OCR Physics Specification A - H156/H556

Module 1: Development of Practical Skills in Physics

You should be able to demonstrate and show your understanding of:	Progress and understanding:			
	1	2	3	4
1.1 Practical skills assessed in the written exam				
Experimental design, including solving problems set in a practical context and including the selection of suitable apparatus, equipment and techniques for the proposed experiment.				
Identification of variables that must be controlled, where appropriate.				
Evaluation that an experimental method is appropriate to meet the expected outcomes.				
How to use a wide range of practical apparatus and techniques correctly as outlined in this specification.				
Appropriate units for measurements.				
Presenting observations and data in an appropriate format.				
Processing, analysing and interpreting qualitative and quantitative experimental results, including reaching valid conclusions where appropriate.				
Use of appropriate mathematical skills for analysis of quantitative data.				
Appropriate use of significant figures.				
Plotting and interpreting suitable graphs from experimental results, including: **(i)** selection and labelling of axes with appropriate scales, quantities and units. **(ii)** measurement of gradients and intercepts.				
How to evaluate results and draw conclusions.				
The identification of anomalies in experimental measurements.				

You should be able to demonstrate and show your understanding of:	Progress and understanding:			
	1	2	3	4
The limitations in experimental procedures.				
Precision and accuracy of measurements and data, including margins of error, calculating percentage errors and uncertainties in apparatus.				
The refining of experimental design by suggestion of improvements to the procedures and apparatus.				
1.2 Practical skills assessed in the practical endorsement [A Level only]				
Apply investigative approaches and methods to practical work including how to solve problems in a practical context.				
Safely and correctly use a range of practical equipment and materials including identification of potential hazards and how to minimise the risks involved.				
Follow written instructions.				
Make and record observations/measurements.				
Keep appropriate records of experimental activities.				
Present information and data in a scientific way.				
Use appropriate software and tools to process data, carry out research and report findings.				
Use online and offline research skills including websites, textbooks and other printed scientific sources of information.				
Correctly cite sources of information using either the Vancouver or Harvard referencing system.				
Use a wide range of experimental and practical instruments, equipment and techniques appropriate to the knowledge and understanding included in the specification.				
Use of appropriate analogue apparatus to record a range of measurements (to include length/distance, temperature, pressure, force, angles and volume) and to interpolate between scale markings .				
Use of appropriate digital instruments, including electrical multimeters, to obtain a range of measurements (to include time, current, voltage, resistance and mass).				
Use of methods to increase accuracy of measurements, such as timing over multiple oscillations, or use of fiduciary marker, set square or plumb line.				

You should be able to demonstrate and show your understanding of:	Progress and understanding:			
	1	2	3	4
Use of a stopwatch or light gates for timing.				
Use of calipers and micrometers for small distances, using digital or vernier scales.				
Correctly constructing circuits from circuit diagrams using DC power supplies, cells, and a range of circuit components, including those where polarity is important (e.g diodes).				
Designing, constructing and checking circuits using DC power supplies, cells, and a range of circuit components.				
Use of a signal generator and oscilloscope, including volts/division and time-base.				
Generating and measuring waves, using microphone and loudspeaker, or ripple tank, or vibration transducer, or microwave/radio wave source.				
Use of a laser or light source to investigate characteristics of light, including interference and diffraction.				
Use of ICT such as computer modelling, or data logger with a variety of sensors to collect data, or use of software to process data.				
Use of ionising radiation, including detectors.				

The material in this checklist is based on the OCR Physics A Specification published at ocr.org.uk/**alevelphysicsa** by Oxford, Cambridge and RSA Examinations.