Switching to OCR from AQA

Introduction

We are really excited about our GCE Physics A qualification. Whether taking on the AS or the full A Level, this fantastic course is a great qualification for those with an interest in the subject. Why choose Physics A?

- The 'Big Ideas' of Physics are covered
- The topics are selected and structured to underpin the knowledge and understanding needed for the next generation of physicists
- Physics A is enjoyable to teach and learn, giving students the essentials for physics-related higher education courses, as well as many transferable, marketable skills
- There are many opportunities for 'hands-on' practical, linking to our flexible practical assessment model
- The topics of physics are presented in a clear and logical linear order with practical, maths and contextual opportunities highlighted.

Textbook comparison

We have not included a textbook comparison in this switching document as there are a number of textbooks available for each exam board's qualifications, and the order and organisation of content within these textbooks can vary. However, similarities in content across exam boards mean that it is possible to use any textbook for the core content of any board's qualifications. The specification can be used to identify relevant content, as well as that which is not required for a specific qualification. If you need further clarification on any specific content, you can email our Subject Advisor team at science@ocr.org.uk.

Support from OCR

We offer a range of support to teachers of our qualifications. This includes:

- A dedicated Subject Advisor team, with teaching and assessment experience, available to answer your queries and support your delivery of our qualifications. You can contact us by email at science@ocr.org.uk or by phone on 01223 553998.

- Monthly newsletters highlighting new resources, CPD courses, and other news about our qualifications.
- An online scheme of work builder which helps you create a bespoke scheme of work using the extensive range of resources we have provided for each specification.
- A wide range of support materials, including handbooks covering practical and mathematical skills, delivery guides, lesson elements, practical activity suggestions, candidate exemplar resources, and more.
- Free access to ExamBuilder, our mock assessment service that allows you to create your own bespoke assessments.
- Termly regional Science Teacher Networks, giving you the opportunity to meet with other teachers and our Subject Advisors.
- CPD courses, including courses for teachers new to teaching our qualifications and courses on outcomes from previous examination series to help inform your teaching.
- You can also follow and interact with our Subject Advisors on Twitter (@ocr_science).

Key differences

OCR Physics A	AQA Physics
Flexible practical assessment allows you to select from our suggested activities or use your own preferred practical activities	12 required practical activities you have to deliver
Practical skills take centre stage, detailed in full at the start of the specification in a separate module for **clarity** and prominence	Required practical activities listed in the specification
A section of **multiple choice questions** in the exams to allow breadth of coverage. 20 in total at AS and 30 at A level.	30 multiple choice questions at AS and 50 at A level
All **28 maths skills** covered in our free maths skills handbook and further supported with online resources	Some skills supported by online resources

Content

The content within the OCR Physics A specification covers the 'Big Ideas' of physics and will be very familiar. We've laid it out to support the co-teaching of the AS and A level and provide a logical linear progression through the A level.

OCR Physics A	*AQA Physics*
Module 1: Practical skills Planning, implementing, analysis and evaluation Plus all the skills to be covered in the Practical Endorsement	The same practical skills, as mandated by the DfE, are listed in Chapters 7 and 8 of the AQA specification
Module 2: Foundations of physics • Physical quantities • S.I. units • Measurements and uncertainties • Scalars and vectors	**3.1.2 Measurements and their errors** • Use of S.I. units and their prefixes • Limitation of physical measurements • Estimation of physical quantities • Scalars and vectors (section 3.4.1.1)
Module 3: Forces and motion • Kinematics and dynamics • Linear motion • Projectile motion • Motion with non-uniform acceleration • Equilibrium • Density [and pressure] • Work, energy and power • Springs • Mechanical properties of materials • Newton's laws of motion • Momentum	**3.4 Mechanics and materials** • Moments • Motion along a straight line • Projectile motion • Newton's laws of motion • Momentum • Work, energy and power • Conservation of energy • Bulk properties of solids • The Young modulus

OCR Physics A	*AQA Physics*
Module 4: Electrons, waves and photons • Charge and current • E.m.f. and p.d. • Resistivity and resistance • Power • Series and parallel circuits • Internal resistance • Potential dividers • Wave motion • Electromagnetic waves • Superposition • Stationary waves • Quantum physics • Photons • The photoelectric effect • Wave particle duality	**3.2 Particles and radiation** • Particles, antiparticles, and photons • [Particle interactions] • Classification of particles [strange particles] • Quarks and antiquarks • Application of conservation laws • Electromagnetic radiation and quantum phenomena • Energy levels and photon emission • Wave-particle duality **3.3 Waves** • Progressive waves • Longitudinal and transverse waves • Superposition and stationary waves • Refraction, diffraction and interference **3.5 Electricity** • Basics of electricity • Current voltage characteristics • Resistivity • Circuits • Potential divider • E.m.f. and internal resistance
Module 5: Newtonian world and astrophysics • Temperature • Solid, liquid and gas • Thermal properties of materials • Ideal gases • Circular motion • Centripetal force	**3.6 Further mechanics and thermal physics** • Circular motion • Simple harmonic motion • Simple harmonic systems • Forced vibrations and resonance • Thermal energy transfer • Ideal gases • Molecular kinetic theory model

OCR Physics A	*AQA Physics*
• Simple harmonic oscillations • Energy of a simple harmonic oscillator • Damping • Point and spherical masses • Newton's law of gravitation • Planetary motion • Gravitational potential and energy • Stars • Electromagnetic radiation from stars • Cosmology	**3.7 Fields and their consequences** • Gravitational fields • Gravitational field strength and potential • Orbits of planets and satellites **3.9 Astrophysics option** • Classification by luminosity • Parsec and light year • Classification by temperature • The Hertzsprung-Russell diagram • Supernovae, neutron stars and black holes • Doppler effect • Hubbles law • [Telescopes] • [Absolute magnitude M] • [Stellar spectral classes] • [Quasars] • [Exoplanets]
Module 6: Particles and medical physics • Capacitors • Energy stored by a capacitor • Charging and discharging capacitors • Point and spherical charges • Coulomb's law • Uniform electric field • Electric potential energy • Magnetic fields • Motion of charged particles • Electromagnetism • The nuclear atom • Fundamental particles	**3.7 Electric fields** • Coulomb's law • Electric field strength • Electric potential • Capacitance • Parallel plate capacitor • Energy stored by a capacitor • Capacitor charge and discharge • Magnetic flux density • Moving charges in a magnetic field • Magnetic flux and flux linkage • Electromagnetic induction • [Alternating current]

OCR Physics A	*AQA Physics*
• Radioactivity • Nuclear fission and fusion • Using X rays • Diagnostic methods in medicine • Using ultrasound	• The operation of a transformer **3.8 Radioactivity** • Rutherford scattering • A,β and γ radiation • Radioactive decay • Nuclear instability • Nuclear radius • Mass and energy level • Induced fission • Safety aspects **3.10 Medical physics option** • Ultrasound imaging • X ray imaging • Radionuclide imaging and therapy • [Physics of the eye] • [Physics of the ear] • [Biological measurement] • [Fibre optics and endoscopy] • [Magnetic resonance scanner]
Appendix 5f: Mathematical requirements Arithmetic and numerical computation • Handling data • Algebra • Graphs • Geometry and trigonometry	**Chapter 6: Mathematical requirements and exemplifications** • Arithmetic and numerical computation • Handling data • Algebra • Graphs • Geometry and trigonometry

Assessment

OCR Physics A	*AQA Physics*
AS Paper 1: Breadth in Physics, Modules 1-4 50% of AS Written paper 1hr 30 minutes 70 marks Section A multiple choice questions, 20 marks. Section B short structured questions, covering problem solving, calculations, practical and theory, 50 marks.	**AS Paper 1: Sections 1-5** 50% of AS Written paper 1hr 30 minutes 70 marks 70 marks short and long answer questions split by topic.
AS Paper 2: Depth in Physics, Modules 1-4 50% of AS Written paper 1hr 30 minutes 70 marks Short structured questions and extended response questions, problem solving, calculations, practical and theory.	**AS Paper 2: Sections 1-5** 50% of AS Written paper 1 hr 30 minutes 70 marks Section A: 20 marks of short and long answer questions on practical skills and data analysis Section B: 20 marks of short and long answer questions from across all areas of AS content Section C: 30 multiple choice questions
A Level Paper 1: Modelling Physics, Modules 1, 2, 3 & 5 37% of A level Written paper 2 hours 15 minutes 100 marks Section A multiple choice questions, 15 marks. Section B short structured questions, and extended response questions, problem	**A Level Paper 1: Section 1-5 and 6.1** 34% of A level Written paper 2 hours 85 marks 25 multiple choice questions and 60 marks of short and long answer questions.

OCR Physics A	*AQA Physics*
solving, calculations, practical and theory 85 marks.	
A Level Paper 2: Exploring Physics, Modules 1, 2, 4 & 6 37% of A level Written paper 2 hours 15 minutes 100 marks Section A multiple choice questions, 15 marks. Section B short structured questions and extended response questions, problem solving, calculations, practical and theory 85 marks.	**A Level Paper 2: Section 6.2, 7 & 8 plus assumed knowledge from sections 1 to 6.1.** 34% of A level Written paper 2 hours 85 marks 25 multiple choice questions and 60 marks of short and long answer questions.
A Level Paper 3: Unified Physics, Modules 1-6 26% of A level Written paper 1 hour 30 minutes 70 marks Short structured questions and extended response questions, problem solving, calculations, practical and theory.	**A Level Paper 3: Section A Practical Skills and data analysis, Section B Option one of sections 9 to 13** 32% of A level Written paper 2 hours 80 marks 45 marks of short and long answer questions on practical experiments and data analysis. 35 marks of short and long answer questions on optional topic.

Want to switch to OCR?

If you're an OCR-approved centre, all you need to do is download the specification and start teaching.

Your exams officer can complete an expression of interest form which enables us to provide appropriate support to them. When you're ready to enter your students, you just need to speak to your exams officer to:

1. Make estimated entries by 10 October so we can send you any early release materials, prepare the question papers and ensure we've got enough examiners.
2. Make final entries by 21 February

If you are not already an OCR-approved centre please refer your exams officer to the centre approval section of our admin guide.

Practical Endorsement Administration (A Level only)

The requirements for the practical endorsement have been set by the Department for Education and Ofqual working with all awarding bodies to ensure a common approach.

Just as when following the AQA A Level Physics qualification, your A Level students studying OCR Physics A will need to demonstrate to you, their teacher(s), that they are consistently and routinely competent in each of the skills and techniques defined for A Level Physicists.

You will need to:

- Keep records of carrying out practical activities as well as your assessment of competence of each of your students in each of these skills and techniques. This can be done, if you wish, using our OCR tracker spreadsheet, available in both fixed format and new flexible format, editable version.

- Designate a 'Lead Teacher' who will need to make sure that they have completed the online Lead Teacher training
- Email us at science@ocr.org.uk to let us know you've started teaching the qualification. This will make sure we have up-to-date information on your centre for planning monitoring visits. When a monitoring visit takes place at your centre for Physics it will be carried out by an OCR-appointed monitor applying the criteria

agreed across all awarding organisations. Up-to-date details on the monitoring process are available on the Positive about practical page.

Students need to keep records of their practical work, which can be done in whatever format best suits you and your students, be it a lab book, a loose leaf folder or an electronic record. Help and guidance are available from our Positive about practical page..

Next steps

1. Familiarise yourself with the specification, sample assessment materials and teaching resources on the OCR Physics A qualification page of the OCR website.
2. Browse the online delivery guides for teaching ideas and use the Scheme of Work builder to create your personal scheme of work.
3. Get a login for our secure extranet, Interchange – allows you to access the latest past/practice papers and use our results analysis service, Active Results.
4. Sign up to receive subject updates by email.
5. Sign up to attend a training event or take part in webinars on specific topics running throughout the year and or our Q&A webinar sessions every half term.
6. Attend one of our free teacher network events that are run in each region every term. These are hosted at the end of the school day in a school or college near you, with teachers sharing best practice and subject advisors on hand to lead discussion and answer questions.
7. Follow us on Twitter (@ocr_science) where you can have discussions with other teachers and OCR Subject Advisors, and where new resources are developed and posted first.

