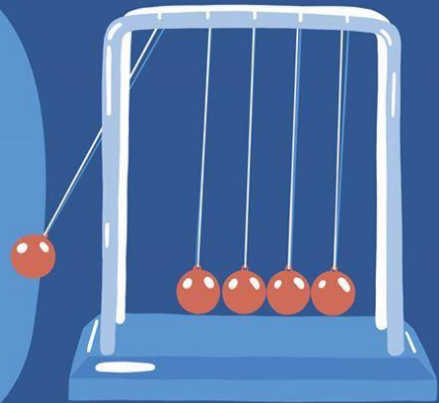


# 5 WORK SKILLS PHYSICS WILL GIVE YOU



## PROBLEM SOLVING



**In school:** Like all branches of science, physics is experimental. You'll be encouraged to look at problems from new angles and find innovative solutions using your physics knowledge. You'll need to gather all the relevant information to help you as you work towards a solution.

## DATA ANALYSIS



**In school:** Whenever you perform an experiment in physics, you'll generate data. It's this information that can help you spot trends and patterns, or reveal something completely new. You need to be able to analyse the data you create, otherwise it's just numbers with no clear meaning.

## RESEARCH



**In school:** Research means collecting your own data by carrying out experiments. It also means reading around a subject to find information and data that could help you or support your theories. You might need to look through scientific papers or read books about scientific discoveries.

## CRITICAL THINKING



**In school:** You can't take everything at face value. That means you need to think critically about the information you're presented with to find new solutions. Being able to do this allows you to take a rational approach to problem solving. This is essential in physics, where you're following scientific...



## COMMUNICATION



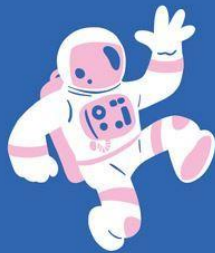
**In school:** It's not just enough to carry out experiments and research. You need to be able to explain your findings to others. You'll do this through written and spoken reports. That means you need to present information in a clear and logical way. Sometimes you'll also work on experiments with...



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# WHERE CAN

# PHYSICS

# TAKE YOU?



## CONSTRUCTION

With almost 300,000 business trading in construction, this **sector accounts for 7% of all employment in the UK**. That's 2.3 million jobs!<sup>4</sup>

**Career paths:** Architect, civil engineer, construction manager



## ENERGY & UTILITIES

Today, about 500,000 people work in the energy sector. But with the demand for green energy growing, **by 2020 half a million people could be working in renewables alone**.<sup>5</sup>

**Career paths:** Electrician, gas engineer, geoscientist, plumber



## ENGINEERING

The proportion of young engineers has dropped over the last decade. This means there will be **high demand for younger workers** in the years to come!<sup>1</sup>

**Career paths:** Electronic/mechanical/software engineer



## IT & THE INTERNET

People with qualifications in Information Technology have **one of the highest rates of employment in the UK**.<sup>2</sup>

**Career paths:** Cyber security analyst, database developer, games developer



## SCIENCE & RESEARCH

Between 2016 and 2023, jobs in science and research will grow at twice the rate of other industries, creating 142,000 new jobs. **1 in every 6 jobs will be in science and research**.<sup>6</sup>

**Career paths:** Aerospace engineer, data scientist, modelling scientist



## TRANSPORT & LOGISTICS

The UK transport industry employs 1.5 million people across the nation. Over the next 10 years, **100,000 new workers will be required in rail alone**.<sup>3</sup>

**Career paths:** Air traffic controller, logistics analyst, mechanic, pilot

**EMPLOYER:**

**Cadent**

Cadent needs amazing problem solvers to keep gas flowing securely and sustainably across the UK. Physics can help you understand the science behind our gas network, and gives you the communication and analytical skills to be a great employee!

**EMPLOYER:**



At Jaguar Land Rover, the next generation of innovators will create groundbreaking technologies. Physics gives you the scientific understanding and creativity to come up with new innovations and be successful on our engineering apprenticeships.



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Data sources: <sup>1</sup>[https://www.engineeringuk.com/media/1356/enguk\\_report\\_2017\\_synopsis.pdf](https://www.engineeringuk.com/media/1356/enguk_report_2017_synopsis.pdf); <sup>2</sup><https://www.hesa.ac.uk/news/11-01-2019/6247-higher-education-student-statistics/subjects> (Fig. 13); <sup>3</sup>No of workers: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentbyindustryemp13> (May 2018); No of new rail jobs: <https://successatschool.org/educadatas/947/careers-in-rail-QYR/>; <sup>4</sup>No of workers: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentbyindustryemp13> - May 2018; No of businesses: <https://www.statistics.com/topics/377/construction-industry-in-the-uk>; <sup>5</sup>New jobs: <http://ec.europa.eu/social/BSBService?docId=44707&lang=en> (UK 2011 roadmap reference lane); <sup>6</sup>No of workers: <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/>; <sup>7</sup><https://www.edenergy.com/sites/default/files/jobs-of-the-future.pdf> (p.4)

## Careers in Physics

Physics is a natural science that studies matter, its motion and behaviour through space and time. It studies the related entities of energy and force. It is also one of the most fundamental science disciplines and its main goal is to understand how the universe works.

Physics explains why the world goes round. During your studies, you will also discover why global warming will have the Alaskans trading their snow boots for flip-flops. Perhaps, you will also be able to find an answer to the question of “What’s the meaning of life?”

Problem-solving skills are needed for every physics student: you will be able to solve almost any problem. You will find your physics degree also helps you develop critical thinking and problem-solving skills.

Recruiters and future employers are always on the search for physics graduates, because they count as smart. Also, friends will keep asking if you follow in Stephen Hawking’s footsteps.

To receive a broad understanding of the general principles of physics, universities offer a common core body of courses in theoretical and experimental physics. Different tracks allow you to specialise, apply problem-solving techniques in a particular area of interest; this also enhances your employability.

### **Jobs directly related to Physics include:**

- Academic researcher
- Acoustic consultant
- Astronomer
- Clinical scientist, medical physics
- Geophysicist
- Higher education lecturer
- Metallurgist
- Meteorologist
- Nanotechnologist
- Radiation protection practitioner
- Secondary school teacher
- Sound engineer

### **Jobs where Physics would be really useful include:**

- Actuary
- Applications developer
- Clinical technologist
- Data analyst
- Nuclear engineer
- Operational researcher
- Patent attorney
- Prosthetist/orthotist
- Software engineer
- Telecommunications researcher

## Typical employers

- aerospace and defence
- education
- energy and renewable energy
- engineering
- health and medicine
- instrumentation
- manufacturing
- meteorology and climate change

## Skills for your CV

Studying physics develops your understanding of core physics and gives you a range of subject-specific skills in areas such as astronomy, computational and experimental physics, condensed matter, dynamics, electromagnetism and quantum mechanics.

You also develop transferable skills valued by a wide range of both technical and non-technical employers. These skills include:

- problem solving - with a pragmatic and analytical approach
- reasoning - constructing logical arguments and grasping complex problems
- research and data analysis - undertaking research and applying analytical skills
- numeracy - skills in using mathematics to find solutions to scientific problems, mathematical modelling and interpreting and presenting information graphically
- practical skills - planning, executing and reporting experiments, using technical equipment and paying attention to detail
- communication - conveying complex ideas and using technical language correctly, discussing ideas and taking on other viewpoints
- information technology (IT) - including specialist software packages and some programming.

## Studying physics at university – topics you may cover

- Laboratory physics
- Contemporary physics
- Mathematical techniques
- Quantum physics
- Newtonian and relativistic mechanics
- Fabric of physics
- Plasma and fluids
- Special and general relativity
- Analysing the nanoscale and magnetism
- Stellar physics