

Summary of the Dot Point Changes for the Adjusted Physics Study Design in 2020

Unit 4

AoS 1: How can waves explain the behaviour of light?

Deletions of dot points

- explain a wave as the transmission of energy through a medium without the net transfer of matter
- distinguish between transverse and longitudinal waves
- explain qualitatively the Doppler effect
- compare the wavelength and frequencies of different regions of the electromagnetic spectrum, including radio, microwave, infrared, visible, ultraviolet, x-ray and gamma, and identify the distinct uses each has in society
- explain polarisation of visible light and its relation to a transverse wave model
- investigate and analyse theoretically and practically the behaviour of waves including:– refraction using Snell's Law: $n_1 \sin(\theta_1) = n_2 \sin(\theta_2)$ and $n_1 v_1 = n_2 v_2$ – total internal reflection and critical angle including applications: $n_1 \sin(\theta_c) = n_2 \sin(90^\circ)$
- investigate and explain theoretically and practically colour dispersion in prisms and lenses with reference to refraction of the components of white light as they pass from one medium to another

Rewording of dot point

- The dot point that began 'Investigate and analyse theoretically and practically ...' have been simplified to just 'analyse ...'. The dot point that began 'Investigate and explain theoretically and practically ...' have been simplified to just 'explain ...'.

AoS 2: How are light and matter similar?

Deletions of dot points

- explain how diffraction from a single slit experiment can be used to illustrate Heisenberg's uncertainty principle
- explain why classical laws of physics are not appropriate to model motion at very small scales.
- Compare the production of light in lasers, synchrotron, LEDs and incandescent lights

Rewording of dot point

- The dot point that began 'Investigate and describe theoretically and practically ...' have been simplified to just 'explain ...'.
- 'including those from metal vapour lamps' in the dot point 'explain the production of atomic absorption and emission line spectra, ...' has been deleted.

AoS 3: Practical Investigation

There are significant changes to the Practical Investigation, including:

- Change of name to Analysis and Evaluation of a Practical Investigation

Introduction to the Area of Study

- Removal of 'student-designed' and the requirement for the student to 'develop a question, etc.'
- Removal of 'undertaken ... through practical work' and replaced with 'primary and/or collated secondary quantitative data'.
- Reduction from two to one continuous variable.
- The word 'Results' is replaced by 'Findings'.
- Choice of a scientific poster format or a practical report.

Outcome statement

- Replacement of 'design and undertake' with 'analyse and evaluate'
- Removal of 'methodologies' and 'conclusions' from the list of what should be presented.

Dot points

- Removal of 'experiments (*on Units 3 & 4 content*) and construction and evaluation of a device'
- Inclusion of error bars in a dot point.