Subject: **KS5 Physics**		Year Group: **13**
Term 1 Key Focus/Topic(s) **Further Mechanics** • Impluse • 2D collision • Circular Motion • Centripetal Force	Term 2 Key Focus/Topic(s) **Oscillation + Space** • SHM • Resonance • Hertzsprung-Russell diagrams • Hubble's law • Fate of the Universe	Term 3 Key Focus/Topic(s) **Electric & magnetic fields** • Electric fields • Capacitance • Magnetic fields • Faraday's law • AC theory
Term 1 Assessment Opportunities: • Classwork in tutorial lessons. • Homework. • CORE PRACTICAL 9: Investigate the relationship between the force exerted on an object and its change of momentum. • CORE PRACTICAL 10: Use ICT to analyse collisions between small spheres, eg ball bearings on a table top.	Term 2 Assessment Opportunities: • Classwork in tutorial lessons. • Homework. • CORE PRACTICAL 16: Determine the value of an unknown mass using the resonant frequencies of the oscillation of known masses	Term 3 Assessment Opportunities: • Classwork in tutorial lessons. • Homework. • CORE PRACTICAL 11: Use an oscilloscope or data-logger to display and analyse the potential difference (p.d.) across a capacitor as it charges and discharges through a resistor
Term 4 Key Focus/Topic(s) **Nuclear radiation + Nuclear & particle physics** • E = mc2 • Nature of α, β & γ • Radioactive decay • Standard model • Particle accelerators • Fission & fusion	Term 5 Key Focus/Topic(s) **Revision and Exams**	
Term 4 Assessment Opportunities: • Classwork in tutorial lessons. • Homework. • Mock exam results. • CORE PRACTICAL 15: Investigate the absorption of gamma radiation by lead.	Term 5 Assessment Opportunities:	

Long term overview for Year 13 Physics

Rationale:

In Term 1 Year 12 - some of the basic concepts and mathematical foundations are laid for the course. All of the other topics rely on the material cover in the mechanics topic and so it comes first. The waves topic is left until the end of the Year 12 work because of the complexity of the core practical investigations that require a higher level of practical skills, and the abstract thinking required by students for the photoelectric effect.

In Term 6 Year 12 we start the Year 13 work with the thermodynamics topic. Thermodynamics is one of the more accessible units in the A2 material and also works well in Term 6 because there is a great deal of practical work.

In Term 1 Year 13 (as in Year 12) basic concepts and mathematical foundations are laid in the Further Mechanics topic. Certain aspects of the other topics rely on the material covered in the Further Mechanics topic and so it is positioned first.

A big feature of the A level Physics Scheme of Work is to develop the students critical thinking skills. Students are expected to develop higher quality thinking skills, participate more in lessons, demonstrate more profound levels of knowledge and make connections across topics. The lessons are sequenced and designed to do this. Students are also set reading work and are assessed on the quality of understanding in class discussions. Students are asked to read some of the lesson's content before the lesson, thereby allowing for a deeper understanding to be developed through discussion with peers and problem-solving activities. Reading outside of lessons also promotes independence and allows students to consolidate lesson content better.

Evaluation:

- Assessment opportunities will involve teacher, self and peer assessment. The assessment is focused around work produced in tutorial and lab sessions where the students are required to demonstrate their practical and mathematic skills as well as their scientific knowledge of the theory covered.
- Early intervention is a key feature of the A level assessment so that gaps in attainment can determine promptly and barriers in the students learning addressed. Lesson observations, work scrutiny and particularly student discussions and self-assessment are key aspects in ensuring that students can close gaps and make good progress. It also results in greater student retention from Year 12 to Year 13.
- In lessons they should be demonstrating critical thinking skills and making connections across topics.
- Homework consists of questions in which multiple steps solutions are required. Homework tests the students' knowledge and ability to apply their knowledge to find answers.
- Students should demonstrate an understanding of how theory is used to explain scientific phenomenon with clarity and detail.
- Lesson observations, work scrutiny and particularly student discussions and self-assessment play a key role in student assessment.

Long term overview for Year 13 Physics