



# **MATERIALS DESIGN AND TECHNOLOGY**

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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.

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## Rationale

The Materials Design and Technology ATAR course offers students both practical and academic learning experiences. While grounded in practical work, the course also fosters deeper analytical thinking about the relationship between materials, design and technology and how ethical, historical, cultural and environmental factors influence design and development decisions.

Students apply critical and creative thinking to design and produce solutions that respond to real-world needs, and engage in research, reflection and evaluation processes that underpin a deeper understanding and application of knowledge. The course also supports the development of transferable skills in communication, collaboration and project management.

By studying the course, students experience how to design and manufacture products through hands-on and theoretical tasks. They apply knowledge of Materials Design and Technology contexts and current and emerging materials to create practical solutions when justifying and presenting their design ideas and choices. Students engage with broader social, cultural and environmental issues related to material use and examine the sustainability and ethical implications of design and manufacturing choices. The course promotes technological literacy, encouraging students to become informed, responsible decision-makers who can critically evaluate and are solution-driven.

Students apply creativity and critical thinking skills to develop innovative design solutions while actively engaging in the production process. Students develop and practise skills, such as the safe use of tools and machinery; maintaining work health and safety (WHS) requirements; time and resource management; interpreting technical drawings; and problem-solving and ideation in response to design challenges. They strengthen their communication skills by documenting and presenting design processes, project work and practical goal setting, effectively applying analytical evidence to support and reflect on choices made. Students have opportunities to engage in tasks that relate to real-world challenges, building essential skills in basic maintenance and troubleshooting, promoting independence and confidence.

Through hands-on design and production projects, students develop a broad skill set that includes material manipulation, critical thinking, problem-solving and communication skills that are industry-relevant and academically rigorous. This multidisciplinary approach supports students in building transferable capabilities that enhance employability, while also preparing them for further study in fields, such as textile, fashion and product design and manufacturing; engineering; architecture; industrial design; construction and environmental science. The course encourages students to apply their learning in real-world contexts, making informed decisions and contributing meaningfully to contemporary technological and design challenges.

By combining practical experiences with theoretical inquiry, the course supports students in becoming informed, adaptable contributors to a rapidly evolving material and technological world. Graduates may pursue careers as designers (environmental, fashion, furniture, industrial, interior, textile) in industries such as construction, engineering, mining or in fields such as architecture, art and science.

## Aims

The Materials Design and Technology ATAR course aims to develop students’:

- application of a structured design process to modify or create products, processes and/or systems to meet human/client needs
- creative and critical thinking skills to design and create solutions to meet human needs and realise opportunities
- understanding of how the structure, characteristics and properties of materials influence design development and use
- selection of materials based on structure, characteristics and properties
- knowledge of the interrelationship between the people, environmental and sustainability aspects of materials selection for an identified purpose
- knowledge, skills and techniques using equipment and machines from relevant industry contexts to achieve specified/defined manufacturing standards
- application of regulatory safety requirements when creating and modifying products and systems
- knowledge of environmental, sustainability and ethical design factors for design, materials and processes
- understanding of how product design choices impact the environment, ethical factors, society, manufacturing and design choices.