Government of Western Australia
School Curriculum and Standards Authority

Western Australian Curriculum

Technologies | Design and Technologies

Scope and sequence | Pre-primary–Year 10
Revised curriculum | For familiarisation in 2025

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.

Disclaimer

Any resources such as texts, websites and so on that may be referred to in this document are provided as examples of resources that teachers can use to support their learning programs. Their inclusion does not imply that they are mandatory or that they are the only resources relevant to the course. Teachers must exercise their professional judgement as to the appropriateness of any they may wish to use.

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Contents

Overview

The current Western Australian Curriculum: Technologies was adopted and adapted from the Australian Curriculum version 8.4.

The revised Western Australian Curriculum: Technologies is adopted and adapted from the Australian Curriculum version 9.

The Technologies learning area comprises two subjects: Design and Technologies and Digital Technologies. The Technologies curriculum is written on the basis that students will study both Technologies subjects from Pre-primary to the end of Year 8. In Years 9 and 10 the study of Technologies is optional.

Guide to reading this document

The Scope and sequence for Design and Technologies shows the **mandated** curriculum for teaching, written as **content descriptions** across year levels so that a sequence of content can be viewed across the years of schooling from Pre-primary to Year 10. The **examples** illustrate the content and are **not mandated**. Teachers should use examples relevant to the context of the school and the needs of their students.

The document is organised by two Design and Technologies strands: Technologies and society and Design thinking skills.

The **Design and Technologies** subject includes four contexts: Engineering principles and systems; Food and fibre production; Food specialisations; and Materials and technologies specialisations. Within the Design and Technologies subject, students have the opportunity to study at least one of the contexts each year; it is desirable that schools provide students with the opportunity to engage with all contexts across Pre-primary to Year 10.

The **Design thinking skills** strand for **Pre-primary to Year 10** includes the sub-strands: Project management; Investigating and defining; Designing; Producing and implementing; and Evaluating. This strand is shared with the Digital Technologies subject.

The table below outlines the subject organisation for the Pre-primary to Year 10 Design and Technologies curriculum. The Design and Technologies subject includes four contexts.

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<tr><th colspan="2">Technologies and society</th><th>Design thinking skills</th></tr>
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Key

The four Design and Technologies contexts and the abbreviations used in this document are listed below:

EP&S Engineering principles and systems

F&FP Food and fibre production

FS Food specialisations

M&TS Materials and technologies specialisations

Pre-primary–Year 6

Strand: Technologies and society

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore familiar technologies to meet personal needs For example: • EP&S: technology appliances or devices for personal use, such as a night light, small fan or remote-controlled toy • F&FP: a range of footwear or clothes for specific activities, such as a sport, dance or family outing • FS: a range of utensils required	People use technologies to create products for personal needs For example: • EP&S: electric blender to create a juice or smoothie for breakfast • F&FP: tractor to dig holes for planting of trees/hedges to create shelter for animals • FS: barbecue grill to cook food • M&TS: materials to create an umbrella to protect from the	People use selected technologies to make familiar products and environments to meet local needs For example: • EP&S: design features and selected technologies of playground equipment for the needs of a child • F&FP: hot house environment for growing food, such as tomatoes or cucumbers to meet needs of local people	Role of people in design and technologies occupations in the local community For example: • EP&S: electrician provides a service to repair fans, ovens, lights and other electrical technologies used in the home • F&FP: carer at an animal refuge uses a range of technologies to care for sick and injured animals • FS: canteen manager	Diverse roles for people in design and technologies occupations For example: • EP&S: designer of prams and strollers considers ways forces and materials affect mobility for a safe and smooth ride for a baby or toddler • F&FP: school gardener assists students to design and make growing boxes for vegetables and develop an automatic water	People in design and technologies occupations consider competing factors in the design of products, services and/or environments For example: • EP&S: engineer considers competing factors to design for sustainability, including ways to repurpose resources and components used in products, such as electrical appliances and solar panels	People in design and technologies occupations address competing considerations, including sustainable factors in the design of products, services and environments For example: • EP&S: engineer considers competing factors, such as design features, alternative technologies and a range of components suitable to develop or adapt an environment,

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
for food preparation • M&TS: various closures or fasteners on a range of shoes and jackets to secure, and/or keep warm, such as a hook and loop fastener, and zipper	rain and/or the sun	• FS: selected technologies, such as an electric food mixer, measuring scales or cups and an oven to produce bread, cupcakes or banana bread • M&TS: design shelving for extra storage in the classroom and identify appropriate technologies and materials, such as timber and metal for the designer to consider	organises the production of lunches using a range of kitchen technologies, such as utensils and cooking equipment • M&TS: picture framer uses a range of materials and specialised technologies to create a photo frame or digital frame	system to grow food for the school community • FS: home fruit grower manages the growing cycle of plants till maturity, then preserves the fruit as pickles, sauces and jams • M&TS: a woodworker designs utensils, chopping boards and children's toys, and develops a production plan to produce, evaluate and package as gifts or to sell the finished wood product	• F&FP: gardener or horticulturalist considers competing factors to repurpose vacant land for a community need, such as a sensory garden; grows seedlings for food and a peaceful environment • FS: chef and wait staff consider competing factors to repurpose a classroom for a community lunch • M&TS: fashion designer considers competing factors to	like the assembly area for the school community, including improved access, lighting, seating and overall comfort • F&FP: food producer or clothing manufacturer considers competing factors, such as cost, access to preferred resources, water constraints, transport time and secure storage in the design of the selected product • FS: chef considers

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					repurpose uniforms, garments, and accessories for identified community needs	competing factors, such as access to seasonal produce including sensory properties, consumer values, cost, reliable and safe transport, storage and staff skills in the design of the café menu • M&TS: local government services consider sustainable features of selected materials, and competing factors, such as cost, suitable access and safety in the design of

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
						parks, gardens and playgrounds for all community members
			Technologies are designed and used in products, services or environments to meet individual needs For example: • EP&S: ways product design and specific technologies can assist a person with limited mobility, hearing or sight • F&FP: design environments for the growth of seedlings indoors	Products, services and/or environments are designed to meet community (society) needs, including consideration of sustainable factors For example: • sustainable factors incorporated at the design stage for products, services and/or environments to meet community (society) needs is effective for change, such as	Technologies are used in the design of products, and implementation of services and environments For example: • EP&S: the combinations of technologies required for a transport system, such as trains, buses and trucks to deliver services for the community • F&FP: the combination of technologies and resources	Competing technologies are used for the design of products, services and environments for community needs For example: • EP&S: engineer considers ways competing technologies are used in public transport, media or communication systems within the local and wider community

			• FS: products designed using technologies to keep food cool and fresh in a lunch box • M&TS: products designed for use by children or the elderly, such as kitchen utensils, or a bell for a bike, scooter or wheelchair	▪ EP&S: ability to reuse, repurpose or recycle materials used for construction of wheels, frame and components for a pram or stroller ▪ F&FP: energy-efficient watering systems for a school garden ▪ FS: reuse, repurpose or recycle packaging like plastic bags and bottles, tins, and glass jars used for preservation of foods ▪ M&TS: select materials,	required to design a system to grow food for a community garden • FS: the combination of technologies and resources required to design a system to deliver food produce to the school canteen • M&TS: the combination of materials and technologies are used to produce different versions of popular products to be exclusive, unique, fashionable, distinctive and/or for safety	• F&FP: a food or fibre producer considers competing technologies in the design of gardens or production systems to increase production, such as systems to weed, fertilise, water, harvest and store • FS: a takeaway food producer considers competing technologies in production and packaging of food ready for sale considering food waste reduction and sustainable features of the packaging used

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
				including wood, from regenerated sources		• M&TS: a local boilermaker who fabricates sheet metal into large containers considers competing technologies including safety, assembly, installation, transport and construction components in the design of a boiler system for a remote mine site

Engineering principles and systems

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Objects can be moved when force is applied For example: • objects can be moved through actions including push, pull, bounce, slide, fall, spin and float • the force of the action affects the movement • a pulley as a way to move objects, such as a rope over a bar to lift items	Force generates movement in objects and can be affected by materials For example: • surfaces including carpet, concrete and grass affect the movement of objects • different shapes move differently down a slope • varying force is required to push or pull an object on different surfaces	Force can move objects within a system For example: • large and small cogs work together to create movement • the slope that marbles or small balls roll down affects their movement • bends, 'S' curves and/or straights affect the movement of the object	Forces, and the properties of materials affect the behaviour of objects For example: • drop a range of balls from same height • roll a marble into a group of marbles using different force • resistance; roll marbles or types of balls down/along different surfaces, with same gradient, force and distance	Forces, and the properties of materials affect the behaviour of an object or system For example: • different gear levels on a bicycle • surface of playground equipment • surface of tyres, range of treads, surface area • variation of force of compression when operating a bicycle pump • spikes and studs on athletic shoes, such as sprinting shoes, football boots	Forces can control motion, sound or light in a product or system For example: • movement of a scooter, skateboard or bike through human force • sound projected using a cone-shaped object or musical instrument • intensity of light or sound is controlled by variable forces, such as with a dimmer switch or volume control • movement of air by a hair dryer,	Forces and electrical energy can control motion, sound or light in a product and/or system For example: • an electrical circuit, including switches or movement sensors for output to light-emitting diodes (LEDs), and buzzers for sound • addition of light, using circuits, to decorate clothing, costumes, hats and shoes • catapults work to transfer force,

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					air conditioner or fan	as do cams, camshafts, cranks and worm drives

Food and fibre production

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals and plants have essential needs, including food, water, space and shelter For example: • various ways to provide homes and shelter for animals and plants • awareness of processes for 'garden to plate'	Living things are used in everyday life for food and clothing For example: • fibres for clothing, such as from cotton, wool and bamboo • ways seed planting needs to be considered to maximise growth, such as different growing conditions, plant spacings and growth patterns • sustainable collection of food scraps for compost	Food and fibre are produced in different seasons and environments For example: • different foods and fibres available in each of the seasons • plants grow in different seasons • environment required for silk production, fish farming and/or greenhouse tomatoes • system (process layout) for egg, wheat production or print on a T-shirt	Food and fibre produced to meet food and clothing needs For example: • basket weaving, finger knitting and/or hand sewing to produce items for use or to wear • past and current cereal/grain production, collection and sorting • wool production and uses, including waterproof, insulation and fire-resistant properties	Food and fibre produced in different time periods or cultures, including the technologies and equipment used For example: • ways people produce a variety of foods, such as yoghurt, cheese and flour • ways people use a variety of fibres suitable for clothing, protection from sun and heat, and to keep cool (curtains, blinds) • preserve food, such as drying fish, fruits, seeds	Food and fibre production in environments for sustainable and regenerative practices For example: • circular recycling of clothing, such as uniforms • the relationship between plant types and their environment, such as for hydroponics • bamboo production for food, fabrics, furniture and tools • sustainable animal and plant fibre production	Food and fibre production systems for products, considering design features, consumer demand and managed environments For example: • variables within a system, such as quantity and quality of fertilisers in separate plots/pots for optimum plant growth • twist or spin together one or more fibres to create yarns, to produce a fabric

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			• 'fascinating fibres' – up close with a microscope to observe different types of fibres, such as cotton, wool and nylon; similar examination of plants, such as carrot, celery and spinach leaves	for out of season consumption • preserve fibres and textiles for longevity, such as regular cleaning, polish leather shoes, jackets and belts, and ways to reuse, recycle and repurpose	systems, such as forestry management in timber plantations	• compare hothouse environments, trellis espalier, and open field growth of tomatoes • animal welfare considerations in various environments • soil health/topsoil degradation affected by drought and floods • past, current and future needs are considered through cotton fibre production and processes

Food specialisations

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Foods come in different colour/s, texture/s, flavour/s and shapes Appropriate hygiene practices are necessary for safe food handling For example: • explore the colour, texture, flavour and shape of food, and change these using food preparation techniques (slicing, grating, chopping) • the effect of heat on rolled oats (to soften), addition of liquid (to cook	Familiar foods are sourced from various places Foods are prepared in a range of ways for consumption For example: • various food sources and familiar foods, such as dairy cow – cheese, milk; hen – egg; wheat grains – flour, bread • prepare selected foods for a green salad, such as washing and tearing leafy vegetables, removing stalks	Staple foods from local sources are used to create a range of food products For example: • ways staple foods are used to prepare a dish, such as oats rolled for porridge; wheat flour for bread, pasta, noodles; tomatoes for sauce, pizza; rice for sushi, fried rice; potatoes and yams, as a basis for meals • benefits of using local food, such as freshness and could be cheaper	Food selected to nourish the body, for energy to move and support growth For example: • food models, such as the 'traffic light' system, or 'crunch and sip' to select food • 'mindful eating' to nourish the body • consumption of wholegrain products for energy to move • rehydrate with water	Physical properties of food influence selection and preparation For example: • appearance of food, such as colour, size, shape, gloss • texture – mouthfeel, savour the flavour, eat slowly, eat for enjoyment • freshness – over-ripe banana suitable for baking, but not eating	Systems for food preparation and food safety affect selection of food for meals/products For example: • 'assembly line' system of prepared ingredients for lunch foods, such as sandwiches and wraps • a food safety system could include ▪ clean surfaces, utensils, hands ▪ separate raw and cooked foods ▪ storage at appropriate	Food choices, consumer demands and preparation systems affect the use of a food in a meal/product For example: • food selection guides, such as the *Australian Guide to Healthy Eating* and the *Healthy Eating Pyramid* to make food choices • 'what to eat' and 'how we eat'; mindful eating; regular meals versus grazing • ethical considerations affect food choices for

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
and make easier to eat), addition of fruit (for colour, texture, flavour) • use hygiene practices, such as washing and drying hands, securing hair, cleaning surfaces before and after handling food	and breaking down broccoli florets				temperatures, in containers • food suitable for a lunch box or family picnic to include babies, toddlers, adults and/or seniors	inexpensive and inventive recipes to provide food that is nutritious and nourishing

Materials and technologies specialisations

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Everyday objects are made using different materials For example: • furniture and play equipment is made from different materials, has different colours and textures • stepping stones; walk barefoot over squares of different materials with different surfaces and textures • materials for construction based on properties, such as solid blocks	Properties of a material determine their selection for a specified purpose For example: • materials with protective qualities, such as for warmth, waterproofing, strength and durability chosen for winter clothing • fabrics with a close weave and UV protection are used for swimwear and clothing worn in the sun • versatility and durability of materials	Materials can be combined to produce a product for a specified purpose For example: • given a range of materials, select for product suitability, such as for a hat, toy boat or simple bat • different types of materials, such as foam, bubble wrap to create seat cushions • materials suitable to protect from various weather conditions, such as shade for	Properties of materials, suitability and safe practice using given technologies to create a product to achieve a purpose For example: • magnifying glass to view the structure of materials and relate to purpose, such as non-woven textiles for waterproofing • model raft construction from different materials, such as local grasses and pop sticks,	Properties of materials and components for a range of purposes affect suitability and function in a system For example: • different properties of materials and selected components affect the function of a carry bag/basket, such as a cloth carry bag and a woven basket • a decorative face mask, produced safely from a range of materials to	Properties for a range of materials, related components and use of given technologies to achieve a purpose For example: • various fibres combined to twist or plait a rope/belt, considering function, durability and aesthetics for fabric production • properties of material used to protect and transport items, such as a laptop, cricket bat or a dozen eggs	Properties of selected materials, technologies, and production systems affect suitability and functionality in a product For example: • combination of materials to secure and identify a bike or personal schoolbag/ backpack • combination of materials and technologies to produce a photo frame using a planned production system

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
are more stable for a base than a cardboard packet • take a barefoot walk on Country to discover different surfaces and textures	including plastic to make chairs • use of opaque materials or fabrics to make shadow puppets	animals or rain jackets for children • a range of materials provided for loose parts play	and observe performance • system of paper making for a product, considering design features, such as colour, strength, functionality and shape (for a small bowl)	achieve a given purpose, such as for a community celebration • various materials used to construct musical instruments affect the function of the instrument	• range of materials, like paper or board with plain or patterned surfaces used to create (origami) shapes, designed to achieve a purpose, such as kite making, gift cards and decorations	• combination of materials and components suitable for babies, toddlers and children

Strand: Design thinking skills

Sub-strand: Project management

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Share ideas to develop a solution	Share ideas and work with others to develop a solution	Plan, share ideas and work with others to develop a solution for a known user	Communicate ideas and follow a plan with consideration of time management, to develop a solution	Use agreed protocols and management roles to communicate ideas, plan and make decisions, to develop solutions	Use agreed protocols and management roles to communicate decisions, plan and manage time, to develop designed solutions	Use agreed protocols to set goals, manage competing factors, resources and time, to plan, develop and communicate decisions, when developing designed solutions for a given task

Sub-strand: Investigating and defining

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Explore the purpose for design	Explore ideas and design opportunities for a personal need	Explore ideas and design opportunities for a known user	Define ideas and design opportunities for individual and/or local needs	Define the features of a design brief and the requirements of a design task for a community need	Break down a design brief to define the purpose and requirements for a given task	Break down a design brief to define the purpose, requirements and constraints for a given task
				Investigate and select resources based on properties for the given task	Investigate and select resources based on properties and functions for the given task	Investigate and select resources considering constraints, properties and functions appropriate for the given task

Sub-strand: Designing

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Design solutions through discussion, drawing and/or modelling to meet a personal need	Design solutions through drawing, modelling and/or a sequence of steps	Design solutions generated and communicated through discussion, drawing, modelling and/or a sequence of steps	Design solutions created with labelled drawings, use of technical terms and/or a sequence of steps	Design solutions through use of labelled drawings, technical terms, decision-making and/or a sequence of steps	Design solutions considering competing factors, with annotated diagrams, storyboards and/or a sequence of steps, using technical terms and an iterative process	Design alternative solutions achieved through an iterative process, including critical thinking, graphical representations, use of a range of technologies, techniques, technical terms and/or a sequence of steps

Sub-strand: Producing and implementing

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Use available technologies and materials to safely create a solution	Use available technologies and materials to safely create a preferred solution	Use given equipment and technologies to safely create a solution	Use appropriate technologies and components with given equipment and follow agreed protocols to produce a designed solution	Use appropriate technologies, components and/or equipment and follow agreed protocols to produce a designed solution	Use technologies, components and/or equipment to implement agreed protocols to produce a designed solution	Use a range of technologies, components and/or equipment to implement agreed protocols to produce a designed solution

Sub-strand: Evaluating

Pre-primary	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Use personal preferences to evaluate the solution	Use personal preferences to evaluate the solution for a personal need	Use personal preferences and the needs of the known user to evaluate the solution	Use given criteria to evaluate diagrams, technologies and the components used for the designed solution	Use given criteria to evaluate design features, selected resources, decision-making processes and the designed solution	Use given criteria to evaluate design features, consideration of competing factors, processes and the designed solution	Develop negotiated criteria to evaluate design features, graphics, selected technologies, processes and functionality with consideration of constraints for the designed solution

Years 7–10

Strand: Technologies and society

Year 7	Year 8	Year 9	Year 10
People in design and technologies occupations consider competing factors, social and ethical influences and existing technologies for designed solutions For example: • choose an inventor/designer (local, national, international, past/contemporary), such as Leonardo Da Vinci, Thomas Edison or Prue Acton and review the design techniques and technologies used to develop and invent products and systems • decision-making processes to select existing technologies, considering social and ethical influences • consider sustainable elements and competing factors at the designing phase of creating a solution	People design for change considering ethical and sustainable factors, available technologies and systems for designed solutions, locally and regionally For example: • ways sustainable factors can be incorporated at the designing phase, including preferred technologies, and select components for reuse, longevity, circular economy, risk assessment and impact on known users • ways ethical issues and social cohesion supports positive change in society and is achieved through working together, allocating roles in the development and production phases, sharing common goals and responsibilities	People consider social, ethical and sustainable factors, and use specialised technologies for designed solutions to address community needs For example: • explore and design alternative sustainable methods of transport and storage, source replacement resources, innovate production systems and adopt a creative approach to meet community needs • obsolescence within products, services and systems impacts society, materials, sustainable factors and the environment • factors to reduce, recycle, reuse, repurpose and remove obsolescence in designing sustainable products, services or environments for the community	People consider social, ethical, sustainable and security factors to improve design and production systems using specialised technologies to achieve designed solutions For example: • strategies for sustainable production systems are subject to competing demands (social, environmental, economic) and how these factors influence functionality and process layout • entrepreneurial activity, enterprising behaviours, including problem-solving strategies and critical thinking, encourage the introduction of something new, useful and is usually innovative to capture a specific market or to achieve a purpose

Year 7	Year 8	Year 9	Year 10
		• apply conflict resolution skills and work collaboratively to achieve a common goal	
Products, services and/or environments evolve locally through the application of technologies For example: • timeline to show the evolution of a technology and/or product, such as telescopes, agricultural machinery, processed foods (breakfast cereal), sewing machines or woodworking equipment • value of local knowledge considering culture, skills and resources in the evolution of technologies	Products, services and/or environments are designed and developed with creative and innovative application of technologies For example: • an existing invention for an individual, community or organisation has evolved over time, reflecting on changed technologies, such as the advancement of lighting from filament to LED, from harvesting crops with hand tools to mechanisation, increased 'seasonal' produce availability with the evolution of processing and transport options, progress of engines and tools with the evolution of sources of energy	Products, services and environments are designed and developed with consideration of economic factors and alternative technologies For example: • methods of product, system and technologies design, with consideration of markets, materials, sustainable factors, the environment and built-in obsolescence • ways to appeal to consumers' desires when marketing products, services and environment in the local and regional community	Products, services and environments are designed and developed with consideration of specialised occupations, economic and environmental factors to identify market opportunities, innovate, create and develop entrepreneurial behaviours For example: • computer-controlled production systems and technologies, such as artificial intelligence (AI), design for disassembly and sustainable features of 3D printed products • innovation of new fibres, composite materials, material combinations and ways technologies influence product design, such as synthetics replacing natural fibres, traditional materials and use of 'intelligent' textiles for personal clothes

Year 7	Year 8	Year 9	Year 10
	• ways cultural diversity influences design of products, services and environments through creativity, innovation and individual enterprise, collaborative efforts and relationships		• self-management skills, such as goal setting, time management, resource management, budgeting, collaboration and continuous evaluation, contribute to success

Engineering principles and systems

Year 7	Year 8	Year 9	Year 10
Force, motion and energy, including light and/or sound and/or heat and/or wind are used to control engineered systems Social and ethical considerations for the design and development of engineered products and systems, including ways products evolve locally to achieve designed solutions For example: • control of loads with lifting devices using simple or compound pulleys or gearing • elements involved in changing speed of a vehicle over a distance	Force, motion and energy are used to control and manipulate engineered systems Ethical and sustainable considerations for the design and development of engineered products and systems, including economic factors, use of locally or regionally sourced materials and reliable supply chains to achieve designed solutions	Properties of materials, combined with force, motion and energy influence the design of engineered products and systems Social, ethical and sustainable considerations for the design and development of engineered products and systems, including consumer and/or producer values and management of resources to achieve designed solutions for a specified community need	Effect of materials when combined with force, energy and/or motion in the design of ethical and sustainable engineered products and systems Social, ethical, sustainable, consumer and producer considerations in the design and development of entrepreneurial and marketing strategies for an engineering enterprise, including management of risks, security measures and for optimum quality and performance to achieve designed solutions For example:

Year 7	Year 8	Year 9	Year 10
• energy audit of family home, considering time of day, appliances in use to determine energy consumption and ways to conserve energy • considerations, such as ▪ social – develop engineered products to assist in everyday activities, such as ways to open canned food, put shoes and socks on to assist the infirm, family and community members, and consideration of regulatory responsibilities ▪ ethical – use engineered systems to develop ideas to assist others considering sustainable factors, use of limited resources and cultural values	For example: • manipulation of forces, energy and motion for the remodelling of a local skate park • manipulation of wind force on a model wind power generator affects energy generation • balanced and unbalanced forces for motion, such as spring balance, and amusement park rides, including the roller coaster • control sensing for light, heat or mechanical signals results in varied output/s in systems • sustainable sources of force and energy; management of excess production of energy, including storage • sequence of steps (energy supply chains) for utilising locally sourced energy for electricity production • considerations, such as ▪ ethical o system for sharing power or water in the community	For example: • forces involved in bridge and tunnel construction for road and rail infrastructure • management of engineered systems to control combined forces and materials in the construction of train haulage systems and multistorey buildings • engineered road systems to construct safe and efficient traffic flow, including fuel, time and resource efficiencies • social responsibility in the design of engineered systems for specific needs, such as old age, to develop products like prostheses, mobility aids, and modified kitchen utensils to aid grip, movement, hearing and sight • autonomous guided vehicles (AGVs) – black line follower or bump car • radio-controlled limited range drone	• management of the development, production and evaluation of a programmable device using kits or from scratch for an ‘engineered futures’ exhibition • engineered audio systems to develop individualised hearing aids, live music streaming online and reliable communications • management of ethical factors and the use of automation and artificial intelligence (AI) in the design of engineered systems, considering employment opportunities in vehicle manufacturing, food processing and clothing construction • automata, powered automatons • stationary or mobile devices with multiple, simple actions • perpetual motion machines

Year 7	Year 8	Year 9	Year 10
	during disruptions and shortage ▪ sustainable o individual responsibility, such as conserving energy or water in the household o collective endeavours, such as local community plans to generate and conserve energy or water		

Food and fibre production

Year 7	Year 8	Year 9	Year 10
Features of production systems, including managed environments, regulatory requirements for quality and safely produced food and/or fibre products Social and ethical considerations for the design and development of food products and/or fibre products or a combination, including ways products evolve locally to achieve designed solutions	Process for selection of food and fibres, components, and systems, including for managed environments, to produce food and/or fibre products Ethical and sustainable considerations for the design and development of food products and/or fibre products or a combination, including economic factors, use of locally or regionally	Competing factors (social, environmental, economic) influence the design and function of specialised food and fibre products and systems Social, environmental, economic and sustainable considerations for the design and development of specialised food and/or fibre products and systems, including consumer and/or producer values	Role of technological innovations in ways food and fibre products are grown, processed and marketed, in the design of ethical and sustainable food/fibre products and systems Social, ethical, sustainable, consumer and producer considerations in the design and development of entrepreneurial and marketing strategies for a food- and/or fibre-based enterprise,

Year 7	Year 8	Year 9	Year 10
For example: • milk production from farm to fridge • cotton/linen production from seed to fabric • wool production processes compared with synthetic fibre production • considerations, such as ▪ social – shared food, eating with others, mindful eating, eating for nourishment of the body ▪ ethical o food from different cultures; communities and celebrations o managed environments to produce plant fibres, such as cotton production; and food, such as egg and meat production	sourced food and fibre products, and reliable supply chains to achieve designed solutions For example: • sustainable production processes ▪ source local produce and resources ▪ management of waste materials • design and process selected food and fibre for a specified purpose • considerations, such as ▪ ethical – production of food and fibre in managed environments; demand for land use, such as primary production, forest regeneration, housing ▪ sustainable o individual responsibility; be involved in or develop ways to use resources efficiently, such as monitor water systems for optimum plant and animal growth	and management of resources to achieve designed solutions for a specified community need For example: • social ▪ clothing, textile and food regulatory responsibilities to protect consumers, such as pasteurisation of milk, safe colour dyes for fabric production to create garments ▪ change in consumer and/or producer values, such as varieties of milk, natural fibre preferences, production of eggs, milk and meat in managed environments	including management of risks, security measures and regulatory responsibilities for optimum quality and performance to achieve designed solutions For example: • social ▪ laboratory-developed protein sources, feed-lots for production, such as meat, eggs, wheat, cotton ▪ robotics capable of picking, sorting, inspecting, packaging and transporting food and/or fibre products • ethical ▪ fair employment in developing countries ▪ greenwashing – when an organisation spends more time and money on marketing itself as environmentally friendly than on actually minimising its environmental impact

Year 7	Year 8	Year 9	Year 10
	o collective endeavours; community insistence for circular and regenerative, sustainable fibre-based products; community gardens for food and fibre products	• environmental ▪ nature-positive systems to support biodiversity, such as heirloom ▪ varieties of plants; forestry production ▪ carbon zero food and/or fibre production ▪ role of fertiliser to increase yield • economic ▪ source of raw materials and impact on cost of production and final product in the market ▪ food security at all times, for all people o economic access to sufficient nutritious food to meet dietary needs, at all times o sourcing of adequate safe and nutritious food	▪ primary source of food or fibre composition and true labelling of food and fibre products ▪ role of herbicide or chemicals and alternatives, to increase yield, as a component of an enterprising system • sustainable ▪ quarantine to prevent pests, diseases and weeds affecting production ▪ genetically modified food or fibre production ▪ regenerative – restore and revitalise natural food and plant systems ▪ United Nations Sustainable Development Goals, such as responsible consumption and production of food and fibre products (food waste, 'fast fashion') ▪ the design, development, production of a food and/or fibre product for a 'living in the future' exhibition

Food specialisations

Year 7	Year 8	Year 9	Year 10
Sensory properties and nutritional value of foods determine preparation, production and presentation techniques Social and ethical considerations for the design and development of meals and specialised food products, including ways products evolve locally to achieve designed solutions For example: • familiar food sources with macro nutrients • menu plans based on the *Australian dietary guidelines* • considerations, such as ▪ social – shared food, eating with others, mindful eating, eating for nourishment of the body; consider the roles and occupations of people who produce, prepare and provide food	Nutritious and sustainable diets, and physical properties of food determine processing techniques Ethical and sustainable considerations for the design and development of specialised food products and systems, including economic factors, locally or regionally sourced produce and reliable supply chains to achieve designed solutions For example: • nutritious diets – influences on the choices consumers make about food and impact on their wellbeing • sustainable diets – management of food waste, such as using leftover food, and sourcing local, fresh, seasonal food • food supply chains and processing systems for a food produced locally or regionally	Wet and dry processing techniques and effect on nutrition, considering demographic groups, food safety including regulatory responsibilities for packaging and labelling; storage and transport of food; food enhanced for nutrition and sensory properties, global tastes and perceptions Social, ethical and sustainable considerations for the design and development of specialised food products and systems, including consumer and/or producer values and management of resources to achieve designed solutions for a specified community need For example: • food enhanced for flavour, appearance, nutritive value, and impact on allergies/intolerances • ways processing techniques affect the nutritive value of a meal, such	Processing techniques and the preservation of food products, considering application of nutrition principles; ways sensory and physical properties of food influence the design, preparation and development of specialised food products Social, ethical, sustainable, consumer and producer considerations in the design and development of entrepreneurial and marketing strategies for a specialised food enterprise, including management of risks, security measures and regulatory responsibilities for optimum quality and performance to achieve designed solutions For example: • identified properties that influence the design of sustainable food products and

Year 7	Year 8	Year 9	Year 10
▪ ethical – food in society; food waste; food security, that is food for all people, have physical and economic access to sufficient safe and nutritious food • preference for locally produced food products, such as the *Buy West Eat Best* promotional campaign • 'panic buying' in times of events, such as floods, war or pandemic may cause shortage of food supplies	• considerations, such as ▪ ethical – food in society, preferred food preparation techniques; where food is sourced and processed; inexpensive and inventive recipes for food that is nutritious and nourishing ▪ sustainable o individual responsibility; ways to use leftover foods, implement appropriate storage and serving sizes to reduce food waste; packaging designs for disassembly and reuse o collective endeavours; community systems to reduce food waste, recycle packaging materials; role of community gardens	as protein content for older people • food safety could be compromised if food substitution occurs during times of shortage, including food fraud (deliberate and accidental) and impact on food allergies and intolerances • food security – influence of ethical considerations to integrate secure, equitable access to healthy, safe food and sustainable diets at all times, for all people and communities • circular sustainable supply chains, or 'close the loop', to recycle more and waste less, particularly for food solutions and packaging	consider nature positive, carbon zero and regenerative elements, particularly for animal- or plant-sourced products • product tampering – tamper-proof packaging; truth in labelling; product substitution in food preservation • consumer and producer values, including ways food security, media role in food messaging, labelling and convenience influence food solutions • management of the development, production and evaluation of a food product for a 'food futures' exhibition, considering social and ethical factors • national supply chain security with a preference for local production and employment; 'buy local' or 'food miles' or marketing for new food enterprises

Year 7	Year 8	Year 9	Year 10
			• integration of sustainable solutions could include ▪ circular – products, such as packaging, and systems designed to be reused, repurposed, repaired, remanufactured or reassembled ▪ regenerative – restore and revitalise natural food systems

Materials and technologies specialisations

Year 7	Year 8	Year 9	Year 10
Properties of combined materials, features of production systems, given components, tools and equipment for quality, safely produced products Social and ethical considerations for the design and development of products using specialised technologies, including ways products evolve locally to achieve designed solutions For example: • embellishment and decorative process, using technologies, such as an electronic cutting machine, laser cutting for street numbers, sewing machine for indoor or outdoor cushions, lathe for wooden serving tray or bowl • tote bag or draw string bag for a specific purpose, such as carrying swimwear, athletics uniform or equipment, food and drink	Materials, components and systems, in combination with specialised technologies for the design, development and safe production of products Ethical and sustainable considerations for the development of specialised products and systems, including economic factors, locally or regionally sourced materials and reliable supply chains to achieve designed solutions For example: • the use of a range of specialised technologies, such as tools and equipment for the production of a selected design solution • sustainable production processes, such as management of waste materials, including a 'measure twice, cut once' approach • land yacht – incorporate different materials for different purposes, such as metal frame (strength),	Properties of materials, components, specialised tools, equipment and technologies used in the design and development of production systems to produce materials-based products Social, ethical and sustainable considerations for the design and development of specialised materials-based products and systems, including consumer and/or producer values and management of resources to achieve designed solutions for a specified community need For example: • features required for accurate product labelling and instructions for product use, storage, safety and optimum performance • accurate list management of materials and components used to produce an item of jewellery, a	Functional properties of materials, combined with components and application of specialised technologies and systems in the design and development of designed solutions Social, ethical, sustainable, consumer and producer considerations in the design and development of entrepreneurial and marketing strategies for specialised materials-based enterprise, including management of risks, security measures and regulatory responsibilities for optimum quality and performance to achieve designed solutions For example: • management of the development, production and evaluation of a product designed to achieve a specific purpose for inclusion at the 'living in the future' exhibition

Year 7	Year 8	Year 9	Year 10
• embossed name tag for a pet collar, produced using either metal, textile or wood material and technologies (specific tools and equipment) for embossing • label or decorate items, such as a metal plate using an engraving tool, a tote bag using an assortment of fibres and free-form machining, a wooden box using a wood burning tool or other alternative, suitable technologies • considerations, such as ▪ social factors – objects, items or clothing produced for individuals and/or community celebrations ▪ ethical factors – cultural respect for choice of embellishment designs; incorporate sustainable factors at the design phase, such as design to assemble, disassemble and reuse components	fabric sails (flexibility), and wooden wheels (decorative) • photo/picture frames – metal, timber, acrylic or combination of materials and technologies • items to achieve specific purposes ▪ lighting, such as a safe, lightweight candle holder/lantern ▪ leisure wear and comfort, such as drawstring shorts, T-shirt ▪ puzzles for children, such as decorated wooden jigsaw puzzles ▪ considerations, such as o ethical factors – use of materials in society o sustainable factors – individual responsibility; collective endeavours	soft toy, wooden box or scooter, from recycled items • technologies used to develop items for specified markets, school, community, artisan events and/or displays, such as gardening tools, hanging baskets (weaving, macramé), pot stands, racks, boxes, jewellery, baby/toddler clothes	• integration of materials and specialised technologies in the design and production of jewellery for personal use or a specific market • use of composite materials, such as plywood, reinforced plastics or a combination of two or more materials, fibres or fabrics and specialised technologies (tools and equipment) in the design and production of products for personal or community use or a specific market, such as swimwear or activewear, baby or toddler sleepwear or for day-to-day activity • sustainable solutions ▪ circular – products, systems and components designed to be reused, repurposed, repaired, remanufactured or reassembled ▪ regenerative – restore and revitalise natural materials systems

Strand: Design thinking skills

Sub-strand: Project management

Year 7	Year 8	Year 9	Year 10
Plan, develop and communicate, using project management processes, considering time and available resources to achieve solutions	Plan, develop and communicate, using project management processes, considering time, resources and costs to achieve solutions	Manage projects, using suitable technologies, with an agile and collaborative approach. Use project management processes to consider time, risk, economic and sustainable factors	Manage projects, using suitable technologies, with an agile and collaborative approach. Use project management processes to consider time, production processes, social, ethical, economic and sustainable factors, and legal responsibilities

Sub-strand: Investigating and defining

Year 7	Year 8	Year 9	Year 10
Investigate and define the problem and requirements of a given design brief	Investigate a problem for a given need or opportunity	Ideate a problem and define the needs of an end user, through interviews and/or surveys	Ideate a problem and define the needs of the client/stakeholder through anecdotal evidence and/or data gathering techniques
Break down a given design brief, identifying and defining the purpose and competing considerations	Develop a design brief for a given need or opportunity	Develop a design brief for a solution based on end user needs	Develop a design brief for a solution or to innovate an existing product, service or environment

Year 7	Year 8	Year 9	Year 10
Consider given technologies, resources and/or components to develop solutions	Consider technologies, resources and/or components to develop solutions, identifying constraints	Investigate a range of technologies, resources and/or components to develop ideas and solutions, with consideration of social, ethical and other constraints	Investigate a range of technologies, resources and/or components to develop ideas and solutions, with consideration of social and ethical factors, legal responsibilities and competing constraints

Sub-strand: Designing

Year 7	Year 8	Year 9	Year 10
Design processes and solutions with given technologies and techniques, using appropriate technical terms	Design processes and solutions considering a range of technologies and techniques, using appropriate technical terms	Design alternative solutions considering available technologies, usability and aesthetics, using appropriate technical terms	Design alternative solutions considering available technologies, functionality, accessibility, usability and aesthetics, using appropriate technical terms

Sub-strand: Producing and implementing

Year 7	Year 8	Year 9	Year 10
Implement agreed protocols and use a range of technologies, components and/or equipment to produce designed solutions	Implement agreed protocols, a range of technologies, techniques, components and processes to produce designed solutions	Select, implement and test a range of technologies, techniques and processes to produce designed solutions and/or prototypes	Select, justify, implement and test a range of technologies, techniques and processes to produce designed solutions and/or prototypes

Sub-strand: Evaluating

Year 7	Year 8	Year 9	Year 10
Use given contextual criteria to evaluate design processes and solutions	Use student-developed contextual criteria to evaluate design processes and solutions	Evaluate design processes and solutions against student-developed criteria	Evaluate design processes and solutions against student-developed criteria