BTEC Applied Science (AAQ) Year 12 – Overview					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Foundations - course induction; maths skills; lab skills. **Unit 1 Cells** - prokaryotic, eukaryotic and plant cells; micrographs; Gram staining and antibiotics; magnification. Specialised cells - plant cells; blood cells; sex cells; neurones. Tissues - epithelial and COPD; endothelial and atherosclerosis; muscle; nervous tissue and synapses. **Biological molecules** - water; carbohydrates; proteins. Topic test and review **Microscopy; dissection; food tests**	**Unit 1 Biological molecules** - nucleic acids; lipids. **Cell transport** - fluid mosaic model; diffusion; osmosis; active and bulk transport. **Enzymes** - action; factors affecting activity. **Homeostasis** - feedback loops; nervous and endocrine control; disturbance of homeostasis. Exam preparation and mock **Unit 2 Atomic structure** - periodic table; electronic configurations. **Beetroot and colorimeter; osmosis; enzyme carousel** **Unit 1 exam: January**	**Unit 2 Atomic structure** - ionisation energy. **Bonding and structure** - metallic, ionic and covalent bonding; molecular shape; polarity; intermolecular forces. **Periodicity** - Period 3 trends; oxidation and redox; Period 3 reactions. **Unit 3 Waves** - wave properties; superposition; diffraction gratings; stationary waves. Optical fibres - refraction; total internal reflection; signals. EM waves - inverse square law; communication uses. Topic test and review **Diffraction grating; refractive index; light intensity**	**Unit 2 Periodicity** - predictions and uses. **Physical chemistry** - moles; kinetics; energetics; equilibrium; green chemistry. **Organic chemistry** - key terms; formulae; naming; isomerism. **Unit 3 Forces** - motion graphs; equations of motion; Newton's laws; friction; momentum; drag. **Electrical circuits** - components; meters. Topic test and review **Empirical formula; ethanol combustion; trolley and friction; circuits** **January results; summer entries**	**Unit 2 Organic chemistry** - reactions of organic compounds; polymers; benefits and problems. **Unit 3 Electricity and energy** - electrical equations; energy usage; specific heat capacity; latent heat. Exam preparation and mocks **Alcohol oxidation; esterification; specific heat capacity** **Unit 2 and Unit 3 exams: May** **Unit 4 launch** - equipment; calibration; uncertainty.	**Unit 4 Biology** - colorimetry; calibration curves; quadrats; plant growth; dissection; microscopy. **Unit 4 Chemistry rehearsal** - standard solutions; titration. Unit 5 project ideas for summer reading. **Unit 4 Task 2**

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Unit 4 Chemistry - titration; chromatography; melting point; evaluating accuracy and reliability. **Unit 4 Physics** - cooling curves; specific heat capacity; circuits and resistivity. Results review and resit preparation **Unit 4 Task 1; Task 3a; Task 3b**	**Unit 4 Physics** - resistivity; solar panels. **Unit 4 Skills review** - personal responsibility; interpersonal skills; professional practice; SMART action plan. **Unit 5 Investigation skills** - scientific method; hypotheses; literature search; referencing. Resit preparation and mocks **Unit 4 Task 3b; Task 3c; Task 4**	**Unit 5 Planning** - project scheduling; risk and ethics; literature review; proposal and plan; trial runs. **Unit 5 Data skills** - descriptive statistics; t-test; chi-square; confidence levels; report writing. **Unit 5 Task 1** **January resits**	**Unit 5 Investigation** - safe procedures; calibration; logbook; data collection; statistical analysis; data presentation. Resit review **Unit 5 Task 2** **January results; summer entries**	**Unit 5 Report** - scientific report; evaluation of findings; skills review. Resit preparation **Unit 5 Task 3: end of April** **Resit exams: May** Resubmissions completed	Study leave **Internal grades and full award claim: 5 July**