

Chapelton Academy Y12 Curriculum Intent Plan

Subject: Physics

Procedural knowledge (exam technique, skills etc):

a. Graphs - Constants and variables, comparing equations to $y = mx + c$, graphs, tables; linear graphs, drawing curves; log lin graphs, reading from graphs, recognising different graphical relationships from graphs and tables.

b. Experimental Physics - Writing lab reports (method, safety, precautions, results, analysis, conclusion, references), using spreadsheets

c. Experimental Physics - Calculating experimental uncertainties and percentage differences

d. Experimental Physics - Working collaboratively (under development), managing time (under development), using a wide range of equipment

e. Careers - university, apprenticeships

f. Mathematical Methods - see Specification Appendix 6: Mathematical skills and Exemplifications. Only significant content delivery noted. AFL thorough homework and classwork.

g. Applications of Physics - Solving multi-step problems, selecting correct approach, derivations

h. Applications of Physics - Explaining phenomena using Physics terms

i. Independent Study Skills - Creating and using revision resources, Reflection, Worked Examples, 5 Step Method

| Week | No of lessons | w/c | Calendar Constraints | Disciplinary Knowledge Sequence | Lab Technician | Disciplinary knowledge connections | Procedural knowledge progression | RS revision knowledge topic | HW focus and actions | Assessment (topic and skills assessed) |
|------|---------------|------------|--|---|---|--|---|--|--|--|
| 1 | 0 | 04/09/2023 | Y12s in on Friday | | | | | | | |
| 2 | 5 | 11/09/2023 | | Further Mechanics - Circular Motion | Marbles and ball bearings, cups and strings, drill + card | Momentum, Energy | a, b, d, f-radians, small angle approx, g-centripetal force+derivation | Further Mechanics - Momentum and Energy, Waves and PNoL | Further Mechanics - Circular Motion | |
| 3 | 5 | 18/09/2023 | | Further Mechanics - CP9, CP10, (Whirling Bungs), Folder Check, RS Check | , Linear Air Track (Whirling bungs?) | Forces, Motion | c | Further Mechanics - Circular Motion, Waves and PNoL | Further Mechanics - Circular Motion, Core Practical 9 and 10 | |
| 4 | 5 | 25/09/2023 | Y12 Awards | Gravitational Fields, Test | | Forces, Motion | | Further Mechanics - Circular Motion, Waves and PNoL | Further Mechanics - Circular Motion | 1. Waves and PNoL |
| 5 | 5 | 02/10/2023 | | Gravitational Fields, Logs and Graphs, Spare, Spaced Practice-Electric Circuits, Folder Check, RS Check | Ladder | Circular Motion, Forces | f-exponentials; a- log plots, reading log-log and log-lin graphs, recognising different graphical | Further Mechanics - Circular Motion, Electric Circuits | Further Mechanics - Circular Motion | |
| 6 | 5 | 09/10/2023 | Progress Day, Inset Day | Electric Fields | Please set up the Van de Graaff Generator and leave out the accessories and some balloons. Please set up the electric fields and semolina demonstration (don't add the semolina). | Charge, Forces, Energy, Motion, Particle Physics | e - Space Science and Near Earth Sensing via Teams Assignment | Fields - Gravitational Fields, Electric Circuits | Fields - Gravitational Fields | |
| 7 | 2 | 16/10/2023 | | Electric Fields + test, Folder Check, RS Check | | Circular Motion, Forces, Energy | f-exponentials | Fields - Gravitational Fields; Mechanics and Further Mechanics | Fields - Gravitational Fields | 2. Grav Fields Electricity |
| 8 | 5 | 23/10/2023 | Half Term | Capacitance | Demo - Bin Bag Capacitor; Demo - capacitor examples (in a tub) | Charge, Electric Circuits, Energy | f-exponentials; a- log plots, reading log-log and log-lin graphs, recognising different graphics | Fields - Electric Fields; Mechanics and Further Mechanics | Fields - Electric Fields | |
| 9 | | 30/10/2023 | 31st Oct Y13 Parents Eve | | | | | | | |
| 10 | 5 | 06/11/2023 | 8th Nov Open Evening | Capacitance, CP11, CP12, Spaced Practice - Writing a Method | CP11: Charge/Discharge of a Capacitor | Charge, Electric Circuits, Energy | a, b, d, | Fields - Capacitors; Mechanics and Further Mechanics | Fields - Capacitors, Core Practical 11 and Core Practical 12 | |
| 11 | 5 | 13/11/2023 | Y11 taster sessions start? | Test, Spare, Magnetic Fields | CP12: Calibrate a temperature sensor | Charge, Forces, Energy, Motion, Particle Physics, Circular Motion | | Fields - Capacitors; Experimental Physics | Fields - Capacitors | 3. Mechanics and Further Mechanics |
| 12 | 5 | 20/11/2023 | 24th Nov Staff Inset | Magnetic Fields | Force on a moving wire, Force between two current carrying wires, Gauss Gun | Charge, Forces, Energy, Motion, Particle Physics, Circular Motion | | Fields - Magnetic Fields, EM Induction, AC; Experimental Physics | Fields - Magnetic Fields, EM Induction, AC | |
| 13 | 5 | 27/11/2023 | | Magnetic Fields | | Charge, Forces, Energy, Motion, Particle Physics, Circular Motion | | Fields - Magnetic Fields, EM Induction, AC; | Fields - Magnetic Fields, EM Induction, AC | |
| 14 | 5 | 04/12/2023 | 4th - 8th Dec Y13 Mocks 1-7th Dec Twilight CPD | Induction | Faraday Effect Demo with Data Harvest Coil | Charge, Forces, Energy, Motion, Particle Physics, Circular Motion, Electric Circuits | h-explaining induction | Fields - Magnetic Fields, EM Induction, AC; Circular Motion, Waves | Fields - Magnetic Fields, EM Induction, AC | |

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| 15 | 0 | 11/12/2023 | Y13 Mock Exams | | | | | | | | | December Mock |
| 16 | 5 | 18/12/2023 | | Induction | Inductance Demo with Helmholtz Coils, copper pipe with magnet demo, eddy current braking demo, transformer | Electric Circuits | | | Fields - Magnetic Fields, EM Induction, AC, Research Task - Accelerators and Detectors; Circular Motion, Waves | Research Task - Accelerators and Detectors | | |
| 17 | | 25/12/2023 | | Holiday | | | | | | | | |
| 18 | | 01/01/2024 | | Holiday | | | | | | | | |
| 19 | 3 | 08/01/2024 | 11th Jan Alumni Awards Evening Y13 Alumni Awards Eve Y13 Mock 1 AP data entry deadline | Particle Physics | | Electric Circuits | | | Fields - Magnetic Fields, EM Induction, AC, Research Task - Accelerators and Detectors | Research Task - Accelerators and Detectors | | |
| 20 | 5 | 15/01/2024 | 16th Jan Progress Day Y12 AP Progress Data Entry deadline | Particle Physics | | Circular Motion, Particle Physics, Waves, Motion, Momentum, Energy, Charge | g-conservation of energy, h-explaining Rutherford Scattering | | Accelerators and Detectors, Change in momentum, energy, | Accelerators and Detectors | | |
| 21 | 2 | 22/01/2024 | 22nd Jan Twilight CPD | Thermal Physics | Fire piston, Kinetic Theory Demonstration (Potassium permanganate in warm and cold water); bicycle pump with a thermal strip/forehead thermometer stuck to it; isopropyl alcohol + dropper | Circular Motion, Particle Physics, Waves, Motion, Momentum, Energy, Charge | h-standard model | | Particle Physics | Particle Physics | 4. EM Fields, Induction, Accelerators | |
| 22 | 5 | 29/01/2024 | | Thermal Physics | | Particle Physics, Waves, Momentum, Energy | f-graph sketching | | Thermal Physics; Electricity; Capacitors | Particle Physics | | |
| 23 | 5 | 05/02/2024 | 6th Feb Open Evening 8th Feb Staff Inset | Thermal Physics | | Particle Physics, Waves, Momentum, Energy | a, b, d, f-graph sketching, g-derivation | | Thermal Physics; Electricity; Capacitors; graphs of motion | Thermal Physics, Core Practical 13 and Core Practical 14 | FM, Fields, Particles | |
| 24 | 5 | 12/02/2024 | | SHM, CP13, CP14 | | Circular Motion, Waves, Energy | f-graph sketching and graphs | | SHM, Explain that! | SHM | | |
| 25 | | 19/02/2024 | 26th Feb - 6th March Y13 Mocks 2 28th Feb Twilight CPD | | | | | | | | | |
| 26 | 5 | 26/02/2024 | 26th Feb - 6th March Y13 Mocks 2 28th Feb Twilight CPD | SHM, CP16 | | Circular Motion, Waves, Energy | a, b, d, f-graph sketching and graphs | | SHM, Explain that! | SHM | | |
| 27 | 5 | 04/03/2024 | 26th Feb - 6th March Y13 Mocks 2 | SHM, CP13, CP14 | | | | | | | Y13 Mock | |
| 28 | 0 | 11/03/2024 | | | | | | | | | | |
| 29 | 5 | 18/03/2024 | | Nuclear Physics | Dice | Interdependent with Space, Particle Physics, Energy, Forces | e - a, w, f-exponentials, log plots, reading log-log and log in graphs, h-explaining fusion | | Nuclear Physics | Nuclear Physics | | |
| 30 | 2 | 25/03/2024 | 27th Mar Y13 Parents Eve 29th March Bank Holiday 29th March Bank Holiday | Nuclear Physics, CP15 | CP15 | Interdependent with Space, Particle Physics, Energy, Forces | a, b, d | | Nuclear Physics | Nuclear Physics, Core Practical 15 | | |
| 31 | 3 | 01/04/2024 | | Space | balloon with large spots drawn on | Interdependent with Nuclear Physics and Thermal Physics, Particle Physics | h-explaining evidence for cosmological theories | | Space | Space | | |
| 32 | | 08/04/2024 | | Holiday | | | | | | | | |
| 33 | | 15/04/2024 | | 18th Apr Progress Day | | | | | | | | |
| 34 | 2 | 22/04/2024 | | Space | | Interdependent with Nuclear Physics and Thermal Physics, Particle Physics | | | Space | Space | 7. Assessed homework on Experimental Physics?? | |
| 35 | 5 | 29/04/2024 | 30th Apr Summer Exams Start 2nd May Twilight CPD | Space | balloon with large spots drawn on | Interdependent with Nuclear Physics and Thermal Physics, Particle Physics | h-explaining evidence for cosmological theories | | Space | Space | | |
| 36 | 5 | 06/05/2024 | 6th May Bank Holiday | Revision | | | | | Oscillations | Oscillations | | |
| 37 | 5 | 13/05/2024 | | Revision | | | | | | | | |
| 38 | 5 | 20/05/2024 | | Revision | Superposition of Sound demo | | | | | | | |

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| 39 | 0 | 27/05/2024 | BTEC Exams, Y13 Summer Exams start, Y12 Work Experience | | CP 7 Melde's Experiment | | | | | |
| 40 | | 03/06/2024 | Half Term | | | | | | | |
| 41 | | 10/06/2024 | | | | | | | | |
| 42 | | 17/06/2024 | 21st – 24th June Y12 Study Leave 21st June UCAS Convention | | | | | | | |
| 43 | | 24/06/2024 | 21st – 24th June Y12 Study Leave 24th Jun Induction Day 25th Jun – 2nd July Y12 Mocks 2 24th Jun Induction Day | | | | | | | |
| 44 | | 01/07/2024 | 25th Jun – 2nd July Y12 Mocks 2 2nd July Twilight CPD 3rd – 5th July Post-18 Talks and Events 3rd July Y12 Parents Eve (UCAS) | | | | | | | |
| 45 | | 08/07/2024 | | | | | | | | |
| 46 | | 15/07/2024 | Work Experience Week | | | | | | | |