S2

Pathways in Science

S2 - Science Pathways Week

Learning Intention	How We Will Get There:
To make an informed choice about Sciences in S3/ S4	• Understanding what each Science is • Reflecting on S1/ S2 • Thinking of career ambitions
To learn about different careers in Science and Technology	• Identifying different careers in each of the Sciences • Learning about different people who worked on the 2012 Space Dive

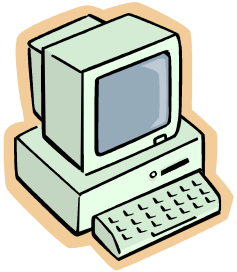
Starter Task:

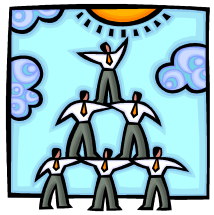
Can you describe what Biology/ Chemistry/ Physics is the study of?

Confident Individuals

Effective Contributors

S2 into S3 Options





Physics

Waves and Radiation

Electricity and Energy

Dynamics and Space

Chemistry

Chemical Changes & Structure

Nature's Chemistry

Chemistry in Society

Biology

Cell Biology

Multicellular Organisms

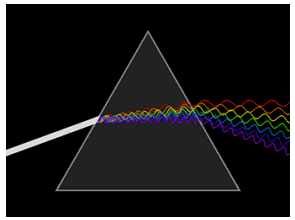
Life on Earth

Successful Learners

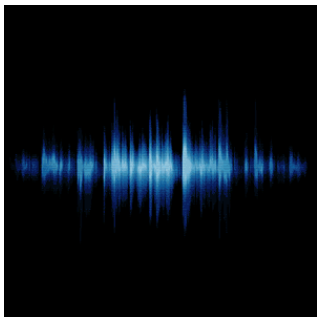
Responsible Citizens

Physics Topics

Waves & Radiation

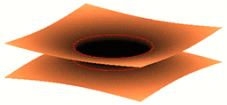


- Waves
- Sound
- Light
- Infrared
- X-Rays
- Radioactivity



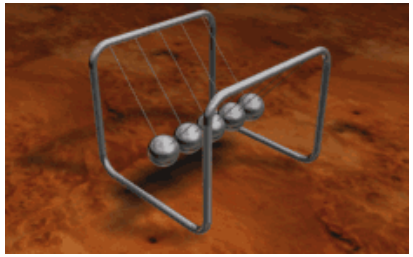
Electricity & Energy

- Circuits
- Resistance
- Power
- Energy
- National Grid
- Logic Gates
- Gas Laws
- Absolute Zero



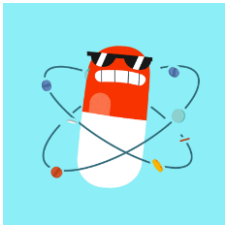
Dynamics & Space

- Motion
- Forces
- Gravitation
- Free fall
- Universe
- Big Bang
- Space flight

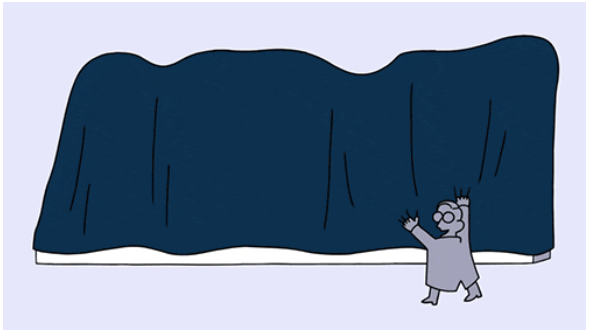


Chemistry Topics

Chemical Changes & Structure

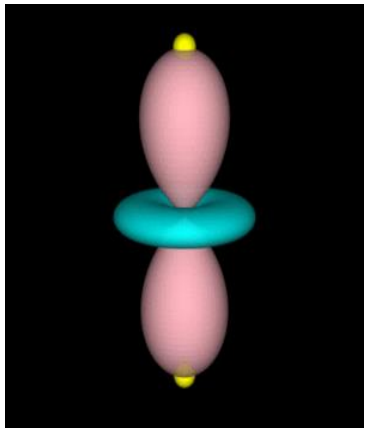


- Atomic structure
- Chemical bonding
- Acids & Bases
- Reactions & Rates

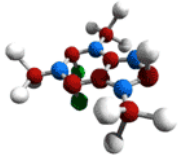


Chemistry in Society

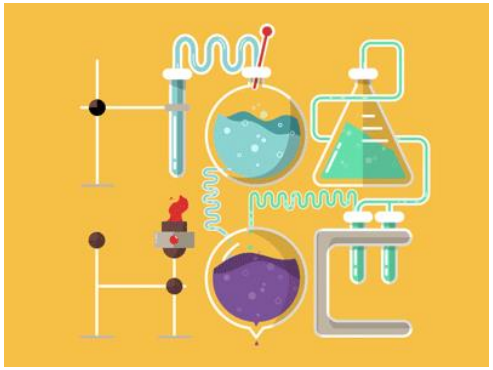
- Properties of Materials
- Cells
- Radioactivity
- Sustainable Chemistry



Nature's Chemistry



- Fuels
- Hydrocarbons
- Energy
- Environmental Issues
- Everyday products



Biology Topics

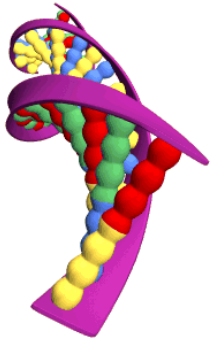
Cell Biology

S3

- Cells
- Microorganisms
- Enzymes
- Respiration

S4

- Movement across membranes
- DNA
- Proteins
- Genetic engineering
- Respiration



Life on Earth

S3

- Ecosystems
- Biodiversity

S4

- Food production
- Photosynthesis
- Evolution & natural selection

Multicellular Organisms

S3

- Life cycles
- Excretory system
- Control of blood sugar
- Controversial biology

S4

- Specialised cells
- Nervous system
- Defence mechanisms
- Reproduction
- Inheritance
- Transport systems

Progression

In S3 and S4

The science courses are at National 4 and National 5.

In S5

The science courses are at National 5 and Higher

In S6

The science courses are at National 5, Higher and Advanced Higher

Beyond School

Science courses are available at college and university level

Why Study Biology?

- Biology is the study of living organisms
  - From microscopic, to multicellular
  - Understand how your body works
  - Learn how all life on earth evolved and how humans affect the balance in nature
- Transferrable skills
  - The following skills you will learn in biology will be transferrable to many careers
    - Critical thinking
    - Problem solving
    - Analysing data
    - Evaluating
    - Communication

Biology Careers

- What careers might need a qualification in biology?
- Take 2 minutes to discuss

  - Medicine
  - Law
  - Research
  - Teacher/lecturer
  - Dietician
  - Hairdressing
  - Beauty therapy
  - Marine biologist
  - Bioengineering
  - Dentistry
  - Vet/Vet nurse
  - Hospital laboratory technician
  - Radiographer
  - Pharmacist
  - Optometrist

Why Study Chemistry?

Want to know what makes up the world around us?

Chemistry is the science of molecules and materials.

There's chemistry everywhere.

Chemistry overlaps both physics and biology. You'll investigate how the smallest particles give us the most high-tech materials.

Transferable skills.

You'll gain valuable knowledge, practical skills and develop your problem solving to use in many careers, not just in science. Not all chemists wear white coats!

Chemistry careers

- What careers might need a qualification in chemistry?
- Take 2 minutes to discuss

- Medicine
- Law
- Accounting & finance
- Research
- Teacher/lecturer
- Engineering
- Renewable Energy
- Oil
- Pharmaceuticals
- Chemical Industry
- Food Chemistry
- Cosmetics
- Journalism

Why Study Physics?

Want to Know the How and the Why?

Physics is crucial to understanding the world around us, the world inside us, and the world beyond us.

It Began with Physics.

Physics encompasses the study of the universe from the largest galaxies to the smallest subatomic particles.

Physicists Gain Skills

Physicists are problem solvers. Their analytical skills make physicists versatile and adaptable so they work in interesting places.

Physics careers

What careers might need a qualification in Physics?
Take 2 minutes to discuss

- Journalism
- Law
- Finance
- Medicine
- Engineering
- Computer Science
- Astronomy
- Biology
- Meteorology and Weather Forecasting
- Defence
- Oil and gas
- Renewable energy
- Electronics
- Telecommunications
- Space exploration

Points to consider

- Broad range of options,
- Enjoyment can lead to success,
- Follow areas of skill/ability for bright prospects,
- Variety of experience from science: practical tasks, graphical tasks, ICT skills, problem solving and design skills.
- Safety is a priority each lesson.

Points to consider

Studying science can help you to develop a range of skills that are useful in many areas. These skills include:

- **problem solving** - with a pragmatic and analytical approach;
- **reasoning** - constructing logical arguments, applying analytical skills and grasping complex problems;
- **numeracy** - skills in using mathematics to find solutions to scientific problems, mathematical modelling and interpreting and presenting information graphically;

Points to consider

- **practical skills** - planning, executing and reporting experiments, using technical equipment and paying attention to detail;

- **communication** - conveying complex ideas and using technical language correctly;

- **information and communication technology (ICT)** - including specialist software packages and some programming.

Possible Careers

- Acoustics
- Aeronautical Engineer
- Agricultural Engineer
- Air Traffic Controller
- Airline Pilot
- Archaeologist
- Architect
- Astronomer
- Audio Engineer
- Broadcasting
- Cartographer
- Chartered Surveyor
- Civil Engineer
- Climatologist
- Clinical Scientist
- Computing
- Designer
- Doctor
- Electrical Engineer
- Energy
- Engineering
- Environment
- Environmental Scientist
- Forensic Scientist
- Gas Engineer
- Geologist
- Health Services
- Journalist
- Laboratory Technician
- Marine Engineering
- Mathematician
- Mechanical Engineer
- Medical Physicist
- Meteorologist
- Naval Architect
- Naval Career
- Nuclear Scientist
- Oceanographer
- Operational Research
- Patent Agent
- Patent Examiner
- Pharmacist
- Physiotherapist
- Radiation Protection
- Radiographer
- Scientific Officer (Government)
- Space and Remote Sensing
- Teacher
- Transport
- Water Management