



PHYSICS

UNDERGRADUATE PROGRAMMES 2019/20

WARWICK
THE UNIVERSITY OF WARWICK





PHYSICS at Warwick

Welcome to the Department of
Physics at the University of Warwick.

Physics is a practical subject full of beautiful ideas. If you study physics as an undergraduate, you will be exploring deep questions about the nature of the universe and developing many useful skills.

This booklet should give you a feeling for what studying with us is like. We look forward to hearing from you and answering any further questions you may have about our courses and the University.

Danny Steeghs

Head, Undergraduate Admissions

HONOURS DEGREE COURSES OFFERED

by the
Department
of Physics

PHYSICS

F300 (BSc) and F303 (MPhys)

MATHEMATICS AND PHYSICS

GF13 (BSc) and FG31(MMathPhys)

PHYSICS WITH BUSINESS STUDIES FN31 (BSc)

Mathematics and Physics and
Physics with Business Studies are
taught jointly with the Department
of Mathematics and the Warwick
Business School respectively.





IDEAS and skills

Physics is about ideas and skills. An important idea is that systems can be understood by identifying a few fundamental quantities, such as energy and momentum, and the universal principles governing them.

One of the joys of physics is seeing how a simple principle, established after studying one problem, can go on to explain seemingly unrelated phenomena. For example, the laws of thermodynamics were discovered in the 19th century by people trying to design better steam engines. They turned out to apply to everything in the universe from the Big Bang onwards. Einstein himself is quoted as saying that thermodynamics "is the only theory of universal content which I am convinced ... will never be overthrown".



Physics teaches us ways of thinking about and tackling problems. This is just as true when studying the laws governing interactions between individual particles, as it is when studying the implication of these laws for complicated systems made up of many particles. In all cases, the process involves making measurements, trying to solve models of what might be happening, and, hopefully, celebrating when a coherent picture emerges.

Studying physics gives an excellent preparation for many different careers. Our graduates work in nearly all parts of the public and private sectors including IT, finance, journalism, and management. Some of our graduates also go on to postgraduate study in physics, usually working towards the research degree of PhD.



PHYSICS

at Warwick

Our main entry streams are the Physics course, and the Mathematics and Physics course which is taught jointly with the Department of Mathematics. The courses are designed to challenge you and to help you to develop important intellectual and marketable skills.

The courses are built around a flexible curriculum, which, particularly after the first year, allows you to choose a sizeable proportion of your modules from lists of options. You might choose to concentrate on particular areas in physics (and mathematics if you are on the joint course) or try to keep your studies as broad as possible. The need to make choices about which modules to take will encourage you to think about physics in the context of science as a whole, and to develop your own ideas about the relative importance of the various strands within the discipline.

Physics Degree

The structure of the course reflects the structure of the subject. You will take core lecture modules (concentrated mainly in the first two years), which introduce and develop the fundamental concepts, such as those of quantum theory and electromagnetism, and cover the mathematics used in physics.

Optional modules are largely concerned with seeing how the basic concepts can explain the phenomena we observe. Examples include the light emitted and absorbed by stellar matter, and the response of the liquids, solids and gases, which we meet on a daily basis, to the mechanical, electrical and thermal forces acting on them.

As a physics graduate, you should be a practical person. The laboratory work in the course helps you to develop important experimental skills and goes together with other more general skills training in computing, communication and problem solving.

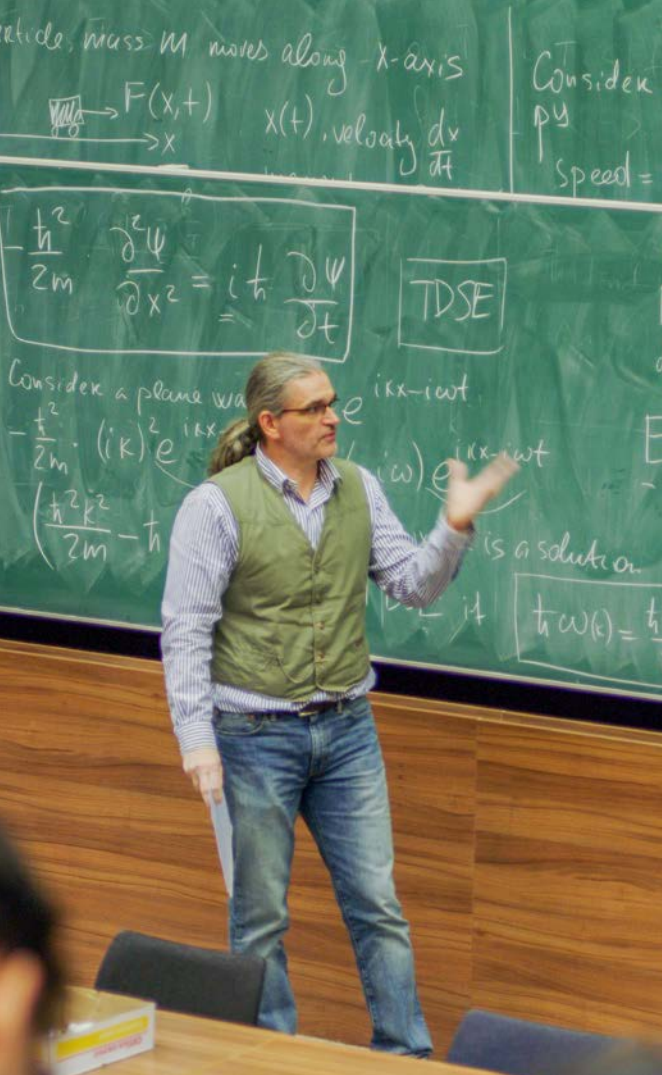
A feature of Warwick is that Departments keep many of their modules open to students from other disciplines. You can opt to take modules in related sciences including mathematics, computing and statistics, or from outside of science altogether. There are modules in business studies, modern languages, philosophy, and other areas.





"One of the things that I was most looking forward to about studying here was being part of a serious community of physicists - feeling like I was surrounded by people as keen to learn as I was"

Alice Stamp
3rd Year MPhys
Physics student



TEACHING

We provide a supportive and friendly environment in which to study. You will learn not just from the lectures and laboratories but also from interacting with others on the course, research students and your friends from outside physics.

Lectures

Lectures are an effective way of presenting information to a large group of students. The 50-minute lectures introduce the material, which you then study further on your own. The core modules in the first year are supported by weekly classes, at which you and your fellow students meet in small groups with a member of the research staff or a postgraduate student. These classes have two main purposes: to discuss any problems of understanding, which arise from the lectures, and to go through any written work associated with the module. They also provide an important indirect route back to the lecturer for your comments about the lectures.

Laboratories

The laboratory modules teach the essential skills of experimental physics. In broad terms every scientist needs to know how to carry out an investigation, assess its significance and report the results clearly and concisely. As well as developing the techniques of experimental physics, time spent in the laboratory helps illustrate the theoretical aspects of the subject presented in the lectures.

Projects

In your final year, you will work on a research-style project. This is often a very satisfying part of the degree course. It gives you the opportunity to develop your own ideas in a particular field of interest. Usually you will work in a pair, within one of our research groups and alongside postgraduate students and other members of staff. Sometimes the project work can involve interacting with people from other disciplines or from industry.





Personal Tutor

Your personal tutor will be an important contact with the academic staff in the Department. During the first two years, you will meet your personal tutor at weekly tutorials in the first two terms to discuss coursework and to reflect on your studies and planning for future years. Normally your tutor would also be the first person to see about any problem. In the case of more serious worries, your personal tutor will direct you to the University's Dean of Students, who runs a team of professional counsellors and the student support services.

Assessment

Your performance is assessed on the basis of written examinations and coursework. In any year about 30% of the overall mark is assigned to coursework. Coursework components of a degree course include problems set in association with lecture modules, laboratory and computational projects, and modules assessed on the basis of one or more reports.

Feedback

Our staff and student representatives meet regularly on a Staff Student Liaison Committee (SSLC) to discuss any changes and improvements, which can be made to the teaching.

ASSOCIATED Degrees

Mathematics and Physics

This course is one of the best established Mathematics and Physics joint honours courses in Britain, admitting around 65 students a year. The course has a flavour distinct from the single honours mathematics and physics courses, as a significant proportion of the modules taught by both departments have been designed specifically for joint degree students. The general theme of the course is theoretical physics and the course benefits from the presence in both Departments of staff working in theoretical physics.

There is a large optional component to the degree, which allows you to concentrate on your strengths and interests. The flexibility of the Warwick degree makes it a sensible choice if you are still not sure whether you enjoy one subject more than the other, as it is normally possible to switch to either of the single subject degrees at a later stage.

Physics with Business Studies

If you wish to widen your studies to include business studies, possibly with a view to a career in management or finance, you can opt for the Physics with Business Studies course. In the first two years the course only differs from the physics course in that one second-year business module is compulsory. In the third year, you transfer to Warwick Business School and take all your modules on business-related topics.



The Physics COMMUNITY

Apart from teaching, the University's main role is to carry out research.

Warwick is consistently ranked amongst the top universities for research in the UK and the Department of Physics is itself rated highly in the Research Excellence Framework 2014.

The interaction with the research community within the Department brings you into contact with the latest innovations and ideas and is particularly valuable in your final year when you carry out project work.

The Department of Physics has a number of areas of research excellence including: astronomy, the physics of condensed matter, elementary particle physics, plasma physics and theoretical physics.

The other departments which teach physics-based undergraduates – Mathematics, Statistics and WBS (Warwick Business School) – have all been rated highly for their research.

Looking AHEAD

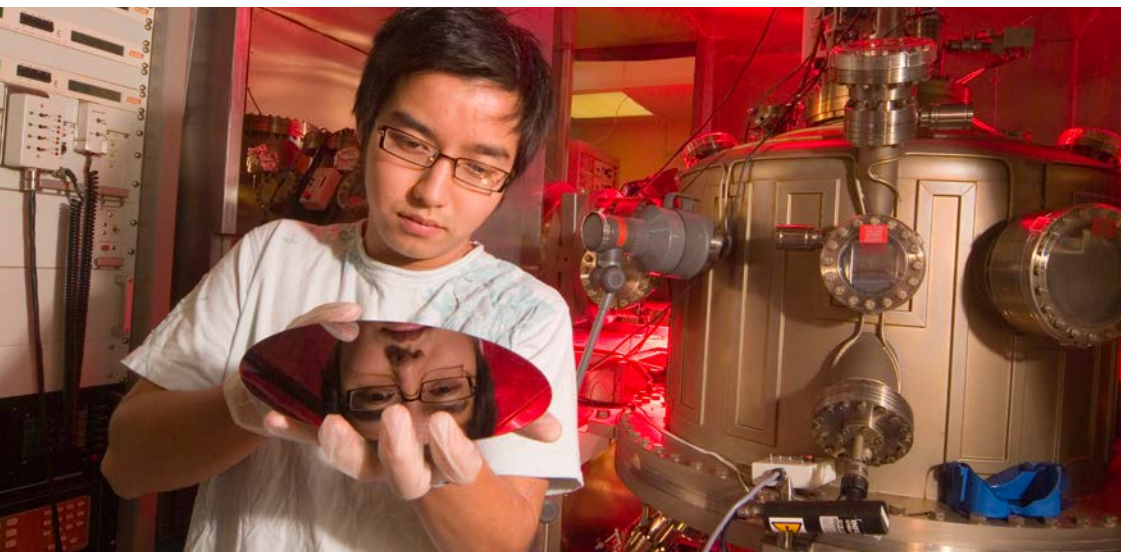
After graduation about 66% of our graduates move directly into employment while 34% go on to further academic training usually in physics, mathematics or computing.

Of the 66% entering employment, 26% went into the financial and insurance sector, 22% into technology, 15% into administration, management & consultancy and 14% into engineering and manufacturing.

The remaining 23% are spread across a wide range of employment industries.

"I studied the MPhys course at Warwick and ended up extending my final year project into a PhD. I'm now in training as a Patent Attorney for Withers & Rogers LLP. Broadly speaking, my role is to help inventors secure effective legal protection for new and innovative technology. In a typical day, I work on multiples cases across a crazy range of technology - from jet engines to software, satellites to artificial heart valves. My interest in this area came about during my PhD, whilst I worked with Warwick Ventures to patent a novel semiconductor device. It was Warwick that first exposed me to the eclectic mix of science and technology that allows me to work in such a varied and dynamic environment."

Dr James Richardson-Bullock
Patent attorney in training at
Withers & Rogers LLP



FIND OUT MORE

HOW TO APPLY

Applications are made through UCAS
ucas.com

We do not typically interview applicants. Offers are made based on your predicted and actual grades, along with your personal statement. Occasionally, some applicants may be interviewed, for example candidates returning to study or those with non-standard qualifications. After completing your application through UCAS and being made an offer you will be invited to an offer holder day.
warwick.ac.uk/study/undergraduate/apply

OFFER HOLDER DAYS

A perfect opportunity to visit our campus and experience what it is like to be a student at Warwick.
warwick.ac.uk/opendays

STUDENT FEES AND FUNDING

We want to ensure that, wherever possible, financial circumstances do not become a barrier to studying at Warwick. We provide extra financial support for qualifying students from lower income families.

warwick.ac.uk/study/undergraduate/studentfunding

ACCOMMODATION

Warwick Accommodation has over 6,000 rooms across a range of well-managed self-catering residences. There is an excellent network of support staff in the Residential Life Team.

warwick.ac.uk/accommodation

Statistics on page are 11 taken from the DLHE survey, 2015/16, of Physics undergraduate students approximately six months after successful completion of their degree course.

**Undergraduate Admissions
Department of Physics**
The University of Warwick
Coventry
CV4 7AL



warwick.ac.uk/physics



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This course information was accurate at the time of printing. Our course and module content and schedule is continually reviewed and updated to reflect the latest research expertise at Warwick, so it is therefore very important that you check the website for the latest information before you apply and when you accept an offer.