



PHYSICS CURRICULUM MAP

FURTHER STUDY

Physics university study
Post-graduate study

CAREER PATHS

Researcher, Forensic Scientist, Education and Training

SKILLS

Critical analysis, interpretation, evaluation

Assessment: Mock exams (full set of three papers)

Assessment: Synoptic assessment on last year's content from terms 1-5: vectors and motion, thermal physics, forces, space, materials, circular motion, gravitational fields, oscillations, electricity and waves.

Assessment: Synoptic assessment 40 marks. Made up of a range of exam style questions on the content and skills from the paper 2 content: electric fields, radioactivity, capacitors, quantum physics.

Revision and Examination Practice

Medical Physics; Magnetic fields

- CAT scans, gamma cameras and PET scans
- Use of ultrasound and acoustic impedance
- Determine the magnitude and direction of a force on a current carrying conductor
- Calculations involving magnetic flux and magnetic flux density
- Faraday and Lenz's laws

Electric Fields; Radioactivity

- How to calculate electric field strength, force, electrical potential
- Uniform and radial electric fields
- The strong force within the nucleus
- Hadrons, baryons, mesons and quarks
- The stability curve and atoms position on the graph
- Fission and fusion reactions

Assessment: Two short answer assessments each 40 marks.

Synoptic assessments made up of a range of exam style questions on the content and skills from vectors and motion, and thermal physics, forces and space, material and circular motion.

End of year exam. 20 multiple choice questions followed by a series of short answer questions based on vectors and motion, and thermal physics, forces and space, material, circular motion, gravitational fields, oscillations, electricity and waves.

Capacitors Quantum Physics

- Photoelectric effect
- Threshold frequency and work function
- De Broglie equation
- Use of capacitors to store electrical charge
- Capacitance
- Combining capacitors in series and parallel
- Energy stored in charged capacitors

Materials and Circular Motion

- Stress, strain and Young's modulus
- Analysing graphs of materials under tension.
- Centripetal force
- Velocity and radius of circle
- The radian as a unit of angle
- Angular velocity
- Experimental techniques to prove the validity of an equation

Gravitational fields Oscillations

- Use equations to calculate gravitational field strength and force
- Conditions for harmonic motion
- Variations of energy within an oscillation
- Displacement, velocity and acceleration

Electricity and Waves

- Resistivity, potential dividers and internal resistance
- Combining resistors in series and parallel
- Properties of LDRs and Thermistors and applications as variable resistors
- Energy transferred by electricity.
- Reflection, refraction, polarisation, diffraction.
- Superposition when waves meet.

YEAR 13

Forces and Space

- Resolving forces at different angles and understanding the effects.
- Equilibrium
- Energy levels in atoms
- What we can learn from the temperature and emissions of stars
- Archimedes principle and its applications
- How neutron stars are formed
- Dark energy and dark matter

Assessment: One full exam paper: 20 multiple choice questions followed by a series of short answer questions based on vectors and motion, and thermal physics, forces and space, material, circular motion, gravitational fields and oscillations. There will be one extended answer question and at least one practical based question.

Assessment: Synoptic assessment 40 marks. Made up of a range of exam style questions on the content and skills from the paper 2 content: capacitors, quantum physics. Synoptic assessment on last year's content from terms 1-5: vectors and motion, thermal physics, forces, space, materials, circular motion, gravitational fields, oscillations, electricity and waves.

Forces and Space

- Newton's laws of motion
- Moments as turning forces
- Terminal velocity
- Explaining the stages of a star's life
- Doppler shift used as evidence for the expanding universe leading to Hubble's law.

Vectors and Motion Thermal Physics

- Base units
- Analysing motion graphs
- Describe situations involving transfers of thermal energy.
- Specific heat capacity and latent heat.
- Moles as an amount of substance

YEAR 12

Assessment: Three short answer assessments each 40 marks. Synoptic assessments made up from a range of exam style questions on the content and skills from vectors and motion, and thermal physics, forces and space.

Assessment: Transition test - 30 marks of short answer questions based on the transition work. Two further short answer assessments each 40 marks. Made up of a range of short answer questions from vectors and motion, and thermal physics.

SCIENCE SKILL

Scientific knowledge and conceptual understanding

SCIENCE SKILL

The nature, processes and methods of science

SCIENCE SKILL

Analysis, evaluation and measurement

SCIENCE SKILL

Experimental skills and investigations