Government of **Western Australia**
School Curriculum and Standards Authority

PHYSICS

ATAR course

Year 12 syllabus – What's changing: Rationale and Aims

For teaching in 2027

Acknowledgement of Country

Kaya. The School Curriculum and Standards Authority (the Authority) acknowledges that our offices are on Whadjuk Noongar boodjar and that we deliver our services on the country of many traditional custodians and language groups throughout Western Australia. The Authority acknowledges the traditional custodians throughout Western Australia and their continuing connection to land, waters and community. We offer our respect to Elders past and present.

Background

As part of the Western Australian Certificate of Education (WACE) Refreshment for reviewing the nomenclature of courses, the Authority has updated the rationale and aims of each syllabus.

The revised rationale and aims are aligned with the mapping of the general capabilities to provide clear connections between the rationale, aims and syllabus content. The rationale outlines what the subject is about and why it is important. It describes what students can expect to study in the course, along with the knowledge, skills and understandings they will develop throughout the course. It also explains how these can be applied in everyday life and references potential future pathways, outlining how students might connect what they learn in the course to further education, training and employment opportunities.

Important information

WACE Refreshment: Reviewing the nomenclature of courses

This document contains information that will be included in the syllabus effective from 1 January 2027.

Users of the syllabus are responsible for checking its currency.

Syllabuses are formally reviewed by the Authority on a cyclical basis, typically every five years.

Rationale

The Physics ATAR course helps to develop an understanding of the mysteries of the universe, from the sub-atomic scale to the evolution of the universe. Physics is a fundamental science that endeavours to explain all the natural phenomena that occur in the universe. Its power lies in the use of a comparatively small number of assumptions, models, laws and theories to explain a wide range of phenomena, from the incredibly small to the incredibly large. It provides the foundation of understanding upon which modern technologies and all other sciences are based.

Students investigate how the unifying concept of energy explains diverse phenomena and provides a powerful tool for analysing how systems interact throughout the universe on multiple scales. They learn how more-sophisticated theories are needed to explain more-complex phenomena, and how new observations can lead to models and theories being refined and developed.

The Physics ATAR course uses qualitative and quantitative models and theories based on physical laws to visualise, explain and predict physical phenomena. Models, laws and theories are developed from, and their predictions are tested by, making observations and quantitative measurements. Students gather, analyse and interpret primary and secondary data to investigate a range of phenomena and technologies using some of the most important models, laws and theories of Physics, including the theory of special relativity, the electromagnetic theory and quantum theory.

Students learn how an understanding of Physics is central to the identification of, and solutions to, some of the key issues facing an increasingly globalised society. They consider how Physics contributes to diverse areas in contemporary life, such as engineering, energy generation, communication, development of new materials, transport and vehicle safety, medical science, an understanding of climate change and the exploration of the universe.

Studying the course provides students with a suite of skills and understandings that are valuable to a wide range of further study pathways and careers. The course enables students to become citizens who are better informed about the world around them and have the critical skills to evaluate and make evidence-based decisions about current scientific issues. It provides a foundation in Physics knowledge, understanding and skills for those students who wish to pursue tertiary study in science, engineering, medicine and technology.

Aims

The Physics ATAR course aims to develop students':

- appreciation of the wonder of Physics and the significant contribution Physics has made to contemporary society
- understanding that diverse natural phenomena may be explained, analysed and predicted using concepts, models and theories
- understanding of how matter and energy interact in physical systems across a range of scales
- understanding of how models and theories are refined and new models and theories are developed in Physics, and how Physics knowledge is used in a wide range of contexts and informs personal, local and global issues
- investigative skills, including the design and conduct of investigations, to explore phenomena and solve problems, the collection and analysis of qualitative and quantitative data, and the interpretation of evidence
- ability to use accurate and precise measurement, valid and reliable evidence, and intellectual rigour to evaluate claims
- ability to communicate physics understanding, findings, arguments and conclusions using appropriate representations, modes and genres.