

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	Topics and content	Assessment details
Term 1	6 Further mechanics and thermal physics 6.2.2 Ideal gases, 6.2.3 Molecular kinetic theory model 6.1.2 Simple harmonic motion (SHM) 6.1.3 Simple harmonic systems 6.1.4 Forced vibrations and resonance 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	Homework questions from booklet. Tests: Th 2, Th 3, Th Full, SHM 1, GF 1 Required Practical 8: Boyle's law and Charles' law Required Practical 7: SHM with pendulum and mass-spring
Term 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 LOGS 7.4.1 Capacitance (Ca) 7.4.2 Parallel plate capacitor, 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	Homework questions from booklet. Tests: EF 1, Logs 1, Ca 1 Required Practical 9: Capacitor charge and discharge Required Practical 10: Force on current due to magnet Required Practical 11: Magnetic flux linkage with a search coil

Term 3	7.5.5 Alternating currents, 7.5.6 The operation of a transformer 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 Option: Astrophysics OR Medical Physics OR Engineering Physics OR Turning Points in Physics	Homework questions from booklet. Tests: MF 1, Fields full, Required Practical 12: Inverse square law with gamma rays
Term 4	Option: Astrophysics OR Medical Physics OR Engineering Physics OR Turning Points in Physics	Homework questions from booklet. Tests: Year 13 mock, Options test 1-2 (or 3), Options mock Required Practical 12: Inverse square law with gamma rays
Term 5	Revision	Required practical mop 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/>

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 **year 12 revision sessions** which will run from Term 1. Dates and times will vary each year, ask your teacher.

Extra Curricular:

- Physics Olympiad
- PAT tests
- Residential trip to CERN
- Supporting younger students in Science lessons
- Support running science club for year 7 students
- Overseas trip to the Gambia to teach science practical experiments to students in Africa