the website for the latest information.

CAREERS *in Physics*

Physics graduates have all the right skills that employers need. Your top-notch analytical skills, combined with a team-working ethos, a high level of numeracy and the ability to present your findings, are in demand by employers across all sectors.

HOW DOES STUDYING PHYSICS AT SWANSEA HELP YOU TO GAIN THAT FIRST STEP IN YOUR CAREER?

As you will have seen, many of our physics courses come with a year in industry option. This a great way to prepare for your future career. Students often go on to get a job with their placement company when they graduate. Finding the placement is your responsibility, but we will provide you with the resources you need to do so. One of our students, Georgina Jackson, did her year in industry with McLaren in Barcelona. She said: "I was placed in the McLaren Technology Centre in Barcelona in the powertrain (hybrid) department, I utilised the skills I had learned while studying physics at the university, including the use of programmes such as Matlab and Simulink, and machine learning."

Georgina currently works at Rolls Royce.

You can also do shorter work placements as part of of the WOW (Week of Work) scheme or our SPIN (Swansea Paid Internship Network). The Physics Department has very close links with alumni working in industry and invites global, national and local businesses to an annual careers fair, where our former physics students present key aspects of the careers they have embarked on since they graduated. The fair is an opportunity to share experiences, ask questions, map the next decisions for your career path and speak to potential future employers.

The Physics Department runs a very active LinkedIn group where our alumni and staff share career opportunities, network events and job vacancies.

Career destinations include:

- BAE Systems
- GM Financial
- General Dynamics UK
- Google
- HSBC
- Intel
- Morgan Stanley
- Rolls Royce

MORE INFORMATION ABOUT CAREERS AND EMPLOYABILITY AT SWANSEA UNIVERSITY

www.swansea.ac.uk/undergraduate/careers-and-employability

WHAT CAN YOU DO WITH A PHYSICS DEGREE?

While many physics students are inspired to continue their studies at postgraduate level and beyond, a large majority of graduates find that their physics degree has equipped them for a world outside of physics, too. Physics graduates can choose from a diverse range of career options in areas such as research, teaching, data analysis, IT consultancy, laboratory, commerce, manufacturing and finance as well as having the skills to excel in fields within engineering, medicine and the other natural sciences. It is this diversity that actually makes studying physics so appealing; you have the ability to diversify and the skills you develop can be applied widely and are in high demand.

Surveys and Institute of Physics reports show that physics graduates command starting salaries above the graduate average. Those completing 4-year MPhys schemes tend to command higher salaries than 3-year BSc schemes, and achieving a physics degree makes you more likely to be employed than the overall graduate population.

Alumni Profile
LUKE DAVIS

MPhys Physics with Year Abroad, 1st Class Honours, Currently studying for a PhD in Theoretical Physics

"Studying physics at Swansea University was a fantastic experience. The quality of teaching and guidance has given me a solid and reliable foundation not just in physics, but also the scientific method, mathematics, problem solving, and computer programming (now a great hobby of mine). The staff are very down to earth and open; I fondly remember the countless times knocking on my lecturer's door with questions and leaving with an answer or better yet, a way to get the answer. The best memories for me, apart from walks on the beach and Joe's ice cream, were being with other students solving problems.

My year abroad with the Swansea Physics Department enabled me to learn a new language and I learnt a lot of new physics. I made friends from around the world, and the experience enriched my perspective on life as a whole. My performance in my degree greatly improved. I took all the programming courses available at Swansea and my MPhys project was based on applying computational Monte Carlo methods to our understanding of how proteins fold. I was awarded the PM Davidson prize (2016) for this project. I graduated Swansea with a first class degree and hungry for more physics!

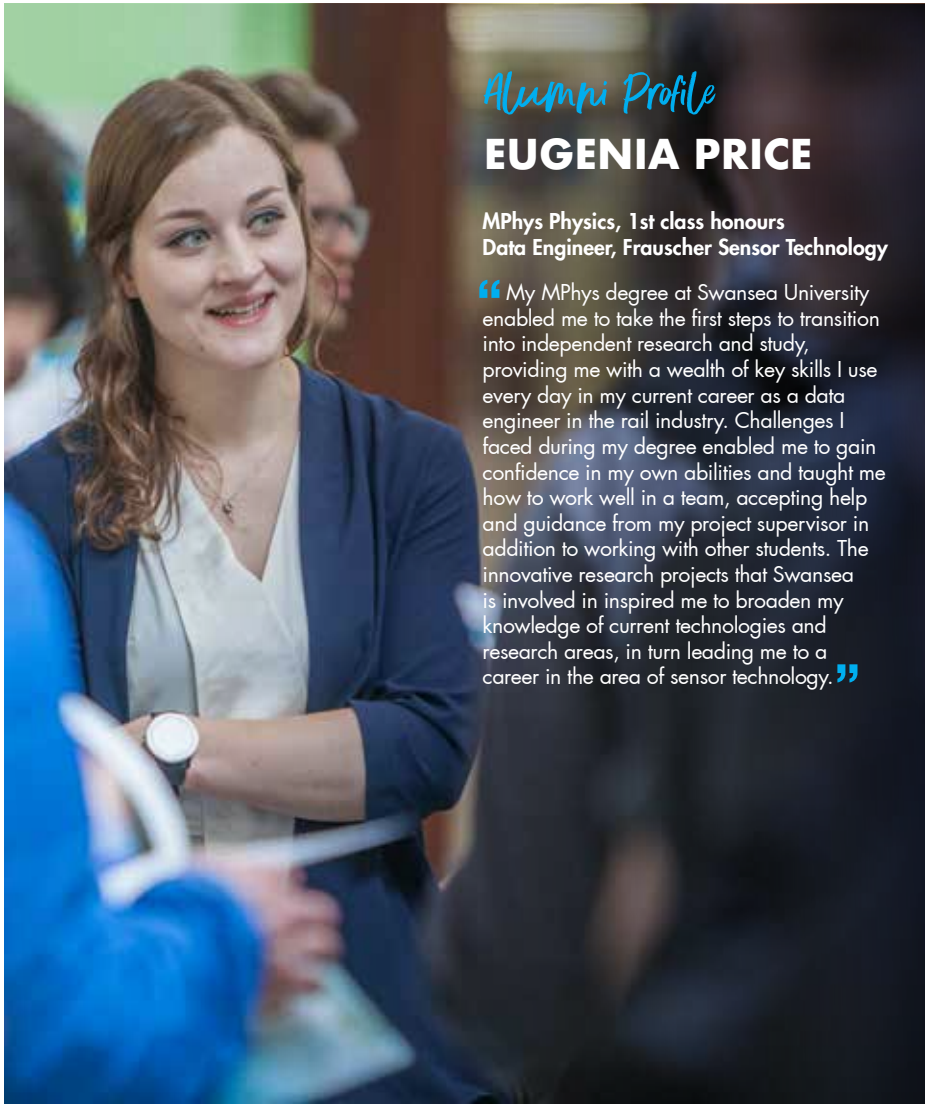
Currently, I am doing a PhD in theoretical physics at University College London (UCL) and the London Centre of Nanotechnology (LCN) using statistical physics and computational methods in understanding biological phenomena."

Alumni Profile
LOWRI GALEA

BSc Physics, Graduate Systems Engineer, Atkins

"During the summer of my second year at Swansea I completed an internship within the department in the Positron Lab. Over the course of the internship I worked as part of a research team trying to use potential wells to capture electrons in the positron beamline.

This opportunity gave me vital experience which helped boost my CV when applying for graduate jobs. I believe this, and the diverse range of topics covered during my degree helped me to secure a graduate job at Atkins."



Alumni Profile

EUGENIA PRICE

MPhys Physics, 1st class honours
Data Engineer, Frauscher Sensor Technology

"My MPhys degree at Swansea University enabled me to take the first steps to transition into independent research and study, providing me with a wealth of key skills I use every day in my current career as a data engineer in the rail industry. Challenges I faced during my degree enabled me to gain confidence in my own abilities and taught me how to work well in a team, accepting help and guidance from my project supervisor in addition to working with other students. The innovative research projects that Swansea is involved in inspired me to broaden my knowledge of current technologies and research areas, in turn leading me to a career in the area of sensor technology."

Alumni Profile

MATTHEW TOLEDO

BSc Physics, 1st Class Honours
Technology Consultant, IBM

"One of the most important skills which I improved during my time at Swansea was my talent for approaching problems from an analytical viewpoint and ultimately solving them. This was essential during the application process for my current position and has certainly served me well since joining IBM. My assessment process for this role was centred around 'Analytical and Problem Solving' skills, something which was utilised in every module in my physics degree, be it in written assessments or in laboratory experiments.

Before attending Swansea University, I had no experience in using any computer programming languages. But thanks to the knowledge, experience and guidance gained through the computing modules, my skills using Python developed to the point where I now use Python on a day-to-day basis, working as a developer on a large scale project for a FTSE 100 client.

I have recently become an ambassador for IBM's quantum computing solution, IBM Q. I was selected for this role because my final year project centred around One-Way quantum computing. This is something which I am very passionate about, in large part because of a fascination nurtured by the professors who supported me, which has now put me in a situation where I am directly involved with one of the world leaders for quantum computing developments."

Alumni Profile

MELERI PRYSE

Audit Trainee, Wales Audit Office

"The support given by the lecturers and staff at the Department of Physics, Swansea University has been excellent. All have encouraged my progress in academic studies and have helped me balance these with my international sporting activities. I'm now in the final stage of my MPhys project researching into the capability of laser-based spectroscopy for diagnosis of colorectal cancer.

This extended project has been the highlight of my time at the department. Engaging in the work has given me the opportunity to expand my knowledge, apply physics in a medical field and learn new mathematical methods and computational skills. It has been a pleasure to work with my academic supervisor, Professor Peter Dunstan, members of his research group, and the colorectal cancer consultant and specialist surgeon. I have been very fortunate to be appointed as an audit trainee by the Wales Audit Office and am looking forward to starting my career, building on the skills and experiences gained at the department.

I represented Wales in karate in Switzerland, Poland, England and Greece during my studies. During this time I won 2 silver and 1 bronze medal at the European Shotokan Karate-do Association (ESKA) European championships as a part of a team kata. The university also supported me with a Sports Scholarship."

Student Profile

NICHOLAS THOMAS

“My name is Nicholas Thomas, I am currently completing my first year studying physics at Swansea University. A few years ago I read about the breakthrough research in antimatter at CERN by a team of researchers from Swansea University.

It was one reason why I decided to choose Swansea University and it was the best decision I have made, I haven’t looked back. The first year in Swansea University was more than what I had expected. The faculty was always there by my side to help me with my work.

One of the aspects I liked about the course in the first year were the workshops where we meet in groups and work together to solve problems. I found this really improved my critical thinking, and feedback I got from the lecturers helped me to improve my weak areas.

We have had lectures from various distinguished guests which helped further deepen our knowledge in physics. The CV workshops have really helped me to build my CV and I believe this will help make me ‘job-ready’ by the final year.

The careers exhibitions held by the Physics Department were very helpful and helped me envision the career path that I can pursue on graduation. Another reason why I chose Swansea University is due to it’s links with various industies and also CERN.

I plan to pursue a career in particle physics or astrophysics when I complete my degree.”

10 Things YOU MUST DO

1. Eat Joe's Ice Cream
2. Paddle in Swansea Bay
3. Visit the National Waterfront Museum – one of many museums and galleries in the city
4. Surf down the Gower
5. Grab fish & chips at Mumbles Pier
6. Walk around our marina
7. Socialise with friends on Wind Street
8. Eat Welsh cakes at Swansea Market
9. Watch football, or the nation's favourite, rugby at the Liberty Stadium
10. Take in a show at the Grand Theatre

WHEREVER YOU GO IN SWANSEA...

you're by the sea

It's a beautiful location and a buzzing city; warm and friendly, it's compact, yet offers it all.

Swansea is as rich an environment for living as it is for learning. From its breath-taking sweep of award-winning beaches and coves to its dazzling nightlife, eclectic dining and unique shopping experiences, it's 378km^2 of everything you need to make your student experience amazing.

3RD MOST AFFORDABLE UK TOWN

(TotallyMoney.com 2018)

SWANSEA HAS AN ESTIMATED POPULATION OF

244,500

HOME OF THE GOWER
THE UK'S FIRST AREA OF OUTSTANDING NATURAL BEAUTY

STUDY AT Swansea

1 HOUR
FROM CARDIFF

2 HOURS
FROM BRISTOL

3 HOURS
FROM LONDON

3 HOURS
FROM BIRMINGHAM

INCLUSIVITY AND DIVERSITY

The Physics Department at Swansea University welcomes a wide range of students and staff. Physics is sometimes seen as a male-dominated subject, and it's true that the department currently has more males than females both in terms of students and staff. However, women thrive in our community and we are the holders of a silver Athena Swan award. We've also been awarded Juno Practitioner status by the Institute of Physics, which demonstrates our commitment to addressing gender equality in physics and better practice for all staff.

The Physics Society is one of the oldest and most active in the university and recent activities have included annual balls and barbecues on the beach. In the summer holidays, the society has visited CERN in Switzerland, an amazing opportunity for any physicist, let alone undergraduate students.

Athena SWAN Silver Award

IOP | Institute of Physics
Juno Practitioner

The Physics Society won

BEST PHYSICS SOCIETY IN THE UK SINCE 2017

(University Student Networks Annual Societies Forum)

"I don't come from an academic family, and I found it hard to find black role models in physics, so I had some doubts on whether I was actually up to studying physics and being a physicist.

They quickly faded as I realised that I should just do what I love doing."

Luke Davis

MPhys Physics with Year Abroad, 1st Class Honours

Swansea University
PhySoc

Join the Phy Soc!

A society for anybody that is interested in physics! While mainly comprised of physics students, anybody may join should they wish to attend our regular socials and science-related events.

@SwanseaPhySoc
physics@swansea-societies.co.uk

Physics students visit CERN, 2017

OUR RESEARCH

Physics is the reason we have the modern world – from power stations to transistors, medical imaging to radiotherapy, weather forecasting to climate change mitigation. The Physics Department at Swansea carries out world-leading research in experimental, applied and theoretical physics which directly contributes to the UN Sustainable Development Goals. Its work is supported by grants from UKRI, EPSRC, STFC, The EU, The Royal Society, The Higher Education Funding Council for Wales and industrial, charitable and governmental sources.

The global nature of our research means that we have world-wide links and collaborators, including with large scale facilities like CERN. Our specialisms and state-of-the-art research facilities are integrated into our curriculum in both our course content and the range of final year projects available to students.

We have examples of students studying in CERN or gaining research internships within the department as part of their development, and our specialist courses encourage students to understand the demands of research – whether that be in physics or in closely allied disciplines.

ANTIMATTER *Research*

Swansea physicists are at the forefront of antimatter research, having recently measured some of the properties of antihydrogen for the first time.

The scientific breakthroughs made at CERN, the European Particle Physics Laboratory, have brought us closer to understanding the mysteries of antimatter and the Big Bang.

GLOBAL IMPACT AND MEETING THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

We are keenly aware that we have a responsibility to enable our students to become highly skilled graduates who can shape the future of the world. In our research we can identify significant contributions to many of the United Nations Sustainable Development Goals.

All our researchers have undergraduates working in their teams as part of their final year projects or summer research internships. Our programmes are designed to convey to our graduates the global significance of physics and the world-changing potential of Swansea physics graduates.

www.swansea.ac.uk/physics/research-and-impact

www.swansea.ac.uk/science/unsdg

GOOD HEALTH AND WELL-BEING

The research of Professor Peter Dunstan is developing analytical laser-techniques to advance the detection of colorectal cancer via a blood-based diagnostic. Professor Ken Meissner's research projects include the long-term monitoring of blood analytes and the study of cardiovascular disease.

AFFORDABLE AND CLEAN ENERGY

The research of the new Advanced Materials Group led by Professor Paul Meredith is leading the way in the development of photovoltaics.

INDUSTRY, INNOVATION AND INFRASTRUCTURE

Professor Michael Charlton and colleagues within the Antihydrogen Team are based at CERN developing new instruments and sensors as part of their ground-breaking research.

Key Dates
FOR YOUR APPLICATION

SEPTEMBER

UCAS applications open

OCT/NOV

Attend a Swansea University Open Day

JAN 15TH

UCAS application deadline
(although we will still accept applications after this date)

JAN – JUNE

More opportunities to visit the campus and make sure it's the right place for you

MAR – JUN

Apply for finance and accommodation

SEPTEMBER

Arrivals and welcome week!

VISITING SWANSEA UNIVERSITY *and your offer*

It's really important that you make the right choice of university and course, and you can always contact us if you're worried things might not go according to plan.

After you've applied, you'll be invited to attend a Swansea University Open Day. You'll have the opportunity to speak with staff and students who can answer any questions you may have. Also, visiting us is a great way to get a taste of life here at Swansea University and get the chance to chat one-on-one with academic staff to discuss your offer or ask questions about the course itself.

Remember that we can be flexible with your offer so this gives you a chance to discuss any personal circumstances or ask any questions about the course itself.

NOT GOT THE GRADES?

Contact us if all doesn't go to plan and we will do our best to help.

Come see us!

BOOK NOW
www.swansea.ac.uk/open-days

JARGON buster

When you apply to university you will come across terms you may not have come across before. We have attempted to take some of the worry away by producing a 'Jargon Buster' covering the most frequently used terms.

Adjustment: If your grades are better than expected and you exceed the conditions of your conditional offer, you can 'adjust' to an alternative place.

BSc: An undergraduate academic degree known as a Bachelor of Science. When you graduate you will be awarded a BSc in your subject.

Change course offer: This can be offered by your university/college if you don't meet the entry requirements of your original choice.

Choice: This is the course you apply for. UCAS allows you to initially apply for up to 5 courses.

Clearing: Clearing gives students the chance to look for a place on a course after 30 June, at any university or college if you haven't already had an offer of a place.

Conditional Offer: Congratulations, we have made you a conditional offer. This means that you have an offer of a place subject to meeting the conditions, which usually means achieving specific grades or tariff points in your exams.

Unconditional Offer: Congratulations, you have an unconditional offer. This means that you have a place with us!

Confirmation: The decision made by university or a college once examination results are received to accept or reject the application.

Deferral: This applies to students who want to start at a later date. UCAS will allow up to two deferrals before you have to re-apply.

Degree classification: When you graduate, you will get one of the following degree classifications: 1st, 2.i, 2.ii or 3rd.

Entry Requirements: These are the grades that we recommend students get to join our courses. Each course will have its own requirements. These can all be found on our website.

Firm Choice: This is your first choice university, so make sure you save this spot for Swansea!

Foundation Year: You can do a BSc degree with an intergrated foundation year if you don't meet the entry ▸

2017 Physics students after their graduation ceremony.

requirements for the the BSc course. This means you do an extra year at the beginning where your knowledge and skills will bring you up to the level you need to begin the BSc course.

Graduation: A ceremony held in the Great Hall at the Bay Campus that you take part in when you finish your degree.

Insurance Choice: This is your second choice university.

MPhys: a 4-year advanced undergraduate Master's in Physics degree. The qualification is ideal for those with a passion for physics and who may want to do research. It is also sometimes referred to as an MSci at other institutions.

Track: This is the UCAS online tracking system where you can see the progress of your application.

UCAS: UCAS stands for Universities and Colleges Admissions Service. All UK applications go through UCAS.

Undergraduate: All first degrees (i.e. BSc) are known as undergraduate degrees.

Undergrad: When you start university, you may be referred to as an undergrad while you are studying an undergraduate degree.

IMPORTANT INFORMATION – PLEASE READ

The following message contains some very important information. Please read it before you use this brochure.

This brochure was printed in the spring of 2019. It contains information on the undergraduate programmes in Physics that Swansea University intends to run for students who are planning to start university in the autumn of 2020.

We have made every reasonable effort to ensure that the information provided is both helpful and accurate as at the date of publication. However, some changes, for example to programmes, modules, study location, placement opportunity, facilities or fees may become necessary due to legitimate staffing, financial, regulatory and academic reasons.

We will endeavour at all times to keep any changes to a minimum and to keep prospective students informed appropriately. Any changes to the information contained in this brochure will be updated quarterly at **www.swansea.ac.uk/undergraduate-programme-changes** and on the online course pages at: **www.swansea.ac.uk/physics/undergraduate**

REASONS TO STUDY AT

Swansea University

TEF Gold

THE TIMES THE SUNDAY TIMES
GOOD UNIVERSITY GUIDE 2019
UNIVERSITY OF THE YEAR RUNNER-UP

THE TIMES THE SUNDAY TIMES
GOOD UNIVERSITY GUIDE 2019
WELSH UNIVERSITY OF THE YEAR

UK TOP 10 GRADUATE PROSPECTS
(Destination of Leavers from Higher Education 2018)

UK TOP 30
RESEARCH EXCELLENCE
REF (2014-2021)

5 Star
TEACHING EXCELLENCE

WHATUNI? STUDENT CHOICE Awards 2019
WINNER
UNIVERSITY OF THE YEAR

WHATUNI? STUDENT CHOICE Awards 2019
WINNER
INTERNATIONAL

UK TOP 30
(The Times and Sunday Times, Good University Guide 2019)

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Telephone: **+44 (0)1792 295111**

For general enquiries (including information about Swansea University Open Days) email: **study@swansea.ac.uk**

For academic enquiries email:
j.e.bateman@swansea.ac.uk

For UK admissions information please email:
admissions@swansea.ac.uk

For international admissions information please email:
international.admissions@swansea.ac.uk

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Prifysgol Abertawe

swansea.ac.uk/physics