Year 11 Triple Science Delivery 2022-23

What is the Year 11 Separate Sciences curriculum aiming to achieve?

AQA Combined Science (Trilogy) GCSE specification is delivered to all year 11 students during timetabled lessons. Students in the top group of each option line were given the opportunity to follow Separate Sciences at the end of year 10. The three Separate Science specifications are delivered through 1 hour 15 minutes sessions after school lessons once a week.

Date	10M1	10B1
Start of term	**Hand in Triple Science summer holiday task to your normal class teacher**	
14.9.22	BIOLOGY 1	CHEMISTRY 1
21.9.22	PHYSICS 1	BIOLOGY 1
28.9.22	CHEMISTRY 1	PHYSICS 1
5.10.22	BIOLOGY 2	CHEMISTRY 2
12.10.22	PHYSICS 2	BIOLOGY 2
19.10.22	CHEMISTRY 2	PHYSICS 2
HALF TERM		

	Biology	Chemistry	Physics
Topics	**Infection and response** a)Monoclonal antibodies and their uses b)Plant diseases **Inheritance, inheritance and evolution** c)Cloning d)Asexual vs sexual reproduction	**Quantitative chemistry** a) titration equipment b) titration required practical c) titration calculations	Reflection and Refraction Sound Waves Seismic Waves
Threshold Concepts	a)Describe how monoclonal antibodies are produced and ways they can be used b)Explain how plant diseases can be detected and give some physical and chemical plant defences c) Describe plant and adult cell cloning techniques. d)Describe the advantages and disadvantages of reproduction	a) describe how to accurately measure the amount of acid and alkali that react completely together b) determine when the reaction is complete c) calculate the number of moles of solute in a given volume of known concentration	a) Describe the effects of reflection, transmission and absorption of a wave at material interfaces b) Describe and explain the limits of human hearing c) Explain how ultrasound waves can be used d) Explain how seismic waves can inform us about the structure of the Earth
Skills		RP 2 – Use titration to investigate reacting volumes Maths skills – rearranging equations and converting units	RP 9 Reflection and Refraction – accurately plotting rays, measuring angles and finding patterns
Opportunities to show progress	Successful completion of summer task Autumn 1 triple topic test	Successful completion of summer task Autumn 1 triple topic test	Successful completion of summer task Autumn 1 triple topic test

Date	AFTER 8 – Triple SUBJECT / ROOM	AFTER 8 – Trilogy SUBJECT / ROOM
2.11 .22	BIOLOGY 3	CHEMISTRY 3
9.11.22	PHYSICS 3	BIOLOGY 3
16.11.22	CHEMISTRY 3	PHYSICS 3
23.11.22	BIOLOGY 4	CHEMISTRY 4
30.11.22	PHYSICS 4	BIOLOGY 4
7.12.22	CHEMISTRY 4	PHYSICS 4
DECEMBER PPES		

	Biology	Chemistry	Physics
Topics	**Inheritance, inheritance and evolution** a)DNA structure b)Theory of evolution and speciation c)The understanding of genetics	**Quantitative Chemistry** a) the yield of a chemical reaction b)atom economy c) volumes of gases **Atoms and the Periodic table** a) Transition elements **Bonding** a) nanoparticles recap /green pen summer task	Visible light Black body radiation Changes in Momentum
Threshold Concepts	a)Describe the structure of DNA and protein synthesis b) Outline different theories for evolution and Wallace's work on speciation c)Explain how Mendel's work developed the understanding of genetics	a) describe what is meant by the yield of a chemical reaction and be able to calculate it b) describe why atom economy is important in industry and how to calculate it c) be able to calculate the moles of gas at RTP knowing its volume a) compare the properties of TM to group 1 metals a)know advantages and disadvantages of nanoparticles and state some uses	a) Describe and explain the apparent colour of an object in different colour light and the effect of filters on coloured light. b) Know what is meant by a black body and how the temperature of the Earth is affected by absorption and reflection of incoming radiation. c) Understand the relationship between Force and Momentum and apply the principle qualitatively and quantitatively to interactions.
Skills		Maths skills – rearranging equations and converting units	Maths skills – rearranging equations and converting units
Opportunities to show progress	December PPE Triple Paper	December PPE Triple Paper	December PPE Triple Paper

Date	10M1	10B1
4.1.23	BIOLOGY 5	CHEMISTRY 5
11.1.23	PHYSICS 5	BIOLOGY 5
18.1.23	CHEMISTRY 5	PHYSICS 5
25.1.23	BIOLOGY 6	CHEMISTRY 6

1.2.23	PHYSICS 6	BIOLOGY 6
8.2.23	CHEMISTRY 6	PHYSICS 6
15.2.23	BIOLOGY 7	CHEMISTRY 7
HALF TERM		

	Biology	Chemistry	Physics
Topics	**Homeostasis and response** a)Plant hormones and their uses b)The brain and eye	**Organic reactions** a) alkene b) alcohols c) carboxylic acids and esters	Moments, levers and gears Pressure in Gases Pressure in Fluids
Threshold Concepts	a)Describe plant tropisms and commercial uses of plant hormones b)Describe the regions of the brain and how brain damage is investigated Explain the structure of the eye and how eye defects can be corrected	a) name alkenes and know how they react with; hydrogen, oxygen, steam and the halogens b) a) name alcohols and know how they react with; oxygen, sodium, carboxylic acids and the oxidising agents c) name carboxylic acids, describe their properties and their reactions with alcohols to produce esters	Understand the principle of moments and use it to explain simple levers and gears, including numerical solutions. Know and use the equations for pressure and pressure in a fluid. Explain the origin of upthrust. Explain how and why atmospheric pressure changes with altitude.
Skills	RP 8 The effect of light on the growth of newly germinating seeds		Maths skills – rearranging equations and converting units
Opportunities to show progress	Spring 1 triple topic test	Spring 1 triple topic test	Spring 1 triple topic test

Date Jan	**10M1**	**10B1**
1.3.23	PHYSICS 7	BIOLOGY 7
8.3.23	CHEMISTRY 7	PHYSICS 7
15.3.23	BIOLOGY 8	CHEMISTRY 8
22.3.23	PHYSICS 8	BIOLOGY 8
29.3.23	CHEMISTRY 8	PHYSICS 8
EASTER		

	Biology	Chemistry	Physics
Topics	**Homeostasis and response** a)Control of body temperature b)Control of water and nitrogen in the body	**Polymers** a) addition polymerisation b) condensation polymerisation c) natural polymers d) DNA e) thermosetting and thermosoftening polymers	Loudspeakers Induction Transformers

Threshold Concepts	a)Explain how body temperature is monitored and regulated b)Describe the role of the kidney in producing urine and controlling water balance	a) Recognise addition polymers and monomers from their displayed formulas. Be able to draw repeating units, polymers and monomers b)state what condensation polymerisation is and explain how polyesters are formed c)describe how natural polymers are produced d) Describe the basic structure of monomers used to make DNA	How the motor effect can be used to explain the function of a moving-coil loudspeaker. Use the principle of electromagnetic induction to describe and explain the function of alternators and dynamos. Explain how a transformer works and use equations to calculate current, voltage and number of turns.
Skills			Maths skills – rearranging equations and converting units
Opportunities to show progress	PPE 2 TRIPLE PAPER	PPE 2 TRIPLE PAPER	PPE 2 TRIPLE PAPER

Date	**10M1**	**10B1**
19.4.23	BIOLOGY 9	CHEMISTRY 9
26.4.23	PHYSICS 9	BIOLOGY 9
3.5.23	CHEMISTRY 9	PHYSICS 9
10.5.23	BIOLOGY 10	CHEMISTRY 10
17.5.23	PHYSICS 10	BIOLOGY 10
24.5.23	CHEMISTRY 10	PHYSICS 10
SUMMER EXAMINATIONS BEGIN		

	Biology	Chemistry	Physics
Topics	**Homeostasis and response** a)Control of body temperature b)Control of water and nitrogen in the body **Ecology** c)Decomposition **TO BE DELIVERED IN NORMAL TIMETABLED LESSONS** d) Trophic levels, pyramids of biomass and transfer of biomass e)Food security f)Farming techniques g)Sustainable fisheries h)Role of biotechnology	**Analysis** a) tests for positive ions b) tests for negative ions c) instrumental analysis **TO BE DELIVERED IN NORMAL TIMETABLED LESSONS** **Resources** a) rusting b) useful alloys c) glass, ceramics and composites d) making ammonia e) the economics of the Haber process f) making fertilisers in the lab g) making fertilisers in industry	Our Solar System Life Cycle of stars Orbital motion of satellites Red-shift and the Big Bang Theory **TO BE DELIVERED IN NORMAL TIMETABLED LESSONS** Radiation Hazards Fission and Fusion Static Electricity RP 2: Insulation
Threshold Concepts	a)Explain how body temperature is regulated b)Describe how the kidney produces urine and balances water	a) identify positive ions using flame tests and the precipitates formed with NaOH b) identify negative ions such as carbonates, halides and sulphates	Describe our solar system and its position in our galaxy. Describe and explain the stages in the life cycle of a star and understand how this relates to the size of the star.

	c) Explain how decay can be speeded up and its role in compost and biogas generators d) Identify trophic levels, construct pyramid of numbers and describe how biomass is lost e) Describe different levels of food security f) Explain how farming techniques can be more efficient g) Explain how fish stocks can be maintained h) Explain how biotechnology can meet population demands	c) describe the advantage and disadvantages of instrumental instruments compared to traditional chemical tests and interpret results a) Describe experimental results to show necessary conditions for rusting and suggest how to prevent it. b) explain why some metals are alloyed using common examples c) use data to compare the physical properties of glass, ceramics and composites d) explain why the Haber process is important for growing populations e) explain the commercial conditions for the Haber process is a compromise f) Describe how to make a fertiliser in a lab g) Compare production of fertilisers in industry with in a lab. Explain the use of fertilisers.	A qualitative explanation of the motion of satellites. Describe and explain the red-shift observed of light from distant galaxies and explain how these observations provide evidence for the Big Bang theory.
Skills	RP 10 The effect of temperature on the rate of decay of fresh milk	RP 7 Use chemical tests to identify unknown compounds	
Opportunities to show progress (Assessments	Summer GCSE examinations Paper 1 and 2	Summer GCSE examinations Paper 1 and 2	Summer GCSE examinations Paper 1 and 2