



St John's Curriculum Overview – Year 13



Introduction

- 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)

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

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	6 Further mechanics and thermal physics 6.2.2 Ideal gases 6.2.3 Molecular kinetic theory model	Homework questions from booklet. Tests: Th 2, Th 3, Th Full Required Practical 8: Boyle's law and Charles' law	6.1.2 Simple harmonic motion (SHM) 6.1.3 Simple harmonic systems 6.1.4 Forced vibrations and resonance	Homework questions from booklet. Test: SHM I Required Practical 7: SHM with pendulum and mass-spring
Term 2	LOGS 8 Nuclear physics 8.1.1 Rutherford scattering 8.1.2 α , β and γ radiation 8.1.3 Radioactive decay 8.1.4 Nuclear instability 8.1.5 Nuclear radius	8.1.6 Mass and energy 8.1.7 Induced fission 8.1.8 Safety aspects <u>Option:</u> Astrophysics OR Medical Physics OR Engineering Physics OR Turning Points in Physics	Homework questions from booklet. Tests: Logs 1, Nu 1, Nu 2, Nu 3 Required Practical 12: Inverse square law with gamma rays	7.1 Fields 7.2 Gravitational fields (GF) 7.2.1 Newton's law 7.2.2 Gravitational field strength 7.2.3 Gravitational potential 7.2.4 Orbits of planets and satellites

Term 3	Option: Astrophysics OR Medical Physics OR Engineering Physics OR Turning Points in Physics	Homework questions from booklet. Tests: Option tests, Year 13 mock paper 1 and 2	7.1 Fields 7.3 Electric fields (EF) 7.3.1 Coulomb's law 7.3.2 Electric field strength 7.3.3 Electric potential 7.4.1 Capacitance (Ca) 7.4.2 Parallel plate capacitor,	Homework questions from booklet. Tests: EF 1, Ca 1 Required Practical 9: Capacitor charge and discharge
Term 4	Option: Astrophysics OR Medical Physics OR Engineering Physics OR Turning Points in Physics	Homework questions from booklet. Tests: Year 13 mock paper 3	7.4.3 Energy stored by a capacitor 7.4.4 Capacitor charge and discharge 7.5 Magnetic Fields (MF) 7.5.1 Magnetic flux density 7.5.2 Moving charges in a magnetic field 7.5.3 Magnetic flux and flux linkage, 7.5.4 Electromagnetic induction 7.5.5 Alternating currents 7.5.6 The operation of a transformer	Homework questions from booklet. Tests: MF 1, Fields full Required Practical 10: Force on current due to magnet Required Practical 11: Magnetic flux linkage with a search coil
Term 5	Revision and practice papers Required practical catch up		Revision and practice papers Required practical catch up	
Term 6	Study leave/in exams		Study leave/in exams	

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>

<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>

[xgdeyQCKGnGt](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