

SENIOR SCHOOL VCE

English

English Unit 1

The focus of this unit is on the reading of a range of texts, particularly narrative and persuasive texts, in order to comprehend, appreciate and analyse the ways in which texts are constructed and interpreted. Students will develop competence and confidence in creating written, oral and multimodal texts.

The Areas of Study include:

1. Reading and Responding
2. Creating and Presenting
3. Using Language to Persuade

English Unit 2

The focus of this unit is on reading and responding to an expanded range of text types and genres in order to analyse ways in which they are constructed and interpreted, and on the development of competence and confidence in creating written, oral or multimodal texts.

The Areas of Study include:

1. Reading and Responding
2. Creating and Presenting
3. Using Language to Persuade

English Unit 3

The focus of this unit is on reading and responding both orally and in writing to a range of texts. Students analyse how the authors of texts create meaning and the different ways in which texts can be interpreted. They also develop competence in creating written texts by exploring ideas suggested by their reading within the chosen Context, and the ability to explain choices they have made as authors. The chosen Context is Exploring Issues of Identity and Belonging.

The Areas of Study include:

1. Reading and Responding
2. Creating and Presenting
3. Using Language to Persuade

English Unit 4

The focus of this unit is on reading and responding in writing to a range of texts in order to analyse their construction and provide an interpretation. Students also create written or multimodal texts suggested by their reading within the chosen Context and explain creative choices they have made as authors in relation to form, purpose, language, audience and context. The chosen Context is Exploring Issues of Identity and Belonging.

The Areas of Study include:

1. Reading and Responding
2. Creating and Presenting

Biology

Biology Unit 1

In this unit students examine the cell as the structural and functional unit of the whole organism. Students investigate the needs of individual cells, how specialised structures carry out cellular activities and how the survival of cells depends on their ability to maintain a dynamic balance between their internal and external environments.

Whether life forms are unicellular or multicellular, whether they live in the depths of the ocean or in the tissues of another living thing, all are faced with the challenge of obtaining nutrients and water, a source of energy, a means of disposing of their waste products, and a means of reproducing themselves.

Though there are many observable differences between living things, they have many fundamental features and biological processes in common. Students explore the diversity of organisms and look for patterns of similarities and

differences. They investigate how the structure and functioning of interdependent systems in living things assist in maintaining their internal environment. They relate differences in individual structures and systems to differences in overall function.

As students consider the development of ideas and technological advances that have contributed to our knowledge and understanding of life forms and cell biology, they come to understand the dynamic nature of science. Students investigate technological applications and implications of bioscientific knowledge.

Biology Unit 2

The rich diversity of Australian ecosystems provides a variety of contexts for students to study the relationships between living things and their environment. Students investigate particular sets of biotic and abiotic factors that operate in different places in the biosphere, and how these factors influence the kinds of organisms that live there. Students examine how organisms in their particular habitats are part of the integrated and naturally self-sustaining systems in which energy flows and matter is cycled between the living and non-living components of the environment.

Students investigate how features possessed by organisms affect their fitness and reproductive success, in relation to their habitats. They consider how species are affected by changes in environmental conditions, whether natural or human-induced.

In this unit students investigate what changes have taken place in selected ecosystems, and how ecological principles can be applied to conserve natural ecosystems, to restore damaged ones and to ensure sustainability of the biosphere. Students investigate how technologies are being applied to monitor natural ecosystems and to manage systems developed to provide resources for humans.

Biology Unit 3

In this unit students consider the molecules and biochemical processes that are indicators of life. They investigate the synthesis of biomacromolecules and biochemical processes that are common to autotrophic and heterotrophic life forms. Students consider the universality of DNA and investigate its structure; the genes of an organism, as functional units of DNA and code for the production of a diverse range of proteins in an organism.

Students investigate the significant role of proteins in cell functioning; how technological advances have enabled scientists to determine differences in the molecular structure of proteins, how the structure of a protein relates to its function in an organism's tissues, and how technological advances have given rise to applications such as the design of proteins for specific purposes.

Students consider advances in proteomics applied, for example, to medical diagnosis.

Students investigate how cells communicate with each other at molecular level in regulating cellular activities; how they recognise 'self' and 'non-self' in detecting possible agents of attack; and how physical barriers and immune responses can protect the organism against pathogens.

Students consider the technological advances that have contributed to our knowledge and understanding of molecular biology and thereby appreciate the dynamic nature of science.

Students apply concepts related to the structure, function, activities, needs and regulated death of cells.

Biology Unit 4

In this unit students examine evidence for evolution of life forms over time. Students explore hypotheses that explain how changes to species have come about. In addition to observable similarities and differences between organisms, students explore the universality of DNA and conservation of genes as evidence for ancestral lines of life that have given rise to the present biodiversity of our planet.

Students investigate how the study of molecular genetics has expanded into genomics – the study of whole sets of genes possessed by an organism. Information obtained by studying genomes and functional genomics has provided insight into gene expression and regulation, and relationships between species.

Students study how genes are transmitted from generation to generation by examining meiosis and patterns of inheritance including pedigree analysis. Students consider the relationship between heritable variations and the environment in accounting for changes to species over time, and for speciation and extinction.

Students examine the interrelationships between biological, cultural and technological evolution. As they consider the historical development of ideas and technological advances that have contributed to our knowledge and understanding of inheritance and evolutionary biology, students come to understand the dynamic nature of science, the human factors that influence developments in science and its increasing reliance on evidence. Students investigate emerging technological applications and the implications of advances in molecular genetics.

The ability to apply technologies that can change the genetic composition of individual organisms and species, including humans, raises controversial issues for individuals and society. Students examine these issues and consider their implications from a variety of perspectives.

Chemistry

Chemistry Unit 1

The story of chemistry begins with the building of the Periodic Table from speculation, debate and experimental evidence. The Periodic Table provides a unifying framework for studying the chemistry of the elements using their chemical and physical properties to locate their position. The electron configuration of an element, its tendency to form a particular bond type and its ability to behave as an oxidant or reductant can all be linked to its position in the Periodic Table.

A study of the development of our understanding about the internal structure of the atom illustrates to students the collaborative and step-by-step way in which scientific theories and models are formed.

Students study the models for metallic, ionic and covalent bonding. They consider the widespread use of polymers as an example of the importance of chemistry to their everyday lives. Students investigate the uses of materials and how these have changed. Examples could include improved corrosion prevention or limitation and carbon nanotubes and self-repairing materials.

Students are introduced to the development and application of 'smart' materials. Developing new materials has escalated with the use of synchrotron science that explores particle behaviour at an ever decreasing size. Some examples of new materials are alloys, fibres and compounds incorporating polymers, ceramics, biopolymers, films and coatings.

Students use the language of chemistry, its symbols and chemical formulas and equations, to explain observations and data collected from experiments.

Chemistry Unit 2

Living things on earth have evolved to use water and the gases of the atmosphere in the chemical reactions that sustain them. Water is used by both plants and animals to carry out their energy-producing reactions, dissolve their nutrients and transport their wastes. The atmosphere supplies life-giving gases, provides temperature that sustains life, and gives protection from harmful radiation.

Algae blooms, salinity, acid rain, depletion of ozone, photochemical smog, and global warming continue to have an impact on living things and the environment. Students will investigate how chemistry is used to respond to the effects of human activities on our environment.

Typical tasks of environmental chemists include monitoring the concentration of wastes in the effluent from an industrial plant and monitoring air quality. Quantitative chemical calculations play an essential role in these tasks and

students are introduced to the types of calculations used every day by analytical chemists.

The principles and applications of green chemistry – benign by design – to processes and practices are included. The goal of these processes is to achieve hazard-free, waste-free, energy efficient synthesis of non-toxic products whilst maintaining efficiency. Students are introduced to new, cleaner and more efficient chemical processes that have been designed using green chemistry principles.

Students continue to use and develop the language of chemistry, its symbols and chemical formulas and equations, to explain observations and data collected from experiments.

Chemistry Unit 3

In this unit students investigate the scope of techniques available to the analytical chemist. Chemical analysis is vital in the work of the forensic scientist, the quality control chemist at a food manufacturing plant, the geologist in the field, and the environmental chemist monitoring the health of a waterway.

Each technique of analysis depends on a particular property or reaction of the chemical being investigated. Consequently, an understanding of the chemistry is necessary in learning how and why the techniques work. Some techniques of analysis have been refined over many years to make them quicker and more accurate. Other techniques are now used in combination to provide higher and more reliable levels of accuracy, for example gas chromatography and mass spectrometry, or carbon-13 and proton nuclear magnetic resonance spectroscopy.

Students investigate organic reaction pathways and the chemistry of particular organic molecules. A detailed knowledge of the structure and bonding of organic chemicals is important to the work of the synthetic organic chemist. In the wake of the work done on the genome project, synthesis of new medicines is one of the growth industries for the coming decades. Students investigate the role of organic molecules in the generation of biochemical fuels and medicines.

Students use the language and symbols of chemistry, and chemical formulas and equations to explain observations and data collected from experiments.

Students complete an extended experimental investigation drawn from Area of Study 1 or Area of Study 2.

Chemistry Unit 4

In this unit students investigate the industrial production of chemicals and the energy changes associated with chemical reactions.

Chemical reactions produce a diverse range of products we use and depend on every day. Access to large quantities of raw materials and reliable energy supplies for these reactions is necessary to maintain continuous production of high quality useful chemicals. Features that affect chemical reactions such as the rate and yield or equilibrium position are investigated. Students explore how an understanding of these features is used to obtain optimum conditions in the industrial production of a selected chemical.

Our society uses a range of energy sources, including coal to generate electricity and gas for heating, oil for transport, and solar and wind for small and large scale production of electricity. Students investigate the renewability of a range of energy sources and consider their energy efficiencies.

Galvanic cells and electrolytic cells operate by transforming chemical and electrical energy. Students investigate their operating principles, both in the laboratory and in important commercial and industrial applications including fuel cells. These cells are used in smaller appliances such as mobile phones, CD players, personal computers, and in larger scale systems such as cars and motor bikes, and in the production of chemicals.

Students continue to use the language and symbols of chemistry, and chemical formulas and equations to explain observations and data collected from experiments.

General Mathematics

General Mathematics Units 1 and 2

General Mathematics provides courses of study for a broad range of students and may be implemented in a number of ways. Some students will not study Mathematics beyond Units 1 and 2, while others will intend to study Further Mathematics Units 3 and 4. Others will also be studying Mathematics Methods (CAS) Units 1 and 2 and intend to study Mathematical Methods (CAS) Units 3 and 4 and, in some cases, Specialist Mathematics Units 3 and 4 as well. The areas of study for Unit 1 and Unit 2 of General Mathematics are 'Arithmetic', 'Data analysis and simulation', 'Algebra', 'Graphs of linear and non-linear relations', 'Decision and business mathematics' and 'Geometry and trigonometry'.

Units 1 and 2 are to be constructed to suit the range of students entering the study by selecting material from the six areas of study using the following rules:

- for each unit, material covers four or more topics selected from at least three different areas of study;
- courses intended to provide preparation for study at the Units 3 and 4 level should include selection of material from areas of study which provide a suitable background for these studies;
- selected material from an area of study provide a clear progression in key knowledge and key skills from Unit 1 to Unit 2.

The appropriate use of technology to support and develop the teaching and learning of mathematics is to be incorporated throughout the course. This will include the use of some of the following technologies for various areas of study or topics: graphics calculators, spreadsheets, graphing packages, dynamic geometry systems, statistical analysis systems, and computer algebra systems.

Further Mathematics Unit 3 and 4

Further Mathematics consists of a compulsory core area of study 'Data analysis' and then a selection of three from six modules in the 'Applications' area of study. Unit 3 comprises the 'Data analysis' area of study which incorporates a statistical application task, and one of the selected modules from the 'Applications' area of study. Unit 4 comprises the two other selected modules from the 'Applications' area of study.

Assumed knowledge and skills for the 'Data analysis' area of study are contained in the topics: Univariate data, Bivariate data, Linear graphs and modelling, and Linear relations and equations from General Mathematics Units 1 and 2.

The appropriate use of technology to support and develop the teaching and learning of mathematics is to be incorporated throughout the units. This will include the use of some of the following technologies for various areas of study or topics: graphics calculators, spreadsheets, graphing packages, statistical analysis systems, dynamic geometry systems, and computer algebra systems. In particular, students are encouraged to use graphics or CAS calculators, computer algebra systems, spreadsheets or statistical software in 'Data analysis', dynamic geometry systems in 'Geometry and trigonometry' and graphics calculators, graphing packages or computer algebra systems in the remaining areas of study, both in the learning of new material and the application of this material in a variety of different contexts.

Mathematical Methods

Mathematical Methods Unit 1

Mathematical Methods (CAS) Units 1 and 2 are designed as preparation for Mathematical Methods (CAS) Units 3 and 4. The areas of study for Unit 1 are 'Functions and graphs', 'Algebra', 'Rates of change and calculus' and 'Probability'. At the end of Unit 1, students will be expected to have covered the material outlined in each area of study given below, with the exception of 'Algebra' which should be seen as extending across Units 1 and 2. This material should be presented so that there is a balanced and progressive development of skills and knowledge from each of the four areas of study with connections among and across the areas of study being developed consistently throughout both Units 1 and 2.

Students are expected to be able to apply techniques, routines and processes involving rational and real arithmetic, algebraic manipulation, equation solving,

graph sketching, differentiation and integration with and without the use of technology, as applicable. Students should be familiar with relevant mental and by hand approaches in simple cases.

The appropriate use of computer algebra system (CAS) technology to support and develop the teaching and learning of mathematics, and in related assessments, is to be incorporated throughout the unit. Other technologies such as spreadsheets, dynamic geometry or statistical analysis software may also be used, as appropriate, for various topics from within the areas of study for the course.

Familiarity with determining the equation of a straight line from combinations of sufficient information about points on the line or the gradient of the line and familiarity with pythagoras theorem and its application to finding the distance between two points is assumed. Students should also be familiar with quadratic and exponential functions, algebra and graphs, and basic concepts of probability.

Mathematical Methods Unit 2

The areas of study for Unit 2 are 'Functions and graphs', 'Algebra', 'Rates of change and calculus', and 'Probability'. At the end of Unit 2, students will be expected to have covered the material outlined in each area of study. Material from the 'Functions and graphs', 'Algebra', 'Rates of change and calculus', and 'Probability' areas of study should be organised so that there is a clear progression of skills and knowledge from Unit 1 to Unit 2 in each area of study.

Students are expected to be able to apply techniques, routines and processes involving rational and real arithmetic, algebraic manipulation, equation solving, graph sketching, differentiation and integration with and without the use of technology, as applicable. Students should be familiar with relevant mental and by hand approaches in simple cases.

The appropriate use of computer algebra system (CAS) technology to support and develop the teaching and learning of mathematics, and in related assessments, is to be incorporated throughout the unit. Other technologies such as spreadsheets, dynamic geometry or statistical analysis software may also be used, as appropriate, for various topics from within the areas of study for the course.

Mathematical Methods Unit 3 and 4 (CAS)

Mathematical Methods (CAS) Units 3 and 4 consists of the following areas of study: 'Functions and graphs', 'Calculus', 'Algebra' and 'Probability', which must be covered in progression from Unit 3 to Unit 4, with an appropriate selection of content for each of Unit 3 and Unit 4. Assumed knowledge and skills for Mathematical Methods (CAS) Units 3 and 4 are contained in Mathematical

Methods Units (CAS) Units 1 and 2, and will be drawn on, as applicable in the development of related content from the areas of study, and key knowledge and skills for the outcomes of Mathematical Methods (CAS) Units 3 and 4.

In Unit 3, a study of Mathematical Methods (CAS) would typically include a selection of content from the areas of study 'Functions and graphs', 'Algebra' and applications of derivatives and differentiation, and identifying and analysing key features of the functions and their graphs from the 'Calculus' area of study. In Unit 4, this selection would typically consist of remaining content from the areas of study: 'Functions and graphs', 'Calculus', 'Algebra' and the study of random variables and discrete and continuous probability distributions and their applications. For Unit 4, the content from the 'Calculus' area of study would be likely to include the treatment of anti-differentiation, integration, the relation between integration and the area of regions specified by lines or curves described by the rules of functions, and simple applications of this content.

The selection of content from the areas of study should be constructed so that there is a development in the complexity and sophistication of problem types and mathematical processes used (modelling, transformations, graph sketching and equation solving) in application to contexts related to these areas of study. There should be a clear progression of skills and knowledge from Unit 3 to Unit 4 in each area of study.

Students are expected to be able to apply techniques, routines and processes involving rational and real arithmetic, algebraic manipulation, equation solving, graph sketching, differentiation and integration with and without the use of technology, as applicable. Students should be familiar with relevant mental and by hand approaches in simple cases.

The appropriate use of computer algebra system technology (CAS) to support and develop the teaching and learning of mathematics, and in related assessments, is to be incorporated throughout the course. This will include the use of computer algebra technology to assist in the development of mathematical ideas and concepts, the application of specific techniques and processes to produce required results and its use as a tool for systematic analysis in investigative, problem-solving and modelling work. Other technologies such as spreadsheets, dynamic geometry systems or statistical analysis systems may also be used as appropriate for various topics from within the areas of study.

Physics

Physics Unit 1

This unit focuses on Physics as a human endeavour. Observations and ideas about the physical world related to aspects of energy are organised and explained through the use of conceptual models. The detailed studies provide

opportunities to explore the application of energy concepts and models in nuclear energy, sustainable energy sources, flight, space and medical contexts.

Students undertake regular experimental work in the laboratory starting with simple observations and measurements. A quantitative investigation involving the collection and analysis of sufficient data points for at least one independent variable will be undertaken. The investigation should be at least partly student designed.

The use of simple mathematical modelling, including calculations, is introduced to organise first-hand and second-hand data in order to make predictions and link concepts. Students begin to solve qualitative and quantitative problems in familiar contexts. Computer and/or graphics calculator programs are used to collect and analyse first-hand and second-hand data and to present investigation findings.

Unit 1 consists of two prescribed areas of study: Nuclear physics and radioactivity; and Electricity; and a third area of study to be chosen from one of six detailed studies: Astronomy, Astrophysics, Energy from the nucleus, Investigations: Flight, Investigations: Sustainable energy sources, and Medical physics.

In this unit, students make and test predictions, identify discrete and continuous variables, select relevant independent variables and recognise controlled variables. They apply a given method for a simple investigation to control variables and collect relevant data. Students record raw qualitative and quantitative data and present processed data, including correct use of units, symbols and formulas, appropriately. They use suitable materials, apparatus and measurement procedures to ensure reliability in the data. When drawing relevant conclusions from their investigations, students recognise sources of uncertainty and error. When completing independent and collaborative investigations, they identify alternative interpretations of data and results. They use appropriate sources to identify and assess risks to themselves, other living things and the environment of Physics related principles and procedures, and they use this knowledge to apply safe, ethical and responsible practices.

Physics Unit 2

This unit focuses on the application of models to more complex phenomena – motion and light – developed within contexts that are familiar to students and relevant to their experiences. Newtonian ideas of motion are extended to include a range of movements and more abstract ideas, while the wave and particle models of light provide a framework for exploring light phenomena in real world applications. The detailed studies provide opportunities to explore motion and/or light in nuclear, sustainable energy, flight, space and medical contexts.

Students continue to undertake extensive and regular experimental work in the laboratory. They design and undertake more complex investigations involving at

least one independent, continuous variable, and take increasing responsibility for the design of investigations.

The use of simple mathematical modelling, including calculations, to organise first-hand and second-hand data, to make predictions and to link concepts is further developed and applied to more extensive data. Students begin to analyse and solve quantitative and qualitative problems in familiar contexts. Computer and graphics calculator programs are used to collect and analyse first-hand and second-hand data, and to present investigation findings.

Unit 2 consists of two prescribed areas of study: Motion and Wave-like properties of light; and a third area of study to be chosen from one of six detailed studies: Astronomy, Astrophysics, Energy from the nucleus, Investigations: Flight, Investigations: Sustainable energy sources and Medical physics. The detailed study chosen in Unit 2 must be a different detailed study from that chosen in Unit 1.

In this unit, students identify a problem or research question and formulate a prediction or hypothesis, select at least one relevant independent continuous variable and recognise controlled variables. They adapt or extend given methods, or at least partly design their own methods, for the control of variables and the systematic collection and recording of sufficient relevant data for simple investigations.

Students record raw qualitative and quantitative data and present processed data, including correct use of units, symbols and formulas, appropriately. They select and use appropriate materials, apparatus and measurement procedures to ensure reliability in the data. When drawing relevant conclusions from their investigations, students take into account sources of error and uncertainty. They evaluate limitations of, and weaknesses and errors in, techniques and equipment. Alternative interpretations of data and results are identified. Students identify and apply safe and responsible practices when completing independent and collaborative investigations. They use appropriate information sources to assess risk.

Physics Unit 3

Unit 3 consists of two prescribed areas of study: Motion in one and two dimensions; and Electronics and photonics. A detailed study is to be chosen in either Unit 3 or Unit 4 from one of six detailed studies: Einstein's special relativity, Materials and their use in structures, Further electronics, Synchrotron and its applications, Photonics, and Sound.

This unit focuses on the ideas that underpin much of the technology found in areas such as communications, engineering, commerce and industry. Motion in one and two dimensions is introduced and applied to moving objects on Earth and in space. Circuit models are applied to further aspects of electricity and electronics, and the operation and use of photonic devices are introduced. The

detailed studies offer examples of theoretical and practical applications of these technologies.

Students continue to have regular experience in experimental investigation in the laboratory. They design and carry out an extended practical investigation. They collect accurate data, evaluate the quality of data and measurement processes, and make conclusions based on the data.

Mathematical modelling, including calculations, is applied to all areas of study to organise first-hand and second-hand data, make predictions and link concepts. Students analyse and solve more complex qualitative and quantitative problems.

Computer and/or graphics calculator programs are used to collect and analyse first-hand and second-hand data, and to present investigation findings.

In this unit, students select focused research questions and formulate a quantitatively testable hypothesis. They identify variables of significance to an investigation and decide the appropriate variables to be controlled. They adapt or extend given methods, and design their own methods, for the control of variables and the systematic collection of sufficient relevant data for focused investigations.

Students record raw qualitative and quantitative data accurately and present processed data, including correct use of units, symbols and formulas, to ensure that relationships between variables are evident. They select and use appropriate materials, apparatus and measurement procedures to ensure a high degree of reliability and accuracy in the data. Students interpret their results to draw relevant conclusions from their investigations. They identify sources of error and estimate uncertainties in, and reliability of, data and derived quantities. They analyse procedures and results, taking into account limitations of, and weaknesses and errors in, techniques and equipment. Alternative interpretations of data and results are identified and explained. They identify and apply safe and responsible practices when designing and completing independent and collaborative investigations. Students select and use appropriate information sources to assess risk.

Physics Unit 4

Unit 4 consists of two prescribed areas of study: Electric power and Interactions of light and matter. A detailed study is to be chosen in either Unit 3 or Unit 4 from one of six detailed studies: Einstein's special relativity, Materials and their use in structures, Further electronics, Synchrotron and its applications, Photonics, and Sound.

This unit focuses on the development and limitations of models in explaining physical phenomena. A field model of electromagnetism is applied to the generation of electricity, and the development of models that explain the complex interactions of light and matter are considered. The detailed studies

provide examples of innovative technologies used for research and communication.

Students continue to undertake extensive and regular experimental work in the laboratory. They design and carry out investigations, collect accurate data, evaluate the quality of data and measurement processes and make conclusions based on the data.

Mathematical modelling, including calculations, continues to be used to organise first-hand and second-hand data, to link concepts, to make predictions and to identify trends. Students analyse and solve more complex qualitative and quantitative problems.

Computer and/or graphical calculator programs are used to collect and analyse first-hand and second-hand data, and to present investigation findings.

In this unit, students develop conceptual understanding by investigating practical activities and demonstrations. Students record raw qualitative and quantitative data and present processed data, including correct use of units, symbols and formulas, accurately and to ensure that relationships between variables are evident. They select and use appropriate materials, apparatus and measurement procedures to ensure a high degree of reliability and accuracy in the data. Students analyse their results to draw relevant conclusions. They identify sources of error and uncertainties to determine the reliability of data and derived quantities. Alternative interpretation of data and results are identified and explained. They identify and apply safe and responsible practices when completing independent and collaborative investigations.

Health and Human Development (HHD):

HHD Unit 1: The health and development of Australia's youth

In this unit students are introduced to the concepts of health and individual human development and focuses on Australia's youth. The unit also explores the many factors that influence health and individual human development, whilst investigating health status and allowing students to increase knowledge on health issues that surround Australia's youth today.

HHD Unit 2: Individual human development and health issues

In this unit students focus on the health and individual human development for the lifespan stages of prenatal, childhood and adulthood. Students will explore the determinants of health and development of Australia's children and adults. Students will also development knowledge surrounding health issues for each stage of the lifespan and investigate strategies/programs designed to minimise impacts of these.

HHD Unit 3: Australia's health

In this unit students will develop an increased knowledge of health status indicators and apply this understanding to population groups within Australia. Students will research the National Health Priority Areas (NHPAs) initiative and develop understanding of risk and protective factors surrounding these. Students will apply their developed knowledge to the Australian Health care system and increase understanding of the range of initiatives designed to promote health in Australia.

HHD Unit 4: Global health and human development

In this unit students explore health and human development on a global scale. Students will develop increased knowledge of sustainability and about the importance of creating an environment in which people can develop to their full potential and lead productive, creative lives in accord with their needs and interests. Students will explore the role of organisations such as the World Health Organisation (WHO) and the UN and other non – government agencies that aim to promote sustainable development for all, whilst increasing understanding of the importance of the Millennium Development Goals in assisting to make this happen

Psychology

Unit 1: Introduction to psychology

In this unit students are introduced to the development of psychology from its philosophical beginnings to a scientific study of the human mind and behaviour. Students explore the scope of psychology, its specialist disciplines such as neuropsychology, cognitive, social and human developmental psychology, and its fields of application. Students consider influences on perception and human behaviour from biological, behavioural, cognitive and socio-cultural perspectives. They examine the contribution classic and contemporary studies have made to the development of different psychological theories used to predict and explain the human mind, and behaviours associated with particular stages of development over a lifespan.

Students analyse research methodologies associated with classic and contemporary theories, studies and models, consider ethical issues associated with the conduct of research and the use of findings, and apply appropriate research methods when undertaking their own investigations. The specific research methodologies and ethical principles considered in this unit are described in detail in the introduction to Unit 1 in the study design.

Unit 2: Self and others

A person's attitudes and behaviours affect the way they view themselves and the way they relate to others. Understanding what influences the formation of attitudes of individuals and behaviours of groups can inform and contribute to explanations of individual aggression or altruism, the positive and negative power of peer pressure and responses to group behaviour.

Differences between individuals can also be ascribed to differences in intelligence and personality, but conceptions of intelligence and personality and their methods of assessment are contested. Differences between individuals, groups and cultures can be analysed in varied ways through different psychological perspectives informed by both classic and contemporary theories.

In this unit students analyse research methodologies associated with classic and contemporary theories, studies and models, consider ethical issues associated with the conduct of research and the use of findings, and apply appropriate research methods when undertaking their own investigations. The specific research methodologies and ethical principles considered in this unit are described in detail in the introduction to Unit 2 in the study design.

Unit 3: The conscious self

This unit focuses on the study of the relationship between the brain and the mind through examining the basis of consciousness, behaviour, cognition and memory.

Advances in brain research methods have opened new ways to understanding the relationship between mind, brain and behaviour. Students study the structure and functioning of the human brain and nervous system, and explore the nature of consciousness and altered states of consciousness including sleep.

The brain continually receives and processes vast amounts of information from its internal and external environment. Memory involves the selective retention and retrieval of this information and it plays an important role in determining behaviour. Students consider the function of the nervous system in memory and investigate the ways in which information is processed, stored and utilised. They apply different theories of memory and forgetting to their everyday learning experiences.

The brain continually receives and processes vast amounts of information from its internal and external environment. Memory involves the selective retention and retrieval of this information and it plays an important role in determining behaviour. Students consider the function of the nervous system in memory and investigate the ways in which information is processed, stored and utilised. They apply different theories of memory and forgetting to their everyday learning experiences.

Students analyse research methodologies associated with classic and contemporary theories, studies and models, consider ethical issues associated

with the conduct of research and the use of the findings, and apply appropriate research methods when undertaking their own investigations. The specific research methodologies and ethical principles considered in this unit and in Unit 4 are described in detail in the introduction to Unit 3 in the study design.

Unit 4: Brain, behaviour and experience

This unit focuses on the interrelationship between learning, the brain and its response to experiences, and behaviour. The overall quality of functioning of the brain depends on experience, and its plasticity means that different kinds of experience change and configure the brain in different ways. Students investigate learning as a mental process that leads to the acquisition of knowledge, development of new capacities and changed behaviours. Understanding the mechanisms of learning, the cognitive processes that affect readiness for learning, and how people learn informs both personal and social issues.

Students build on their conceptual understanding of learning to consider it as one of several important facets involved in a biopsychosocial approach to the analysis of mental health and illness. They consider different concepts of normality, and learn to differentiate between normal responses such as stress to external stimuli, and mental disorders. Students use a biopsychosocial framework – a conceptual model which includes psychological and social factors in addition to biological factors in understanding a person’s mental state – to explore the nature of stress and a selected mental disorder. The intent of the study is not that of diagnosis and treatment but to explore causes of mental illness, avenues of assistance and factors that promote mental wellbeing.

Students analyse research methodologies associated with classic and contemporary theories, studies and models, consider ethical issues associated with the conduct of research and the use of findings, and apply appropriate research methods when undertaking their own investigations. The specific research methodologies and ethical principles considered in this unit and in Unit 3 are described in detail in the introduction to Unit 3 in the study design.

Studio Art

Unit 1: Artistic inspiration and techniques

This unit focuses on using sources of inspiration and individual ideas as the basis for developing artworks and exploring a wide range of materials and techniques as tools for communicating ideas, observations and experiences through artmaking.

Students also explore and research the ways in which artists from different times and cultures have interpreted and expressed ideas, sourced inspiration and used materials and techniques in the production of artworks.

Unit 2: Design exploration and concepts

This unit focuses on students establishing and using a design process to produce artworks. The design process includes the formulation and use of an individual approach to locating sources of inspiration, experimentation with materials and techniques, and the development of aesthetic qualities, directions and solutions prior to the production of artworks.

Students also develop skills in the visual analysis of artworks. Artworks made by artists from different times and cultures are analysed to understand the artists' ideas and how they have created aesthetic qualities and identifiable styles.

Unit 3: Studio production and professional art practices

This unit focuses on the implementation of an individual design process leading to the production of a range of potential directions and solutions. Students develop and use an exploration proposal to define an area of creative exploration. They plan and apply a design process to explore and develop their individual ideas. Analysis of these explorations and the development of the potential directions is an intrinsic part of the design process to support the making of finished artworks in Unit 4.

For this study, the exploration proposal supports the student to identify a direction for their design process. The design process is individually determined by the student. It records trialling, experimenting, analysing and evaluating the extent to which their art practices successfully communicate their aims and ideas. From this process students can develop directions for the development of finished artworks in Unit 4.

The study of artists and their work practices and processes may provide inspiration for students' own approaches to artmaking. Students investigate and analyse the response of artists to a wide range of stimuli, and examine their use of materials and techniques. They explore professional art practices of artists in relation to particular artworks and art form/s and identify the development of styles in artworks. Throughout their study of art processes, students also consider the issues that may arise from the use of other artists' work in the making of new artworks. Students are expected to visit at least two different exhibition spaces in their current year of study.

Unit 4: Studio production and art industry contexts

This unit focuses on the production of a cohesive folio of finished artworks. To support the creation of the folio, students present visual and written documentation explaining how selected potential directions generated in Unit 3 were used to produce the cohesive folio of finished artworks. These artworks should reflect the skilful application of materials and techniques, and the resolution of ideas and aesthetic qualities.

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This unit also investigates aspects of artists' involvement in the art industry, focusing on a variety of exhibition spaces and the methods and considerations involved in the preparation, presentation and conservation of artworks. Students examine a range of environments for the presentation of artworks exhibited in contemporary settings. Students are expected to visit at least two different exhibition spaces in their current year of study.

Visual Communication Design

Unit 1: Introduction to visual communication design

This unit focuses on using visual language to communicate messages, ideas and concepts. This involves acquiring and applying design thinking skills as well as drawing skills to make messages, ideas and concepts visible and tangible. Students practise their ability to draw what they observe and they use visualisation drawing methods to explore their own ideas and concepts. Students develop an understanding of the importance of presentation drawings to clearly communicate their final visual communications.

Through experimentation and through exploration of the relationship between design elements and design principles, students develop an understanding of how design elements and principles affect the visual message and the way information and ideas are read and perceived. Students review the contextual background of visual communication through an investigation of design styles. This research introduces students to the broader context of the place and purpose of design. In this unit students are introduced to three stages of the design process detailed on pages 12 and 13: researching designers, generating ideas and applying design knowledge and drawing skills to develop concepts.

Unit 2: Applications of visual communication design

This unit focuses on the application of visual communication design knowledge, design thinking

skills and drawing methods to create visual communications to meet specific purposes in designated design fields. Students use presentation drawing methods that incorporate the use of technical drawing conventions to communicate information and ideas associated with the environmental or industrial fields of design. They investigate how typography and imagery are used in visual communication design. They apply design thinking skills when

exploring ways in which images and type can be manipulated to communicate ideas and concepts in different ways in the communication design field. Students develop an understanding of the design process detailed on pages 12 and 13 as a means of organising their thinking about approaches to solving design problems and presenting ideas. In response to a brief, students engage in the stages of research, generation of ideas and development of concepts to create visual communications.

Unit 3: Design thinking and practice

In this unit students gain an understanding of the process designers employ to structure their thinking and communicate ideas with clients, target audiences, other designers and specialists. Through practical investigation and analysis of existing visual communications, students gain insight into how the selection of methods, media, materials and the application of design elements and design principles can create effective visual communications for specific audiences and purposes. They investigate and experiment with the use of manual and digital methods, media and materials to make informed decisions when selecting suitable approaches for the development of their own design ideas and concepts.

Students use their research and analysis of visual communication designers to support the development of their own work. They establish a brief and apply design thinking skills through the design process detailed on pages 12 and 13. They identify and describe a client, two distinctly different needs of that client, and the purpose, target audience, context and constraints relevant to each need.

Design from a variety of historical and contemporary design fields is considered by students to provide directions, themes or starting points for investigation and inspiration for their own work. Students use observational and visualisation drawings to generate a wide range of design ideas and apply design thinking strategies to organise and evaluate their ideas. The brief and investigation work underpin the developmental and refinement work undertaken in Unit 4.

Unit 4: Design development and presentation

The focus of this unit is the development of design concepts and two final presentations of visual communications to meet the requirements of the brief. This involves applying the design process twice to meet each of the stated needs. Having completed their brief and generated ideas in Unit 3, students continue the design process by developing and refining concepts for each need stated in the brief. They utilise a range of digital and manual two- and three-dimensional methods, media and materials. They investigate how the application of design elements and design principles creates different communication messages with their target audience. As students revisit stages to undertake further research or idea generation when developing and presenting their design solutions, they develop an understanding of the iterative nature of the design process. Ongoing reflection and evaluation of design

solutions against the brief assists students with keeping their endeavours focused. Students refine and present two visual communications within the parameters of the brief. They reflect on the design process and the design decisions they took in the realisation of their ideas. They evaluate their visual communications and devise a pitch to communicate their design thinking and decision making to the client.

Business management

Unit 1: Small business management

Small rather than large businesses make up the large majority of all businesses in the Australian economy. It is the small business sector that provides a wide variety of goods and services for both consumers and industries, such as manufacturing, construction and retail. This, combined with employment opportunities, makes the small business sector a vital component in the success, growth and stability of Australia. Small businesses are tangible to students as they are visible and accessible in daily life. This unit provides an opportunity for students to explore the operations of a small business and its likelihood of success.

Unit 2: Communication and management

This unit focuses on the importance of effective communication in achieving business objectives. Students investigate communication both internal and external to the business. They develop knowledge of aspects of business communication and are introduced to skills related to its effective use in different contexts. The vital functions of marketing and public relations are considered, with students developing an understanding of the important role these functions play in the ultimate success of a business.

Unit 3: Corporate management

In this unit students investigate how large-scale organisations operate. Students examine the environment (both internal and external) in which large-scale organisations conduct their business, and then focus on aspects of individual business' internal environment and how the operations of the business are

managed. Students develop an understanding of the complexity and challenge of managing large-scale organisations and have the opportunity to compare theoretical perspectives with practical applications.

Unit 4: Managing people and change

This unit continues the examination of corporate management. It commences with a focus on the human resource management function. Students learn about the key aspects of this function and strategies used to most effectively manage human resources. The unit concludes with analysis of the management of change. Students learn about key change management processes and strategies and are provided with the opportunity to apply these to a contemporary issue of significance.

Legal Studies

Unit 1: Criminal law in action

The law influences all aspects of society – at home, at work and in the wider community. Laws are used by society to preserve social cohesion, and to ensure the protection of people from harm and from the infringement of their rights. These laws can be grouped according to their source and whether they are criminal or civil in nature. Following an overview of the law in general, this unit focuses on criminal law.

Students examine the need for laws in society. They investigate the key features of criminal law, how it is enforced and adjudicated and possible outcomes and impacts of crime. Through a consideration of contemporary cases and issues, students learn about different types of crimes and explore rights and responsibilities under criminal law. Students also consider the role of parliament and subordinate authorities in law-making, as well as the impact of the Victorian Charter of Rights and Responsibilities on law enforcement and adjudication in Victoria.

Students investigate the processes and procedures followed by courts in hearing and resolving criminal cases. They explore the main features and operations of criminal courts and consider the effectiveness of the criminal justice system in achieving justice.

Unit 2: Issues in civil law

The civil law regulates the rights and responsibilities that exist between individuals, groups and organisations. If legal rights have been infringed, the aggrieved party may pursue legal action through the court system, through a tribunal, or by using one of the methods of dispute resolution.

Students examine the rights that are protected by civil law, as well as obligations that laws impose. They investigate types of civil laws and related cases and issues and develop an appreciation of the role of civil law in society and how it affects them as individuals.

The unit also focuses on the resolution of civil disputes through judicial determination and alternative methods in courts, tribunals and independent bodies. Students examine these methods of dispute resolution and evaluate their effectiveness.

Individuals can influence a change in the law by taking a case to court. Students focus on cases that have had a broader impact on the legal system and on the rights of individuals. Students develop an appreciation of the role played by such cases and undertake an analysis of relevant legal issues.

Unit 3: Law-making

In this unit students develop an understanding of the institutions that determine our laws, and their law-making powers and processes. They undertake an informed evaluation of the effectiveness of law-making bodies and examine the need for the law to keep up to date with changes in society.

Students develop an appreciation of the complex nature of law-making by investigating the key features and operation of parliament, and influences on law-making, with a focus on the role of the individual.

Central to the investigation of law-making is the role played by the Commonwealth Constitution. Students develop an understanding of the importance of the Constitution in their lives and on society as a whole, and undertake a comparative analysis with another country. They learn of the importance of the role played by the High Court of Australia in interpreting and enforcing the Constitution, and ensuring that parliaments do not act outside their areas of power nor infringe protected rights.

Students investigate the nature and importance of courts as law-makers and undertake an evaluation of their effectiveness as law-making bodies. They also investigate the relationships that exist between parliaments and courts.

Throughout this unit, students examine relevant cases to support their learning and apply legal principles to these cases.

Unit 4: Resolution and justice

The legal system provides mechanisms by which legal disputes of both a criminal and a civil nature can be resolved in a fair and just manner. Dispute resolution bodies such as courts and tribunals employ a range of means and processes that enables the resolution of legal disputes.

Students examine the institutions that adjudicate criminal cases and civil disputes. They also investigate methods of dispute resolution that can be used as an alternative to civil litigation. Students investigate the processes and procedures followed in courtrooms and develop an understanding of the adversary system of trial and the jury system, as well as pre-trial and post-trial procedures that operate in the Victorian legal system. Using the elements of an effective legal system, students consider the extent to which court processes and procedures contribute to the effective operation of the legal system. They also consider reforms or changes that could further improve its effective operation.

Throughout this unit, students examine current or recent cases to support their learning, and apply legal principles to these illustrative cases.

History

Units 1 and 2: Twentieth century history

Unit 1: Twentieth century history 1900–1945

The first half of the twentieth century was marked by significant change. From the late nineteenth century up to World War I there was still a sense of a certain and natural order of society. This order was challenged and overturned. Old certainties were replaced by new uncertainties as new movements and organisations emerged in response to economic, social and political crises and conflicts. Revolution, civil war and international conflict overshadowed the first fifty years of the twentieth century. Many of the recurring conflicts of the twentieth century had their origins in the post-World War I political treaties and agreements. These saw the creation of new states and new borders within Europe, Asia and Africa. This was particularly true for the Middle East.

Patterns of daily life in the twentieth century were to change as a result of political and social developments. Advances in science and technology also began to transform the world of work and the home. Traditional forms of cultural expression such as art, literature, music and dance, as well as the new mediums of film and radio, were to both reflect and explore these changes. This unit considers the way that societies responded to these changes and how they affected people's lives.

This unit should be based on one or more historical contexts from within the specified time period 1900 to 1945; for example, Imperial Russia and the Soviet Union; Palestine and the break up of the Ottoman Empire; the collapse of the Hapsberg Empire; Japan, Germany, America, Europe and World War II; French Indochina; the Middle East and China.

Unit 2: Twentieth century history 1945–2000

In 1945 the forces of Japanese imperialism and German fascism were defeated. The United States of America and the USSR emerged from the destruction of World War II as the new world superpowers. The relationship between these allies soon dissolved into acrimony and suspicion and for the next forty years a Cold War was waged between these opposing ideologies. In 1945 the atomic bombs were dropped on the Japanese cities of Hiroshima and Nagasaki. The debate over the benefits and dangers of nuclear technology was to re-occur throughout the second half of the twentieth century. In 1945 the international community was loath to experience another devastating world war. This year was to see the first meetings of the newly formed United Nations (UN), which aimed, among other things, to take an internationalist approach to avoiding warfare, resolving political tensions and addressing threats to human life and safety. The member nations of the UN grew as the former colonies in Africa, the Middle East, the Pacific and Asia gained independence through both military and diplomatic means, and new countries such as Israel, Pakistan and Bangladesh were created.

Despite advances in medicine, technology and a commitment to the diplomatic process, and internationalist efforts to improve the quality of life for humankind, wars and civil unrest continued to take a huge toll on human life across the globe, as did illness, hunger and disease. Exploitation of the environment to unsustainable levels was identified as an additional threat to the long-term health of the planet. Movements for social, political, and economic change saw the traditional power structures in both Western, communist and developing countries challenged. The individual voice of dissent could now reach across the globe through advances in communication such as television, satellite, and multimedia technology. Increasingly, art, sport, entertainment and consumerism, as well as social action, have become a global experience.

This unit considers some of the major themes and principal events of post-World War II history, and the ways in which individuals and communities responded to the political, economic, social and technological developments in domestic, regional and international settings.

Units 3 and 4: Revolutions

Revolutions are the great disjuncture of modern times and mark deliberate attempts at new directions. They share the common aim of breaking with the past by destroying the regimes and societies that engender them and

embarking on a program of political and social transformation. As processes of dramatically accelerated social change, revolutions have a profound impact on the country in which they occur, as well as important international repercussions.

Because revolutions involve destruction and construction, dispossession and liberation, they polarise society and unleash civil war and counter-revolution, making the survival and consolidation of the revolution the principal concern of the revolutionary state. In defence of the revolution, under attack from within and without, revolutionary governments often deploy armed force and institute policies of terror and repression. The process of revolution concludes when a point of stability has been reached and a viable revolutionary settlement made.

Industry and Enterprise

Unit 1: Workplace participation

This unit prepares students for effective workplace participation. Their exploration of the importance of work-related skills is integral to this unit. Students develop work-related skills by actively exploring their individual career goals and pathways. They observe industry and employment trends and analyse current and future work options. Students build work-related skills that assist in dealing with issues affecting participants in the workplace.

Students examine the diverse contexts in which work takes place in Australian society by investigating a range of work settings. They investigate job tasks and processes in work settings as well as entry-level requirements associated with work in selected industries.

Students research a work-related issue, and consider strategies related to the development of interpersonal skills and effective communication to deal with the selected issue.

After completing the relevant occupational health and safety (OH&S) induction program, students demonstrate the practical application of their work-related skills by completing at least 35 hours of structured workplace learning.

Unit 2: Being enterprising

In this unit students explore the development of enterprising behaviour, leadership and innovation in different settings within industry and in the context of significant issues faced by industry.

Students learn that enterprising and leadership behaviours are vital for success in diverse personal, work and community settings. All work settings exist within a wider industry context and ongoing workplace enterprise and innovation are pivotal to industry success. Students investigate the characteristics and qualities of successful entrepreneurs in different settings, and investigate the relationship between leadership behaviour and the development of an individual's work-related skills.

As part of a wider industry investigation, students consider the characteristics of a selected industry and evaluate the extent to which enterprising behaviours are applied in selected work settings within this industry. They also explore the role of work-related skills in supporting innovation in this industry.

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After completing the relevant OH&S induction program, students demonstrate the practical application of their developing work-related skills by completing at least 35 hours of structured workplace learning. In Unit 2 students are strongly encouraged to undertake one or more enterprise projects or activities as part of their 35 hours of structured workplace learning.