### **BTEC Level 1/2**

# First Awards in Principles of Science and Applications of Science (Level 2)

### **Course Description**

This is a well-respected science qualification, seen as a more practical and work-related route than A Level science. Students on this course will develop self-reliance and effectiveness in researching a wide range of sources.

#### Course Content & Assessment Methods

Units 1-8 are compulsory. From the wide range of possible additional units, the ones we choose to study are below. The completion of four (1-4) units will enable you to achieve a Level 1/2 award in Principles of Science and the rest of the units (5-8) will lead to Level 1 /2 Award in Applications of Science.

It is important that science technicians and scientists are able to use and apply fundamental core concepts to work efficiently and effectively in science organisations, as well as other organisations that use science.

Qualification	Unit Number	Unit Title	Assessment		
Award in Principles of Applied Science	1	Principles of Science	Internal		
	2	Chemistry and our Earth	Internal		
	3	Energy and our Universe	Internal		
	4	Biology and our Environment	Internal		
Award in Applications of Science	5	Applications of Chemical Substances	Internal		
	6	Applications of Physical Science	Internal		
	7	Health Applications of Life Science	Internal		
	8	Scientific Skills	Internal		

### **Potential Career Opportunities in Science**

- Medicine
- Pharmacist
- Nursing
- Midwifery
- Biomedical Scientist
- Paramedic
- Radiographer
- Podiatry

- Teaching
- Psychologist
- Health Visitor
- Optometrist
- Dietitian
- Microbiologist
- Radiotherapist
- Conversationist

- Apprenticeship
- Engineer
- Laboratory Technicians
- Audiologist
- Agriculture
- Researcher
- Forensic Science





# Chemistry

### **Course Description**

This is a well-respected science qualification seen as a more practical and work-related route than A Level science. Students on this course will develop self-reliance and effectiveness in researching a wide range of sources.



### **Chemistry Activity**

The modern periodic table is a chart that arranges the elements in a way that are useful to the chemist. The periodic table is divided into the groups (vertical columns) - with elements having some chemical and physical properties.

1 IA 1 H <sup>1</sup> H <sup>1</sup> 1 2 IIA							13 111A	14 IVA	15 VA	16 VIA		18 VIIIA 2 Helium 4.003
3 4 Be Lithium 6.941 9.012	Be Periodic Table of the Elements						5 B Boron 10.811	6 C Carbon 12.011	7 N Nitrogen 14.007	8 Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.180
11 Na Sodium 22.390 12 Magnesium 24.305 3							13 Aluminium 26.982	14 Silicon 28.086	15 P Phosphorus 30.974	16 S Sulfur 32.066	17 Cl Chlorine 35.453	18 Argon 39.948
19 <b>K</b> Potassium 39.098 <b>20 Ca</b> Calcium 40.078 <b>21 Sc</b> Scandiu 44.956	m Titanium Vanadium	24 Cr Chromium 51.996 25 Mn Manganese 54.938	26 Fe Iron 55.933 27 Col 58.1	palt Nickel	29 Cu <sub>Copper</sub> 63.546	30 Zn <sup>Zinc</sup> 65.39	31 Ga Gallium 69.732	32 Gee Germanium 72.61	33 As Arsenic 74.922	34 Se selenium 78.972	35 Br Bromine 79.904	36 Kr Krypton 84.80
37 <b>Rb</b> Rubidium 84.468 38 <b>Sr</b> Strontium 87.62 39 <b>Y</b> Yttrium 88.906	40 Zr Zirconium 91.224 41 Nb Niobium 92.906	42 Molybdenum 95.95 43 Tc Technetium 98.907	A44 Ru Ruthenium 101.07 A5 Rbo Rho 102.1	dium Palladium	Aq	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn <sup>Tin</sup> 118.71	51 Sb Antimony 121.760	52 Te Tellurium 127.6	53 Iodine 126.904	54 Xe Xenon 131.29
55 Cs Barlum 132.905 Barlum 137.327	72 Hf <sub>Hafnium</sub> 178.49 73 Ta Tantalum 180.948	74 W Tungsten 183.85 75 Re Rhenium 186.207	76 Os osmium 190.23 77	um Platinum	79 Au <sub>Gold</sub> 196.967	80 Hg Mercury 200.59	81 Thallium 204.383	82 Pb Lead 207.2	83 Bismuth 208.980	84 Po Polonium [208.982]	85 At Astatine 209.987	86 <b>Rn</b> Radon 222.018
87 Francium 223.020 B88 Radium 226.025 B9-103	104 Rf Rutherfordium [261]	106 Sg Seaborgium [266]	108 Hs <sub>Hassium</sub> [269]		🛛 Rg 📗	Copernicium [277]	113 Uut <sup>Ununtrium</sup>	114 Fl Flerovium [289]	115 Uup Ununpentium	116 LV Livermorium [292]	Ununseptium	118 Uuo <sup>Ununoctium</sup>
Lanthanide	57 La Lanthanum 138.906 58 Ce Cerium 140.115	59 Pr Praseodymium 140.908	61 Pm Promethium 144.913 150		64 Gd Gadolinium 157.25	Tb 🛛	66 Dy Dysprošium 162.50	67 Ho Holmium 164.930	68 Er Erbium 167.26	69 <b>Tm</b> Thulium 168.934	70 <b>Yb</b> Ytterbium 173.04	71 Lu Lutetium 174.967
Actinide	89 Actinium 227.028	91 Pa Protactinium 231.036 92 U Uranium 238.029	93 Np Neptunium 237.048 94 P4 Pluto 244	nium Americium	Cm	Bk	98 Cf <sup>Californium</sup> 251.080	99 Es Einsteinium [254]	100 <b>Fm</b> Fermium 257.095	101 Md Mendelevium 258.1	102 No Nobelium 259.101	103 Lr Lawrencium [262]

Group 1 of the periodic table has H, Li, Na, K , Rb , Cs and Fr - the group is called alkali metals. Group 17 consists of F, Cl, Br, I, At and Uus - the group is classified as halogens.

Watch the following video and then compare the properties of group 1 and 17. Videos:

https://www.youtube.com/watch?v=IdS9roW7IzM

https://www.youtube.com/watch?v=dZGDUKQa\_6g

https://www.youtube.com/watch?v=yW\_C10cEzMk





## **Physics**

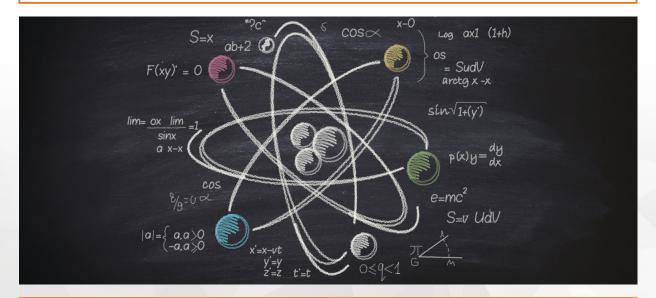
Science employees working in organisations involving energy will need knowledge of the different forms of energy, energy stores, energy transformations and alternative energy sources. Physicists working for the National Grid will need knowledge of energy transfers, energy transfer measurement and energy efficiency. Scientists working in hospital scanning departments will need knowledge of the dangers and uses of X-rays and other features of the electromagnetic spectrum.



### **Physics Activity**

Some of our energy demand is fulfilled by the nuclear energy. The nuclear energy is created by using two reactions - fission and fusion. Our energy demand is partly fulfilled by the nuclear fission. Nuclear fusion, on the other hand, is the main source of our energy source from the sun.

Watch the following video and then click the quiz to answer the questions



Video: https://www.bbc.co.uk/bitesize/guides/zx86y4j/video Test : https://www.bbc.co.uk/bitesize/guides/zx86y4j/test

The aim of these units is to study core science concepts in biology, chemistry and physics. The assessments for these units focus on your understanding and application of these concepts.

A strong grasp of these concepts will enable you to use and apply this knowledge and understanding in vocational contexts, when studying units within this specification.



