



St John's Curriculum Overview – Year 12



Introduction	
Subject title	Physics
Setting arrangements	Course entry requirements: GCSE Maths 5 and GCSE Physics 5 or GCSE Combined Science 55
Time allowance each fortnight	9 hours

<ul style="list-style-type: none"> Physics at St Johns is studied at A-Level only. We cover the AQA Physics specification (7408) Students work towards three externally assessed written exams in A-Level Physics. Paper 1: Sections 1-5 & 6.1 and is a combination of multiple choice, short and long answer questions. Paper 2: Sections 6.2, 7 & 8 as well as assumed knowledge from 1-5 & 6.1, and a combination of multiple choice, short and long answer. Paper 3: Practical skills, Data analysis and one of sections 9, 10, 11, 12 & 13. The specification has been written in a context-free style, allowing suitable contexts to be chosen. We allow each of options 9-12 (Astrophysics, Medical Physics, Engineering Physics and Turning Points in Physics) to take place in the same class, allowing students to start specialising. 40% of marks across the question papers will assess mathematical skills at higher tier GCSE level Practical work done to support teaching of the content will serve to cover the requirements of the practical skills module, which is assessed in written examinations and through the Practical Endorsement. This Practical Endorsement contains 5 different CPACs (Common Practical Assessment Criteria)

Topics, Content and Assessment covered during the course

Term	Teacher 1 topics and content	Teacher 1 Assessment details	Teacher 2 topics and content	Teacher 2 Assessment details
Term 1	2. Particles & Radiation (PR) 2.1.1. Constituents of the atom 2.1.2 Stable and unstable nuclei 2.1.3 Particles, antiparticles and photons 2.1.4 Particle interactions	Homework questions from booklet. Tests: PR 1, PR 2	Required Practical activity 1. Measurements & their Errors (ME) 1.1 Use of SI units and their prefixes 1.2 Limitation of physical measurements 1.3 Estimation of physical quantities 3. Waves (Wa) 3.1.1 Progressive waves 3.1.2 Longitudinal and transverse waves 3.2.3 Refraction at a plane surface	Homework questions from booklet. Tests: ME 1, Wa 1,
Term 2	2.1.5 Classification of particles 2.1.6 Quarks and antiquarks 2.1.7 Applications of conservation laws 2.2.1 The photoelectric effect 2.2.2 Collisions of electrons with atoms 2.2.3 Energy levels and photon emission 2.2.4 Wave-particle duality	Homework questions from booklet. Tests: PR 3, PR 4, PR 5	3.1.3 Principle of superposition of waves and formation of stationary waves 3.2.1 Interference 3.2.2 Diffraction	Homework questions from booklet. Tests: Wa 2, Wa 3 Required Practical 1: Stationary Waves Required Practical 2: Young's slits & Diffraction

Term 3	4 Mechanics and materials (Me & Ma) 4.1.1 Scalars and vectors 4.1.2 Moments 4.1.3 Motion along a straight line 4.1.4 Projectile motion 4.1.5 Newton's laws of motion	Homework questions from booklet. Tests: PR Full, Me 1, Me 2 Required Practical 3: g by freefall	5. Electricity (EI) 5.1.1. Basics of electricity 5.1.4. Circuits 5.1.2. IV characteristics	Homework questions from booklet. Tests: Wa 4, Wa Full, EI 1
Term 4	4.1.7 Work, energy and power 4.1.8 Conservation of energy 4.1.6 Momentum	Homework questions from booklet. Tests: Me 3, Me Full, Ma 1 Required Practical 4: Young modulus	5.1.3. Resistivity 5.1.5. Potential dividers	Homework questions from booklet. Tests: EI 2 Required Practical 5: Resistivity
Term 5	4.2.1 Bulk properties of solids 4.2.2 The Young modulus	Homework questions from booklet. Tests: EI 3	5.1.6. Emf and r	Homework questions from booklet. Tests: EI 3, EI Full Required Practical 6: EMF and internal resistance
Term 6	6.2 Thermal Physics (Th) 6.2.1. Thermal energy transfer	Homework questions from booklet. Tests: EI Full, EOY 12 exam Required practical catch up	6.1.1 Circular motion (CM)	Homework questions from booklet. Tests: EOY 12 exam, CM 1 Required practical catch up

Resources Recommended for Revision and where they are available:

- AQA A level Physics textbook – various available online/book stores
- AQA A level Physics revision guide – various available online/book stores
- Mr Friend has every AQA past paper since 2001 (Physics and Maths tutor goes back to 2009)
- Use good **revision websites** (and suitable videos) to give an alternative wording to some explanations.

<http://www.physicsandmathstutor.com/past-papers/a-level-physics>

<https://www.alevelphysicsonline.com/aqa>

<https://cyberphysics.co.uk/>

<https://www.youtube.com/playlist?list=PLAd0MSIZBSsHL8ol8E-a-xgdeyQCKGnGt>

Homework:

- Review the relevant **booklet** after each lesson using the relevant textbook pages
- Complete exam questions in the **booklet** and ready for the next lesson

- Do the **summary questions** in the textbook and check the answers
- Revise effectively for each test and exam
- Act upon feedback from all assessments

Additional support and help for the course

- Once you know what areas of each topic you do not understand, do more past paper exam questions and revise those areas in your private study sessions.
- Ask your teachers for help!
- Attend the **drop-in support sessions** which run on Tuesdays after school (when there are no staff meetings) and Wednesday lunch / lesson 4b in L012.

Extra-curricular:

- Physics Olympiad
- Residential trip to CERN