**KS5 Physics**

**Year Group 12:** Half Term 1

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| Number of Hours | Topic |
| 7 × 5 = 35 | Measurements & Their Errors (7.5)Progressive & Stationary Waves (10)Electricity (17) |
| As available | Revision work |
| Reasons behind order of topic in this half term |
| * Measurements and Errors is fundamental for calculations in required practicals and must be covered first.
* Progressive and stationary waves build on knowledge and understanding from GCSE and offers a familiar start to A-Level. Many topics later on in the course have waves and oscillations at their basis and require prior knowledge from this topic.
* Electricity is also a familiar topic from GCSE. The content builds on prior learning fast and experiments in this topic give the students the skills to perform required practicals throughout A-Level.
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**Year Group 12:** Half Term 2

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| Number of Hours | Topic |
| 8 × 5 = 40 | Electricity (18)Progressive & Stationary Waves (5)Interference (10)Diffraction & Refraction (5) |
| As available | Revision work |
| Reasons behind order of topic in this half term |
| * Electricity topic continues.
* Progressive & Stationary Waves continues.
* Interference builds on knowledge from progressive and stationary waves and couldn’t be done at an earlier time because of this. It is a natural lead on from the previous waves topic.
* Similarly, diffraction and refraction build of previous topics using equipment, skills and knowledge from previous waves topics and measurements.
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**Year Group 12:** Half Term 3

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| Number of Hours | Topic |
| 6 × 5 = 30 | Diffraction & Refraction (5)Particles & Radiation (10)Moments (2.5)Motion in a Straight Line (7.5)Projectiles (5) |
| As available | Revision work |
| Reasons behind order of topic in this half term |
| * Diffraction and Refraction continues.
* Particles and Radiation is touched on in GCSE but is mostly about new concepts and ideas. Ideas from this topic appear again in the radiation topic in year 13 and to a lesser extent Fields.
* Moments is a direct follow on from GCSE and covers much of the same work but questions are conceptually more difficult and require good problem solving abilities.
* Motion in a straight line also has strong links to GCSE, again with more tricky examples and concepts.
* Projectiles takes the information from motion in a straight line and applies it to multidimensional problems. Must be done after motion in a straight line.
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**Year Group 12:** Half Term 4

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| Number of Hours | Topic |
| 5 × 5 = 25 | Particles & Radiation (15)Newton’s Laws of Motion (7.5)Momentum (5)Materials (2.5) |
| As available | Revision work |
| Reasons behind order of topic in this half term |
| * Particles & Radiation continues.
* Newton’s laws of motion is a topic from GCSE but has more of an emphasis on integrating these laws with other concepts covered previously in Motion in a straight line and Projectiles.
* Momentum is covered simply in GCSE and in build on here with a basis in Newton’s Laws covered previously. Couldn’t be taught before this point.
* Materials is mostly a new topic for A-Level but relies on methodology from measurements and their errors and principles from Newton’s Laws.
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**Year Group 12:** Half Term 5

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| Number of Hours | Topic |
| 5 × 5 = 25 | Particles & Radiation (10)Materials (5)Work, Energy & Power (5)  |
| As available | Revision work |
| Reasons behind order of topic in this half term |
| * Particles and Radiation continues.
* Materials Continues
* Work, Energy and Power follows on from the energy topics from GCSE and must be done in year 12 as many of the topics in year 13 deal with these ideas. Ideas in this topic touch on previously learned knowledge from waves, particles and momentum.
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**Year Group 12:** Half Term 6

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| Number of Hours | Topic |
| 7 × 5 = 35 | Conservation of Energy (2.5)Circular Motion & SHM (10)Elec Fields (10) |
| As available | Revision Work |
| Reasons behind order of topic in this half term |
| * Conservation of energy must be completed after Work Energy and Power. It would not be possible to complete most of the work otherwise. Again builds on knowledge from particles, momentum etc and is an important concept in year 13.
* Circular motion must be completed before gravitational fields. Circular motion lays foundations and concepts that are important for this topic in year 13.
* Electric fields is the best field to start with and many of the ideas and fundamentals from here are common to later fields topics and make them more accessible to students.
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**Year Group 13:** Half Term 1

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| Number of Hours | Topic |
| 7 × 5 = 35 | Circular Motion, SHM & Resonance (7.5)SHC, Latent Heat & Gas Laws (10)Electric Fields (2.5)Magnetism, Induction & Transformers (5) |
| As available | Revision work |
| Reasons behind order of topic in this half term |
| * Circular motion continues.
* Electric Fields continues
* SHC, Latent heat and gas laws are a neat follow on from energy and work done in year 12. Much of the information learned about particles in those topics are applied here.
* Magnetic Fields are closely linked to electric fields in as much as one might be said to induce the other; electromagnetic waves being a commonality. Having the topics side by side makes sense in this case.
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**Year Group 13:** Half Term 2

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| Number of Hours | Topic |
| 8 × 5 = 40 | Magnetism, Induction & Transformers (5)Gravitational Fields (2.5)Capacitors (5) |
| As available | Revision work |
| Reasons behind order of topic in this half term |
| * Magnetic fields continue.
* Gravitational waves, despite seeming very different from electric fields, shares much in common with regards to mathematical models. Theories developed in electric fields are utilised again in gravitational fields. Fundamentals from motion in a straight line from year 12 are also important here.
* Capacitors contains ideas from electric, and to an extent magnetic fields. Placing it as the final fields topic makes sense in this context and also helps to maintain a spread in time of the required practical in this section.
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**Year Group 13:** Half Term 3

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| Number of Hours | Topic |
| 6 × 5 = 30 | Nuclear Physics (7.5)Thomson’s E/M, Millikan’s Experiment (3.75)Wave Particle Duality (6.25) |
| As available | Revision work |
| Reasons behind order of topic in this half term |
| * Nuclear physics has a heavy basis in the particles section from year 12 and follows on strongly from GCSE. The required practical associated with this section requires a good understanding of the practical method and should ideally be done as the last practical from a safety standpoint.
* Thomson’s E/M and Millikan’s Experiment are part of the Turning points in physics option module. We select this module for students as it is the one which has the largest spread in content. That is, there are sections which have their basis in a large range of the course which preceded it. When the students intend to go on to university and study a broad range of subjects, this topic is the one which covers most bases and doesn’t specialise on a single topic too much.
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**Year Group 13:** Half Term 4

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| Number of Hours | Topic |
| 5 × 5 = 25 | Relativity (6.25)Nuclear Physics (5) |
| As available | Revision work |
| Reasons behind order of topic in this half term |
| * Nuclear physics continues.
* Relativity is also part of the option unit and is selected for the same reasons as mentioned previously.
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