Group Weekly Science Masterclasses beginning Sept 2022-May 2023 (Triple Science)

For each weekly group session there will be an online course to follow via the website, which will include around an hours' work for each Science. There will be pre-recorded video lessons covering the key skills required, a quiz to complete, exam-style questions to try out (with answers), and an optional 1-hour live interactive group session. Once the live session has happened, a post-session recording of any sticking spots will be placed into the zoom call area.
Greyed out sessions have no live Zoom call component and the unit is fully complete without the live zoom.
Please check the schedule carefully: ***The dates and times below are of the access times when each masterclass opens online to begin study of the pre-recorded classes and the quiz activity; and then also the date of the live zoom masterclass. The work for the week needs to be completed BEFORE the date of the Zoom session*** *as the time in the live zoom session denoted below is devoted to any problems that arose with the material for the preceding week and checking understanding – the items in the pre-recorded video lessons* ***will not*** *be covered again in the live call.*
E.g. **Session 1.01: Access opens: Mon 6 Sept** (*students will be able to get into course material from this date*). **Zoom: Sun 12 Sept** *(date of the optional live help call, should assistance be needed for any of that weeks' materials)*.

Bio: Cells & Viruses;
Chem: Atoms & Atomic structure;
Phys: Scalars & Vectors.

} The topics covered in this Masterclass session *(name listed in red)*.

All group sessions are paid for via the website so that you get direct access to the resources. Payment must be received a minimum of 5 days before the date of the live session (before the 'Access opens' date is ideal) – as there is work to be done in the week before the live session and a student beginning late is at a disadvantage. The best advice is to pop onto the website with the student, sort out access to the sessions (in their name) for the upcoming month all at once, and then you only need to remember to do that step once a month. *(1-2-1 sessions will continue to be arranged and paid for separately).*

Masterclass 1.0 – Basic items; mostly Paper 1 topics **Sundays** **5-6pm**	**Masterclass 2.0 – More advanced items; mostly Paper 2 topics** **Sundays** **6:50-7:50pm**
Session 1.01: **Access opens: Mon 28 Aug. Zoom: Sun 10 Sept.** Bio: Cells & Viruses; Chem: Atoms & Atomic structure; Phys: Scalars & Vectors, and Physics formulae.	**Session 2.01:** **Access opens: Mon 28 Aug. Zoom: Sun 10 Sept.** Bio: Photosynthesis; Chem: Electrolysis – Molten (Prac); Phys: The National Grid.
Session 1.02: **Access opens: Mon 11 Sept. Zoom: Sun 17 Sept.** Bio: Microscopy (Prac); Chem: The Periodic table & its' history (&labels); Phys: Energy Conservation: Kinetic Energy and Gravitational Potential Energy.	**Session 2.02:** **Access opens: Mon 11 Sept. Zoom: Sun 17 Sept.** Bio: Leaf Structure; Chem: Electrolysis – Aqueous (Prac); Phys: Transformers.
Session 1.03: **Access opens: Mon 18 Sept. Zoom: Sun 24 Sept.** Bio: Enzyme action (Prac) & Enzyme graphs; Chem: Models of the Atom; Phys: Velocity-time & Distance-time graphs, and accompanying calculations.	**Session 2.03:** **Access opens: Mon 18 Sept. Zoom: Sun 24 Sept.** Bio: Effect of light intensity on photosynthesis (Prac); Chem: Electrolysis of Aluminium; Phys: Circuit Symbols.
Session 1.04: **Access opens: Mon 25 Sept. Zoom: Sun 1 Oct.** Bio: Transport: diffusion, osmosis & active transport (Prac); Chem: Reactions of metals and acids to form salts (Prac); Phys: Momentum and the conservation of momentum.	**Session 2.04:** **Access opens: Mon 25 Sept. Zoom: Sun 1 Oct.** Bio: Plant hormones & their uses; Chem: Half Equations; Phys: Circuits, calculations and rules of current and voltage.

Session 1.05: **Access opens: Mon 2 Oct. Zoom: Sun 8 Oct.** Bio: Aerobic Respiration (Prac); Chem: Strong & Weak acids; Phys: Forces & Resultant Forces.	**Session 2.05:** **Access opens: Mon 2 Oct. Zoom: Sun 8 Oct.** Bio: Plant diseases & mineral deficiencies; Chem: Fuel and chemical cells; Phys: The 5 circuit components and their graphs.
Session 1.06: **Access opens: Mon 9 Oct. Zoom: Sun 15 Oct.** Bio: Anaerobic Respiration; Chem: Separating substances: filtration, evaporation, crystallisation, simple distillation, fractional distillation, separating funnel, chromatography; Phys: Terminal Velocity & falling objects.	**Session 2.06:** **Access opens: Mon 9 Oct. Zoom: Sun 15 Oct.** Bio: Mendel & pea plants; Chem: Extracting metals from ores by electrolysis or by carbon; Phys: The Plug and power calculations.
Session 1.07: **Access opens: Mon 16 Oct. Zoom: Sun 22 Oct.** Bio: Surface Area; Chem: Chromatography and Rf calculations (Prac); Phys: Newton's three laws of motion.	**Session 2.07:** **Access opens: Mon 16 Oct. Zoom: Sun 22 Oct.** Bio: Transpiration and Translocation; Chem: Crude oil and fractional distillation; Phys: Earthing and resistance of a wire practical.
Oct 23 (Half term)	**Oct 28** Skills Focus 1: How examiners mark. Access opens 25 October.
Session 1.08: **Access opens: Mon 23 Oct. Zoom: Sun 5 Nov.** Bio: Cell division: Mitosis; Chem: Bonding I: Covalent; Phys: Acceleration and the trolley practical.	**Session 2.08:** **Access opens: Mon 23 Oct. Zoom: Sun 5 Nov.** Bio: Human immune system; Chem: Alkanes & Alkenes, and addition polymerisation; Phys: Left and right hand rules.
Session 1.09: **Access opens: Mon 6 Nov. Zoom: Sun 12 Nov.** Bio: Cell division: Meiosis; Chem: Bonding II: Ionic; Phys: Motion and Forces and stopping distances.	**Session 2.09:** **Access opens: Mon 6 Nov. Zoom: Sun 12 Nov.** Bio: Communicable diseases: bacteria, viruses, fungi and protists; Chem: Alcohols & carboxylic acids and condensation polymerisation; Phys: Magnetism, Permanent magnets and electromagnets.
Session 1.10: **Access opens: Mon 13 Nov. Zoom: Sun 19 Nov.** Bio: Stem cells & differentiation; Chem: Bonding III: Metallic & alloys; Phys: Energy Efficiency.	**Session 2.10:** **Access opens: Mon 13 Nov. Zoom: Sun 19 Nov.** Bio: Non-communicable diseases: cancer, screening; Chem: Polymers, esters; Phys: Dynamos, alternators & electric motors.
Session 1.11: **Access opens: Mon 20 Nov. Zoom: Sun 26 Nov.** Bio: Circulatory system: vessels & blood; Chem: Factors affecting the rates of reactions; Phys: Renewable and non-renewable resources.	**Session 2.11:** **Access opens: Mon 20 Nov. Zoom: Sun 26 Nov.** Bio: Selective Breeding; Chem: Amines, Amino Acids; Phys: Loudspeakers and microphones.

Session 1.12: **Access opens: Mon 27 Nov. Zoom: Sun 3 Dec.** Bio: Circulatory system: heart; Chem: The reactivity series; Phys: Power and work done.	**Session 2.12:** **Access opens: Mon 27 Nov. Zoom: Sun 3 Dec.** Bio: Genetic Engineering; Chem: Cracking; Phys: The Particle Model
Session 1.13: **Access opens: Mon 4 Dec. Zoom: Sun 10 Dec.** Bio: Food tests (Prac); Chem: Calculations I: Combining power, RAM, RFM; Phys: Conserving energy in the home and payback time.	**Session 2.13:** **Access opens: Mon 4 Dec. Zoom: Sun 10 Dec.** Bio: Food webs, food chains and energy transfers Chem: Calculations VI: Gas volume calculations; Phys: Atomic structure and isotopes.
Session 1.14: **Access opens: Mon 11 Dec. Zoom: Sun 17 Dec.** Bio: DNA Structure and genes; Chem: Calculations II: Mass/Mr Mole, Empirical formulae & percentage composition; Phys: Simple Circuit Ideas and Electricity Basics.	**Session 2.14:** **Access opens: Mon 11 Dec. Zoom: Sun 17 Dec.** Bio: Coronary heart disease and other problems; Chem: Gas identification: oxygen, carbon dioxide, hydrogen, chlorine, ammonia, test for alkenes; Phys: Red shift and the Doppler effect.
Dec 20	**Dec 20**
Dec 27	**Dec 27**
Session 1.15: **Access opens: Mon 18 Dec. Zoom: Sun 7 Jan.** Bio: Inheritance; Chem: Calculations III: Mass of reactants & products and yield; Phys: Wave Investigations (Prac).	**Session 2.15:** **Access opens: Mon 18 Dec. Zoom: Sun 7 Jan.** Bio: Natural Selection; Chem: Flame tests: potassium, sodium, lithium, calcium, strontium, copper (prac); Phys: CMBR and BBT.
Session 1.16: **Access opens: Mon 8 Jan. Zoom: Sun 14 Jan.** Bio: Mutations and variations; Chem: Calculations IV: Bond Enthalpy; Phys: Wave calculations.	**Session 2.16:** **Access opens: Mon 8 Jan. Zoom: Sun 14 Jan.** Bio: Darwin & Lamarck; Chem: Positive ion tests: copper, iron II, iron III, calcium, magnesium, aluminium (Prac); Phys: Static electricity and electric fields.
Session 1.17: **Access opens: Mon 15 Jan. Zoom: Sun 21 Jan.** Bio: The endocrine system; Chem: Calculations V: Titrations; Phys: Ray diagrams.	**Session 2.17:** **Access opens: Mon 15 Jan. Zoom: Sun 21 Jan.** Bio: Evidence for evolution, and extinction (and Edexcel Human Evolution); Chem: Negative ion tests: carbonate, sulphate, chloride, bromide, iodide (Prac); Phys: Spring constant and associated calculations.
Session 1.18: **Access opens: Mon 22 Jan. Zoom: Sun 28 Jan.** Bio: Thermoregulation; Chem: Balancing Equations I: Beginner skills; Phys: Refraction in blocks (prac).	**Session 2.18:** **Access opens: Mon 22 Jan. Zoom: Sun 28 Jan.** Bio: Carl Linnaeus, classifications and domains; Chem: Phytomining and bioleaching; Phys: Elastic potential energy.
Session 1.19: **Access opens: Mon 29 Jan. Zoom: Sun 4 Feb.** Bio: Blood Glucose regulation & diabetes; Chem: Balancing Equations II: Advanced skills; Phys: The EM Spectrum.	**Session 2.19:** **Access opens: Mon 29 Jan. Zoom: Sun 4 Feb.** Bio: Adaptations, interdependence and competition; Chem: The Haber Process; Phys: Hooke's law (Prac).

Session 1.20: **Access opens: Mon 5 Feb. Zoom: Sun 11 Feb.** Bio: The Menstrual Cycle and Pregnancy; Chem: Displacement reactions and ionic equations; Phys: Investigating radiation (Prac).	**Session 2.20:** **Access opens: Mon 5 Feb. Zoom: Sun 11 Feb.** Bio: Biotic and abiotic factors; Chem: Reversible reactions and dynamic equilibrium (Le Chatelier's Principles); Phys: Moments, levers and gears.
Half Term	*Half Term*
Session 1.21: **Access opens: Mon 12 Feb. Zoom: Sun 25 Feb.** Bio: Osmoregulation; Chem: Precipitate reactions and ionic equations; Phys: Generating EM Waves, Uses and Hazards of EM waves.	**Session 2.21:** **Access opens: Mon 12 Feb. Zoom: Sun 25 Feb.** Bio: Sampling in an ecosystem (prac); Chem: Reactions of group 1, group 7 and group 0; Phys: Specific heat capacity (Prac).
Session 1.22: **Access opens: Mon 26 Feb. Zoom: Sun 3 March.** Bio: The Kidneys; Chem: Nanoparticles and some composites; Phys: Alpha, Beta & Gamma Radiation.	**Session 2.22:** **Access opens: Mon 26 Feb. Zoom: Sun 3 March.** Bio: Cycling nutrients through an ecosystem: carbon cycle, nitrogen cycle & water cycle; Chem: Soluble and insoluble salts; Phys: Specific latent heat.
Session 1.23: **Access opens: Mon 4 March. Zoom: Sun 10 March.** Bio: Contraception; Chem: Allotropes of Carbon; Phys: Penetrating and Ionising powers of alpha, beta and gamma radiation.	**Session 2.23:** **Access opens: Mon 4 March. Zoom: Sun 10 March.** Bio: living indicators: in water (invertebrates), in air (lichen and fungi) and temp (migration); Chem: REDOX reactions; Phys: Black body radiation.
Session 1.24: **Access opens: Mon 11 March. Zoom: Sun 17 March.** Bio: IVF; Chem: Endothermic and exothermic reaction profiles; Phys: Half-life.	**Session 2.24:** **Access opens: Mon 11 March. Zoom: Sun 17 March.** Bio: Human influences on the environment; Chem: Making fertilisers I; Phys: Soundwaves (infrasound; ultrasound).
Session 1.25: **Access opens: Mon 18 March. Zoom: Sun 24 March.** Bio: Monoclonal Antibodies; Chem: Making pure, dry samples; Phys: Fission and nuclear power stations	**Session 2.25:** **Access opens: Mon 18 March. Zoom: Sun 24 March.** Bio: Trophic levels and pyramids; Chem: Making fertilisers II; Phys: Earthquakes and seismic waves.
Session 1.26: **Access opens: Mon 25 March. Zoom: Sun 14 April.** Bio: Digestive system; Chem: Types of reactions, hazard symbols & titrations (Prac); Phys: Fusion.	**Session 2.26:** **Access opens: Mon 25 March. Zoom: Sun 7 April.** Bio: Parasitism & mutualism; Chem: Complete and incomplete combustion; Phys: Pressure in gases and fluids.
Easter Break	*Easter Break No lesson on Easter Sunday – 31 March*

	Session 2.27: **Access opens: Mon 8 April. Zoom: Sun 14 April.** Bio: Biotechnology and fermentation; Chem: Protecting metals from corrosion; Phys: P1 x V1 = P2 x V2.
Session 1.27: **Access opens: Mon 15 April. Zoom: Sun 21 April.** Bio: Protein synthesis; Chem: The atmosphere past and present; Phys: Lifecycle of stars.	**Session 2.28:** **Access opens: Mon 15 April. Zoom: Sun 21 April.** Bio: Food security and farming techniques; Chem: Composites, ceramics, making glass and other polymers; Phys: Density calculations.
Session 1.28: **Access opens: Mon 22 April. Zoom: Sun 28 April.** Bio: The brain, nervous system and the reflex arc; Chem: Greenhouse gases and global warming; Phys: Nuclear equations.	**Session 2.29:** **Access opens: Mon 22 April. Zoom: Sun 28 April.** Bio: Investigating disinfectants; Chem: Making ethanol; Phys: Density (Prac).
Session 1.29: **Access opens: Mon 29 April. Zoom: Sun 5 May.** Bio: The eye; Chem: LCAs and sustainability; Phys: Lenses and Lens diagrams.	
Session 1.30: **Access opens: Mon 6 May. Zoom: Sun 12 May.** Bio: Long and short-sightedness; Chem: Producing potable water (Prac); Phys: The solar system, comets, satellites, asteroids, orbits, and the origins of the universe (models of Copernicus & Galileo).	**Final GCSE Exams begin the week of 13 May – so we finish in good time ahead of then.** **May 19 – June 9: 3 lessons, one per subject, where we will be going over the Top Tips for what to study for the coming exams.**
May 19 – June 9; The 3 skills building lessons will be at the same times on May 19, May 26 and June 9.	