

ST JOHN'S COLLEGE

Senior School
CURRICULUM GUIDE

Years 11 and 12

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St John's College

Mission, Vision and Values

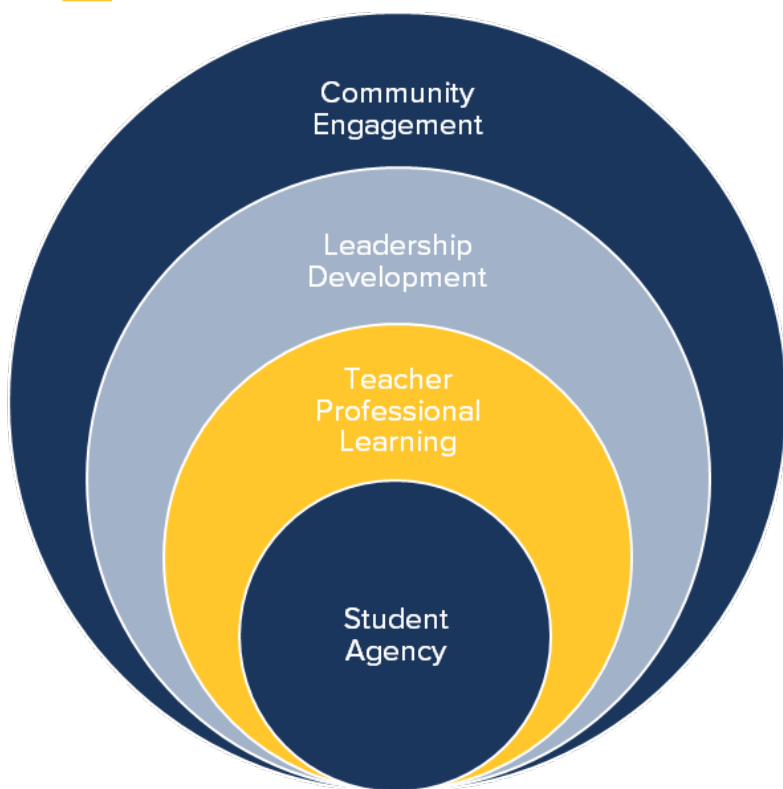
MISSION

To foster a love of learning, live the Orthodox Christian values of love, kindness, responsibility and humility, and celebrate Hellenism, in a community environment where everyone is welcome.

VALUES



STRATEGY

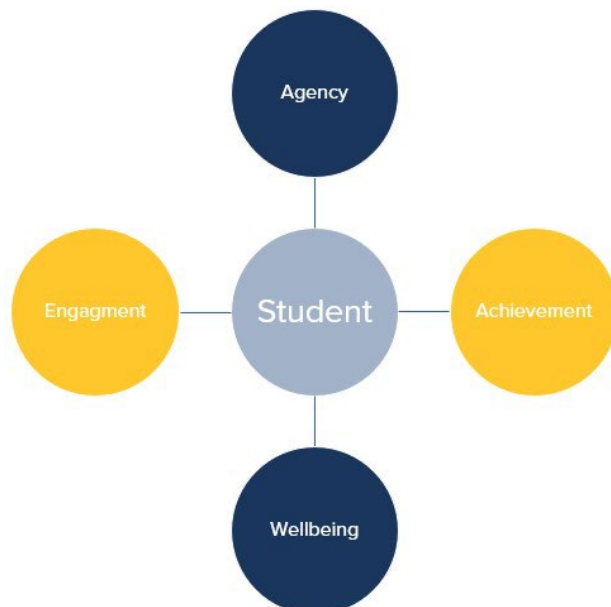


VISION

Our vision is to educate the whole person, academically, socially, spiritually and morally. Students leave the school with the knowledge, skill and confidence to succeed in their chosen field; to 'walk the right path – Philotomo'.

GUIDING PHILOSOPHY

We believe that when students feel safe and accepted at school, they are best able to engage in their learning. Student engagement and agency in learning are the foundation of educational achievement and personal growth.





VCE Studies

V
C
E

English/EAL

Scope of study

VCE English and English as an Additional Language (EAL) focuses on the how English language is used to create meaning in print and digital texts of varying complexity.

Texts selected for study are drawn from the past and present, from Australia and from other cultures, and comprise many text types, including media texts, for analysis of argument.

The study is intended to meet the needs of students with a wide range of expectations and aspirations, including those for whom English is an additional language.

Rationale

The study of English empowers students to read, write, speak and listen in different contexts. VCE English and English as an Additional Language (EAL) prepares students to think and act critically and creatively, and to encounter the beauty and challenge of their contemporary world with compassion and understanding. Students work to collaborate and communicate widely, and to connect with our complex and plural society with confidence.

Through engagement with texts drawn from a range of times, cultures, forms and genres, and including Aboriginal and Torres Strait Islander knowledge and voices, students develop insight into a varied range of ideas. They extend their skills in responding to the texts they read and view, and their abilities in creating original texts, further expanding their language to reflect accurately the purpose, audience and context of their responses.

By developing broad skills in communication and reflection, the study of English enables students to participate in their diverse, dynamic and multicultural world productively and positively.

Aims

This study enables students to:

- extend their English language skills through reading, writing, speaking, listening, thinking and viewing to meet the demands of further study, the workplace, and their own needs and interests
- enhance their understanding, enjoyment and appreciation of the English language through all modes
- discuss, explore and analyse the form, purpose, context, text structures and language of texts from a range of styles and genres
- discuss, explore and analyse how culture, values and context underpin the construction of texts and how this can affect meaning and understanding
- convey ideas and demonstrate insight convincingly and confidently
- create print, digital and spoken texts
- demonstrate the ability to make informed choices about the construction of texts in relation to purpose, audience and context.

Structure

The study is made up of four units. Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit. Each outcome is described in terms of key knowledge and key skills.

Unit 1 and 2 Outline

Reading and exploring texts

Students engage in reading and viewing texts with a focus on personal connections with the story. They discuss and clarify the ideas and values presented by authors through their evocations of character, setting and plot, and through investigations of the point of view and/or the voice of the text. They develop and strengthen inferential reading and viewing skills, and consider the ways a text's vocabulary, text structures and language features can create meaning on several levels and in different ways.

Students' exploration of texts involves understanding and appreciating the role of vocabulary, text structures and language features in creating story and meaning. They contemplate the ways a text can present and reflect human experiences, and how stories or aspects of stories resonate with their own memories and lives. Students are encouraged to share their experience and understanding of the world, and make connections with key ideas, concerns and tensions presented in a text. They also explore the cultural, social and historical values embedded in the text, and can compare these values with their own. It is through these moments of connection that students engage more closely with the reading experience, and draw parallels with their own observations of the world.

Through participation in discussions about their own experiences and the ways they make connections with a text, students develop their own thinking and engage with the ideas of others to extend their understanding of a text. They draw on personal experience and understanding in developing writing about a text, and work to shape their ideas and knowledge into formal essay structures.

Students read or view a text, engaging with the ideas, concerns and tensions, and recognise ways vocabulary, text structures, language features and conventions of a text work together to create meaning. Through discussions about representations in a text, they examine the ways readers understand text considering its historical context, and social and cultural values. They also explore the text through the prism of their own cultural knowledge, experiences and understanding of the world, and extend their observations into analytical and abstracted explorations.

Developing analytical writing about a text provides students with opportunities to build skills to discuss ideas, apply appropriate metalanguage, integrate evidence from a text to support key points, and explore organisational structures such as formal essays.

Crafting texts

Students engage with and develop an understanding of effective and cohesive writing. They apply, extend and challenge their understanding and use of imaginative, persuasive and informative text through a growing awareness of situated contexts, stated purposes and audience.

Students read and engage imaginatively and critically with mentor texts that model effective writing. Through guided reading of mentor texts, students develop an understanding of the diverse ways that vocabulary, text structures, language features and ideas can interweave to craft compelling texts. They consider these texts through knowledge of the ways purpose, context (including mode) and audience influence and shape writing.

Both individual and shared reading of mentor texts provides students with opportunities for rich discussion about what constitutes effective writing. Students collaborate through classwork to cultivate their understandings of cohesive and successful texts.

Students employ and experiment with the qualities of effective writing in their own work. Considering clear purpose, context (including mode) and audiences for their writing, and through engaging with and expanding on ideas drawn from mentor texts and other reading, they extend their creativity, fluency and range. As they craft their texts, students explore text structures and language features, and ideas. They build a varied vocabulary, which can include abstract and technical language, and apply standard and/or non-standard conventions of language, including syntax and spelling, as appropriate. They are also able to explore other forms of non-standard or informal language including colloquial and idiomatic language such as slang or dialects, where appropriate.

Students explore and revisit the mentor texts as inspiration for developing their own writing processes, for generation of ideas, and as models for effective writing. They demonstrate their understanding of ideas and application of effective writing strategies in their crafted texts, and can articulate their writing processes in their commentaries.

Unit 3 and 4 Outline

Reading and responding to texts

Students apply reading and viewing strategies to critically engage with a text, considering its dynamics and complexities and reflecting on the motivations of its characters. They analyse the ways authors construct meaning through vocabulary, text structures, language features and conventions, and the presentation of ideas. They are provided with opportunities to understand and explore the historical context, and the social and cultural values of a text, and recognise how these elements influence the way a text is read or viewed, is understood by different audiences, and positions its readers in different ways.

Sustained analytical writing about a text provides students with opportunities to further develop skills to engage with and challenge ideas, to refine their application of appropriate metalanguage, to integrate evidence from a text to support key points, and to improve their use of organisational structures such as formal essays. Through participation in discussion, students test their thinking, clarify ideas and form views about a text that can be further developed in their writing.

Students consolidate their capacity to critically analyse texts and deepen their understanding of the ideas and values a text can convey.

Students apply reading and viewing strategies to engage with a text, and discuss and analyse the ways authors construct meaning in a text through the presentation of ideas, concerns and conflicts, and the use of vocabulary, text structures and language features. They engage with the dynamics of a text and explore the explicit and implicit ideas and values presented in a text. They recognise and explain the ways the historical context, and social and cultural values can affect a reader, and analyse how these social and cultural

values are presented. They establish how these values can influence the way a text is read or viewed, can be understood by different audiences, and can position readers in different ways.

Sustained analytical writing about a text provides students with opportunities to refine skills to engage with and challenge ideas, to confidently apply appropriate metalanguage, to deftly integrate evidence from a text to support key points, and to enhance their use of organisational structures such as formal essays. Through participation in discussion, students test their thinking, clarify ideas and form views about a text that are clearly developed in their writing.

Students are provided with opportunities to practice and extend their writing about texts.

Crafting texts

Students read and engage imaginatively and critically with mentor texts, and effective and cohesive writing within identified contexts. Through close reading, students expand their understanding of the diverse ways that vocabulary, text structures, language features, conventions and ideas can interweave to create compelling texts. They further consider mentor texts through their understanding of the ways that purpose, context (including mode), and specific and situated audiences influence and shape writing.

Students work with mentor texts to inspire their own creative processes, to generate ideas for their writing, and as models for effective writing. They experiment with adaptation and individual creation, and demonstrate insight into ideas and effective writing strategies in their texts. They reflect on the deliberate choices they have made through their writing processes in their commentaries.

Students participate in collaborative class work and discuss the ways that vocabulary, text structures and language features can enliven ideas. They read, explore and revisit examples of text, including extracts, to stimulate structural innovation and to inspire ideas when developing individual writing. They also make connections with experiences and events in their own lives, observing and recording to enrich their writing, and to extend their ideas.

Students use and experiment with vocabulary, text structures, language features, and standard and non-standard conventions of language, including the use of colloquial and idiomatic language such as slang or dialect where appropriate. Through this engagement they deepen their understanding of how writing can move, provoke and/or inspire when constructed in consideration of a specific and situated audience, purpose and context (including mode). They play with language as they explore ideas and aim for aesthetic appeal, to expand their writing into the possibilities of emotion, imagination, explanation and perspective.

Analysing argument

Students analyse the use of argument and language, and visuals in texts that debate a contemporary and significant national or international issue. The texts must have appeared in the media since 1 September of the previous year and teachers are advised to work with their students to select an issue of relevance to the cohort. Students read, view and/or listen to a variety of texts from the media, including print and digital, and audio and audio visual, and develop their understanding of the ways in which arguments and language complement one another to position an intended audience in relation to a selected issue.

Students consider the purpose, audience and context of each text, the arguments, and the ways written and spoken language, and visuals are employed for effect. They analyse the ways all these elements work together to influence and/or convince an intended audience. Consideration and time should be given to explicit teaching of the contextual and cultural background of the selected issue and the texts explored.

Students must explore and analyse the structures and features of argument presented in audio and/or audio visual texts, and consider the unique structures and features that enhance argument in these contexts. They plan and develop written analyses in response to their explorations. Students practise the skills of revision and editing for clarity and coherence.

Students apply their understanding of the use of argument and language to create a point of view text for oral presentation. Through active listening, reading and viewing, students monitor and evaluate arguments on a topic of their choice, and then plan and develop their own point of view text on that topic.

Foundation English

Scope of study

VCE Foundation English focuses on how English is used to communicate through written, spoken and multimodal texts of varying complexity. A range of texts are drawn from the past and from the present, from Australia and from other cultures. Other texts may be selected for the analysis and presentation of a persuasive text. The study is intended to meet the needs of students with a wide range of expectations and aspirations, including those for whom English is an additional language.

Rationale

The Foundation English study is designed for students who may require a more vocationally orientated approach to English or may be aiming to directly enter the workforce upon completing their senior secondary studies. It may also be suited to students who need additional time and assistance to strengthen and refine their literacy skills to support their study in VCE English and English as an Additional Language (EAL), and in other VCE studies.

Foundation English enables students to improve their skills in comprehending and responding to a variety of texts, and to enhance their overall communication skills. The study may be taken as a bridging course into the VCE or by students completing technically orientated courses. Foundation English also provides an opportunity for students to develop stronger connections between the Australian Core Skills Framework and their English studies. Each area of study offers scope for teacher discretion to tailor the course to the needs of their cohort. This can be done, for instance, through the selection of appropriate texts. For students in vocational courses, more emphasis can be given to workplace texts. For students using Foundation English as a bridge into VCE English, greater prominence can be given to literary works. The flexibility in assessment tasks also enables teachers to cater for the needs of their students.

English helps equip students for participation in a democratic society and the global community

Aims

This study enables students to:

- strengthen and extend their competence and confidence in using Standard Australian English in meeting the demands of further study, the workplace and their own needs and interests
- strengthen and extend their language skills through thinking, reading, writing, speaking and listening
- communicate ideas and information effectively using the conventions of written and spoken language
- listen and speak in a range of informal and formal settings for different audiences and purposes

- read a range of texts to construct personal, creative, comparative and critical responses
- read accurately to locate, extract, understand, organise and synthesise ideas and information
- control the conventions of Standard Australian English in order to edit and proofread their writing to enhance accuracy of expression and clarity of meaning
- acquire a vocabulary to talk precisely about language and texts.

Structure

The study is made up of two units:

Unit 1: English for practical purposes

Unit 2: Thinking and learning through English

Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit. Each outcome is described in terms of key knowledge and key skills.

Unit 1 and 2 Outline

Reading and Viewing texts

In this area of study students read a variety of academic, workplace or everyday texts to identify key information and ideas. They recognise the purposes, structures and features of different text types, for example narratives, arguments, reports, recounts and procedures. Students extend their knowledge of the layout and format of a range of texts and use indexes, headings, subheadings, chapter titles, section summaries, blurbs, menus, links and hyperlinks to locate, read and extract information and ideas. They employ reading strategies, such as skimming and scanning, identifying and selecting, visualising, inferring, interpreting, comparing and predicting. In addition, students learn to organise and synthesise information using strategies such as paraphrasing, summarising and note-taking, and techniques, such as bullet points, tables, concept maps and flow charts.

Students utilise a range of reading and viewing strategies to encourage the understanding and appreciation of both literary and non-literary texts. They develop their ability to access and navigate digital texts.

Students will also read literary texts for enjoyment, insight and critical analysis. A literary text may be any text that is primarily creative and imaginative in nature, and could therefore include short stories, novels, poetry, films, or any other creative form. Students examine the generic conventions of different texts to identify and discuss purpose and intended audience. They explore techniques for identifying and discussing the themes, issues, ideas, characters and arguments in texts. Depending on the needs and interests of a particular cohort, students can study one text in depth, or a number of shorter texts, which may allow for comparisons.

Creating Texts

In this area of study students focus on the structures and features of written language in both handwritten and digital texts. They examine how purpose, context and audience influence the structure and language of texts. Students increase their understanding of spelling conventions, punctuation, syntax and paragraphing. They extend their knowledge of vocabulary commonly used in academic, workplace and social contexts. Students use processes of planning, drafting, revising, editing and proofreading written work for clarity, coherence, style and structure.

Students will develop skills in writing for different purposes and audiences in a variety of forms. They examine the ways in which purpose, context and audience influence the structure and language of texts that entertain, explain, analyse and persuade.

Students develop the ability to use the appropriate language, tone and style to construct coherent, fluent and effective written texts for different purposes and audiences. They employ strategies for planning, drafting, editing and proofreading to achieve intended purposes through the conventions of Standard Australian English.

Listening to and presenting persuasive texts

In this area of study students focus on the structures and features of spoken language, including listening for gist and for detail, speaking in formal situations, such as oral presentations, and leading or actively participating in discussion groups.

Students examine how purpose, context and audience influence the structure and language of spoken texts. They focus on the conventions of speaking to an audience in a formal context, making oral presentations and actively participating in group discussions. Students increase their ability to understand and employ a wide lexis commonly used in academic, workplace and social contexts. They develop skills in speaking with clarity and coherence to communicate information and ideas to a given audience.

Students will explore the structures and features of spoken language for formal situations such as leading and participating in discussion groups, public speaking, debates and online presentations.

Students examine how purpose, context and audience influence the structure and language of spoken texts. They focus on the conventions of public speaking and discussion, and develop their ability to speak formally using a wide lexis commonly found in academic, workplace or social contexts. They extend their ability to speak with clarity and coherence when communicating a reasoned and informed opinion to a given audience.

Biology

Scope of study

The study of Biology explores the diversity of life as it has evolved and changed over time and considers how living organisms function and interact. It explores the processes of life, from the molecular world of the cell to that of the whole organism and examines how life forms maintain and ensure their continuity. Students study contemporary research, models and theories to understand how knowledge in biology has developed and how this knowledge continues to change in response to new evidence and discoveries. An understanding of the complexities and diversity of biology provides students with the opportunity to appreciate the interconnectedness of concepts and areas both within biology, and across biology and the other sciences.

Rationale

VCE Biology enables students to investigate the processes involved in sustaining life at cellular, system and species levels. In undertaking this study, students develop an understanding that, in the dynamic and interconnected system of life, all change has consequences that may affect an individual, a species or the collective biodiversity of Earth. Students gain insights into how molecular and evolutionary concepts and key science skills underpin much of contemporary biology, and how society applies such skills and concepts to resolve problems and make scientific advancements.

VCE Biology provides for continuing study pathways within the discipline and can lead to a range of careers. Branches of biology include botany, genetics, immunology, microbiology, pharmacology and zoology. In addition, biology is applied in many fields of human endeavour including bioethics, biotechnology, dentistry, ecology, education, food science, forestry, health care, horticulture, medicine, optometry, physiotherapy and veterinary science. Biologists work in cross-disciplinary areas such as bushfire research, environmental management and conservation, forensic science, geology, medical research and sports science.

Aims

This study enables students to:

- develop knowledge and understanding of key biological models, theories, concepts and issues from the individual cell to species level
- develop knowledge and understanding of organisms, their relationship to their environment, and the consequences of biological change over time, including the impact of human endeavours on biological processes and the survival of species and more broadly to:
- understand the cooperative, cumulative, evolutionary and interdisciplinary nature of science as a human endeavour, including its possibilities, limitations and political and sociocultural influences

- develop a range of individual and collaborative science investigation skills through experimental and inquiry tasks in the field and in the laboratory

Structure

The study is made up of four units.

Unit 1: How do organisms regulate their functions?

Unit 2: How does inheritance impact on diversity?

Unit 3: How do cells maintain life?

Unit 4: How does life change and respond to challenges?

Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit. Each outcome is described in terms of key knowledge and is complemented by a set of key science skills.

Unit 1 and 2 Outline

Students examine the cell as the structural and functional unit of life, from the single celled to the multicellular organism, including the requirements for sustaining cellular processes. Students focus on cell growth, replacement and death and the role of stem cells in differentiation, specialisation and renewal of cells. They explore how systems function through cell specialisation in vascular plants and animals, and consider the role homeostatic mechanisms play in maintaining an animal's internal environment.

A student-adapted or student-designed scientific investigation is undertaken in Area of Study 3. The investigation involves the generation of primary data and is related to the function and/or the regulation of cells or systems. The investigation draws on the key science skills and key knowledge from Area of Study 1 and/or Area of Study 2.

Students explore reproduction and the transmission of biological information from generation to generation and the impact this has on species diversity. They apply their understanding of chromosomes to explain the process of meiosis. Students consider how the relationship between genes, and the environment and epigenetic factors influence phenotypic expression. They explain the inheritance of characteristics, analyse patterns of inheritance, interpret pedigree charts and predict outcomes of genetic crosses.

Students analyse the advantages and disadvantages of asexual and sexual reproductive strategies, including the use of reproductive cloning technologies. They study structural, physiological and behavioural adaptations that enhance an organism's survival. Students explore interdependences between species, focusing on how keystone species and top predators structure and maintain the distribution, density and size of a population. They also consider the contributions of Aboriginal and Torres Strait Islander knowledge and perspectives in understanding the survival of organisms in Australian ecosystems.

A student-directed research investigation into a contemporary ethical issue is to be undertaken in Area of Study 3. The investigation relates to the application of genetic knowledge, reproductive science, inheritance or adaptations and interdependencies beneficial for survival. The investigation draws on key knowledge and key science skills from Area of Study 1 and/or Area of Study 2.

Unit 3 and 4 Outline

Students investigate the workings of the cell from several perspectives. They explore the relationship between nucleic acids and proteins as key molecules in cellular processes. Students analyse the structure and function of nucleic acids as information molecules, gene structure and expression in prokaryotic and eukaryotic cells and proteins as a diverse group of functional molecules. They examine the biological consequences of manipulating the DNA molecule and applying biotechnologies.

Students explore the structure, regulation and rate of biochemical pathways, with reference to photosynthesis and cellular respiration. They explore how the application of biotechnologies to biochemical pathways could lead to improvements in agricultural practices.

Students apply their knowledge of cellular processes through investigation of a selected case study, data analysis and/or a bioethical issue. Examples of investigation topics include, but are not limited to: discovery and development of the model of the structure of DNA; proteomic research applications; transgenic organism use in agriculture; use, research and regulation of gene technologies, including CRISPR-Cas9; outcomes and unexpected consequences of the use of enzyme inhibitors such as pesticides and drugs; research into increasing efficiency of photosynthesis or cellular respiration or impact of poisons on the cellular respiration pathway.

The application of ethical understanding in VCE Biology involves the consideration of approaches to bioethics and ethical concepts.

A student-designed scientific investigation related to cellular processes and/or responses to challenges over time is undertaken in either Unit 3 or Unit 4, or across both Units 3 and 4, and is assessed in Unit 4, Outcome 3. The design, analysis and findings of the investigation are presented in a scientific poster format.

Students consider the continual change and challenges to which life on Earth has been, and continues to be, subjected to. They study the human immune system and the interactions between its components to provide immunity to a specific pathogen. Students consider how the application of biological knowledge can be used to respond to bioethical issues and challenges related to disease.

Students consider how evolutionary biology is based on the accumulation of evidence over time. They investigate the impact of various change events on a population's gene pool and the biological consequences of changes in allele frequencies. Students examine the evidence for relatedness between species and change in life forms over time using evidence from paleontology, structural morphology, molecular homology and comparative genomics. Students examine the evidence for structural trends in the human fossil record, recognising that interpretations can be contested, refined or replaced when challenged by new evidence.

Students demonstrate and apply their knowledge of how life changes and responds to challenges through investigation of a selected case study, data analysis and/or bioethical issue. Examples of investigation topics include, but are not limited to: deviant cell behaviour and links to disease; autoimmune diseases; allergic reactions; development of immunotherapy strategies; use and application of bacteriophage therapy; prevention and eradication of disease; vaccinations; bioprospecting for new medical treatments; trends, patterns and evidence for evolutionary relationships; population and species changes over time in non-animal communities such as forests and microbiota; monitoring of gene pools for

conservation planning; role of selective breeding programs in conservation of endangered species; or impact of new technologies on the study of evolutionary biology.

The application of ethical understanding in VCE Biology involves the consideration of approaches to bioethics and ethical concepts.

A student-designed scientific investigation involving the generation of primary data related to cellular processes and/or how life changes and responds to challenges is undertaken in either Unit 3 or Unit 4, or across both Units 3 and 4, and is assessed in Unit 4, Outcome 3. The design, analysis and findings of the investigation are presented in a scientific poster format.

Business Management

Scope of study

VCE Business Management examines the ways businesses manage resources to achieve objectives. The *VCE Business Management Study Design* follows the process from the initial idea for a business concept, to planning and establishing a business, through to the day-to-day management of a business. It also considers changes that need to be made to ensure the continued success of a business. Students develop an understanding of the complexity of the challenges facing decision-makers in managing businesses and their resources.

A range of management theories is considered and compared with management in practice through contemporary case studies drawn from the past four years. Students learn to propose and evaluate alternative strategies in response to contemporary challenges in establishing and operating a business.

Rationale

In contemporary Australian society there is a range of businesses managed by people who establish systems and processes to achieve a variety of business objectives. These systems and processes are often drawn from both historical experience and management theories that are designed to optimise the likelihood of achieving success.

In studying VCE Business Management, students develop knowledge and skills that enhance their confidence and ability to participate effectively as ethical and socially responsible members of society, managers and leaders of the business community, and as informed citizens, consumers and investors.

The study of VCE Business Management leads to opportunities across all facets of the business and management field such as small business owner, project manager, human resource manager, operations manager or executive manager. Further study can lead to specialisation in areas such as marketing, public relations and event management.

Aims

This study enables students to:

- understand and apply business concepts, principles and terminology
- understand the complex and changing environments in which businesses operate and how businesses must adapt to these
- understand the relationships that exist between a business and its stakeholders
- recognise the contribution and significance of business within local, national and global markets
- analyse and evaluate the effectiveness of management strategies in different contexts
- propose strategies to solve business problems and take advantage of business opportunities.

Structure

The study is made up of four units.

- Unit 1: Planning a business

- Unit 2: Establishing a business
- Unit 3: Managing a business
- Unit 4: Transforming a business

Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit. Each outcome is described in terms of key knowledge and key skills.

Unit 1 and 2 Outline

Businesses of all sizes are major contributors to the economic and social wellbeing of a nation. The ability of entrepreneurs to establish a business and the fostering of conditions under which new business ideas can emerge are vital for a nation's wellbeing. Taking a business idea and planning how to make it a reality are the cornerstones of economic and social development. In this unit students explore the factors affecting business ideas and the internal and external environments within which businesses operate, as well as the effect of these on planning a business. They also consider the importance of the business sector to the national economy and social wellbeing.

This unit focuses on the establishment phase of a business. Establishing a business involves compliance with legal requirements as well as decisions about how best to establish a system of financial record keeping, staff the business and establish a customer base. In this unit students examine the legal requirements that must be met to establish a business. They investigate the essential features of effective marketing and consider the best way to meet the needs of the business in terms of staffing and financial record keeping. Students analyse management practices by applying key knowledge to contemporary business case studies.

Unit 3 and 4 Outline

Students explore the key processes and considerations for managing a business efficiently and effectively to achieve business objectives. Students examine different types of businesses and their respective objectives and stakeholders. They investigate strategies to manage both staff and business operations to meet objectives, and develop an understanding of the complexity and challenge of managing businesses. Students compare theoretical perspectives with current practice through the use of contemporary Australian and global business case studies from the past four years.

Businesses are under constant pressure to adapt and change to meet their objectives. In this unit students consider the importance of reviewing key performance indicators to determine current performance and the strategic management necessary to position a business for the future. Students study a theoretical model to undertake change and consider a variety of strategies to manage change in the most efficient and effective way to improve business performance. They investigate the importance of effective management and leadership in change management. Using one or more contemporary business case studies from the past four years, students evaluate business practice against theory.

Chemistry

Scope of study

The study of VCE Chemistry involves investigating and analysing the composition and behaviour of matter, and the chemical processes involved in producing useful materials for society in ways that minimise adverse effects on human health and the environment. Chemistry underpins the generation of energy for use in homes and industry, the maintenance of clean air and water, the production of food, medicines and new materials, and the treatment of wastes.

As well as increasing their understanding of scientific processes, students develop insights into how knowledge in chemistry has changed, and continues to change, in response to new evidence, discoveries and thinking. They explore the impact of chemistry on their own lives, and on society and the environment. They develop capacities that enable them to critically assess the strengths and limitations of science, respect evidence-based conclusions and gain an awareness of the ethical contexts of scientific endeavours. Students consider how science is connected to innovation in addressing contemporary chemistry-based challenges.

Rationale

VCE Chemistry enables students to investigate a range of chemical, biochemical and geophysical phenomena through the exploration of the nature of chemicals and chemical processes. Sustainability principles, concepts and goals are used to consider how useful materials for society may be produced with the least possible adverse effects on human health and the environment. In undertaking this study, students apply chemical principles to explain and quantify the behaviour of matter, as well as undertake practical activities that involve the analysis and synthesis of a variety of materials.

In VCE Chemistry, students develop and enhance a range of inquiry skills, such as practical experimentation, research and analytical skills, problem-solving skills including critical and creative thinking, and communication skills. Students pose questions, formulate hypotheses, conduct investigations, and analyse and critically interpret qualitative and quantitative data. They assess the limitations of data, evaluate methodologies and results, justify their conclusions, make recommendations and communicate their findings. Students apply chemical knowledge, scientific skills, and critical and creative thinking to investigate and analyse contemporary chemistry-related issues and communicate their views from an informed position.

VCE Chemistry provides for continuing study pathways within the discipline and can lead to a range of careers. Branches of chemistry include organic chemistry, inorganic chemistry, analytical chemistry, physical chemistry and biochemistry. In addition, chemistry is applied in many fields of human endeavour including agriculture, bushfire research, dentistry, dietetics, education, engineering, environmental science, forensic science, forestry, horticulture, medicine, metallurgy, meteorology, nursing, pharmacy, sports science, toxicology, veterinary science and viticulture.

Aims

This study enables students to: develop knowledge and understanding of matter and its interaction with energy, as well as key factors that affect chemical systems, to explain the properties, structures, reactions and related applications of materials in society

- understand and use the language and methodologies of chemistry to solve qualitative and quantitative problems in familiar and unfamiliar contexts
- develop knowledge and understanding of how chemical systems can be controlled to develop greener and more sustainable processes for the production of chemicals and energy while minimising any adverse effects on human health and the environment, with consideration of wastes as underutilised resources and/or feedstock for another process or product and more broadly to:
 - develop attitudes that include curiosity, open-mindedness, creativity, flexibility, integrity, attention to detail and respect for evidence-based conclusions
 - develop an understanding of the cooperative, cumulative, iterative and interdisciplinary nature of science as a human endeavour, including its possibilities, limitations and sociocultural, economic, political and legal influences and consequences
 - develop a range of individual and collaborative science inquiry skills through a variety of investigation methodologies in the laboratory and field, refining investigations to improve data quality
 - understand the research, ethical and safety guidelines that govern the study and practice of the discipline and apply these guidelines to generate, collate, analyse, critically evaluate and report data
 - analyse and interpret qualitative and quantitative data to provide evidence, recognising patterns, relationships and limitations of data
 - develop an informed and critical perspective, as local and global citizens, on contemporary science-based issues
 - develop knowledge and understanding of key models, concepts, theories and laws of science to explain scientific processes and phenomena, and apply this understanding in familiar and unfamiliar situations, including personal, sociocultural, environmental and technological contexts
 - communicate clearly and accurately an understanding of the discipline, using appropriate terminology, conventions and formats.

Structure

The study is made up of four units.

- Unit 1: How can the diversity of materials be explained?
- Unit 2: How do chemical reactions shape the natural world?
- Unit 3: How can design and innovation help to optimise chemical processes?
- Unit 4: How are carbon-based compounds designed for purpose?

Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit. Each outcome is described in terms of key knowledge and key skills.

Unit 1 and 2 Outline

The development and use of materials for specific purposes is an important human endeavour. In this unit students investigate the chemical structures and properties of a range of materials, including covalent compounds, metals, ionic compounds and polymers. They are introduced to ways that chemical quantities are measured. They consider how manufacturing innovations lead to more sustainable products being produced for society through the use of renewable raw materials and a transition from a linear economy towards a circular economy.

Students conduct practical investigations involving the reactivity series of metals, separation of mixtures by chromatography, use of precipitation reactions to identify ionic compounds, determination of empirical formulas, and synthesis of polymers.

Throughout this unit students use chemistry terminology including symbols, formulas, chemical nomenclature and equations to represent and explain observations and data from their own investigations and to evaluate the chemistry-based claims of others.

A student-directed research investigation into the sustainable production or use of a selected material is to be undertaken in Area of Study 3. The investigation explores how sustainability factors such as green chemistry principles and the transition to a circular economy are considered in the production of materials to ensure minimum toxicity and impacts on human health and the environment.

Society is dependent on the work of chemists to analyse the materials and products in everyday use. In this unit students analyse and compare different substances dissolved in water and the gases that may be produced in chemical reactions. They explore applications of acid-base and redox reactions in society.

Students conduct practical investigations involving the specific heat capacity of water, acid-base and redox reactions, solubility, molar volume of a gas, volumetric analysis, and the use of a calibration curve.

Throughout the unit students use chemistry terminology, including symbols, formulas, chemical nomenclature and equations, to represent and explain observations and data from their own investigations and to evaluate the chemistry-based claims of others.

A student-adapted or student-designed scientific investigation is undertaken in Area of Study 3. The investigation involves the generation of primary data and is related to the production of gases, acid-base or redox reactions, or the analysis of substances in water.

Unit 3 and 4 Outline

The global demand for energy and materials is increasing with world population growth. In this unit students investigate the chemical production of energy and materials. They explore how innovation, design and sustainability principles and concepts can be applied to produce energy and materials while minimising possible harmful effects of production on human health and the environment.

Students analyse and compare different fuels as energy sources for society, with reference to the energy transformations and chemical reactions involved, energy efficiencies, environmental impacts and potential applications. They explore food in the context of supplying energy in living systems. The purpose, design and operating principles of galvanic cells, fuel cells, rechargeable cells and electrolytic cells are considered when evaluating their suitability for supplying society's needs for energy and materials. They evaluate chemical processes with reference to factors that influence their reaction rates and extent. They

investigate how the rate of a reaction can be controlled so that it occurs at the optimum rate while avoiding unwanted side reactions and by-products. Students conduct practical investigations involving thermochemistry, redox reactions, electrochemical cells, reaction rates and equilibrium systems.

Throughout the unit students use chemistry terminology, including symbols, formulas, chemical nomenclature and equations, to represent and explain observations and data from their own investigations and to evaluate the chemistry-based claims of others.

A student-designed scientific investigation involving the generation of primary data related to the production of energy and/or chemicals and/or the analysis or synthesis of organic compounds is undertaken in either Unit 3 or Unit 4, or across both Units 3 and 4, and is assessed in Unit 4 Outcome 3.

Carbon is the basis not only of the structure of living tissues but is also found in fuels, foods, medicines, polymers and many other materials that we use in everyday life. In this unit students investigate the structures and reactions of carbon-based organic compounds, including considering how green chemistry principles are applied in the production of synthetic organic compounds. They study the metabolism of food and the action of medicines in the body. They explore how laboratory analysis and various instrumentation techniques can be applied to analyse organic compounds in order to identify them and to ensure product purity.

Students conduct practical investigations related to the synthesis and analysis of organic compounds, involving reaction pathways, organic synthesis, identification of functional groups, direct redox titrations, solvent extraction and distillations.

Throughout the unit students use chemistry terminology including symbols, formulas, chemical nomenclature and equations to represent and explain observations and data from their own investigations and to evaluate the chemistry-based claims of others.

A student-designed scientific investigation involving the generation of primary data related to the production of energy and/or chemicals and/or the analysis or synthesis of organic compounds is undertaken in either Unit 3 or Unit 4, or across both Units 3 and 4, and is assessed in Unit 4 Outcome 3.

Modern Greek Language

The language to be studied and assessed is the modern standard version of Greek. Students are expected to know that dialects and language variations exist, but they are not required to study them.

Scope of study

Greek is the official language of Greece and Cyprus. It is spoken throughout the world wherever there are Greek communities. It is one of the languages of the European Union and an Australian community language. Greek is shaped by over 3,000 years of historical, linguistic and cultural continuity. It gives expression to an eventful history and to a rich and varied modern culture. It also encapsulates two great historical traditions; the Classical and the Byzantine. The heritage of ancient Greece forms the basis of Western civilisation and has been integral to European thought. It continues to influence such fields of human endeavour as the arts, architecture, literature, philosophy, politics and the sciences. Many concepts in these fields derive from the classical period, and many others are labelled with terms derived from the Greek language.

The heritage of Greek Byzantium has particularly influenced Russia, various Balkan countries and countries around the eastern Mediterranean, and the Black Sea. It helped give impetus to the Renaissance in Western Europe. Today, the Byzantine influence is most visible in the art, architecture, music, ritual and theology of Eastern Orthodox Christianity. Greek is one of the most widely used languages in Australia. Historically, Greeks have made, and continue to make, a significant contribution to the development of Australian society.

The study of Greek contributes to the overall education of students, particularly in the areas of communication, cultural understanding, literacy and general knowledge. The ability to communicate in Greek may, in conjunction with other skills, also enhance vocational opportunities in fields such as the arts, banking, diplomacy, education, law, medicine, shipping, social services and tourism.

Aims

This study is designed to enable students to:

- use Greek to communicate with others
- understand and appreciate the cultural contexts in which Greek is used
- understand their own culture(s) through the study of other cultures
- understand language as a system
- make connections between Greek and English, and/or other languages
- apply Greek to work, further study, training or leisure.

Structure

The study is made up of four units. Each unit deals with specific content and is designed to enable students to achieve a set of outcomes. Each outcome is described

in terms of key knowledge and skills.

Unit 1 and 2 Outline

Students develop an understanding of the language and culture/s of Greek-speaking communities through the study of three or more topics from the prescribed themes listed on page 11. Each area of study in the unit must focus on a different subtopic. Students access and share useful information on the topics and subtopics through Greek and consolidate and extend vocabulary and grammar knowledge and language skills. They focus on analysing cultural products or practices including visual, spoken or written texts. Cultural products or practices can be drawn from a diverse range of texts, activities and creations. These may include the following: stories, poems, plays, novels, songs, films, photographs, artworks, architecture, technology, food, clothing, sports and festivals. Students apply acquired knowledge of Greek culture and language to new contexts. Students reflect on the interplay between language and culture, and its impact on the individual's language use in specific contexts and for specific audiences.

Students develop an understanding of aspects of language and culture through the study of three or more topics from the prescribed themes listed on page 11. Each area of study must focus on a different subtopic. Students analyse visual, spoken and written texts. They access and share useful information on the topics and subtopics through Greek and consolidate and extend vocabulary, grammar knowledge and language skills. Cultural products or practices can be used to demonstrate how culture and perspectives may vary between communities. Students reflect on the interplay between language and culture, and its impact on meaning, understanding and the individual's language use in specific contexts and for specific audiences.

Unit 3 and 4 Outline

Students investigate the way Greek speakers interpret and express ideas, and negotiate and persuade in Greek through the study of three or more subtopics from the prescribed themes and topics. Each area of study must cover a different subtopic, though teachers may choose to teach more than one subtopic in an area of study. Students interpret information, inform others, and reflect upon and develop persuasive arguments. They access and share useful information on the subtopics through Greek, and consolidate and extend vocabulary and grammar knowledge and language skills. Students consider the influence of language and culture in shaping meaning and reflect on the practices, products and perspectives of the cultures of Greek-speaking communities. They reflect on how knowledge of Greek and Greek-speaking communities can be applied in a range of contexts and endeavours, such as further study, travel, business or community involvement.

Students investigate aspects of culture through the study of two or more subtopics from the prescribed themes and topics. Area of Study 1 and Area of Study 2 may focus on the same subtopic. Area of Study 3 should cover a different subtopic to the subtopic/s chosen for Areas of Study 1 and 2. Students build on their knowledge of Greek-speaking communities, considering cultural perspectives and language and explaining personal observations. Students consolidate and extend vocabulary, grammar knowledge and language skills to investigate the topics through Greek. Students identify and reflect on cultural products or practices that provide insights into Greek-speaking communities. Cultural products or practices can be drawn from a diverse range of texts, activities and creations. Students reflect

on the ways culture, place and time influence values, attitudes and behaviours. They consider how knowledge of more than one culture can influence the ways individuals relate to each other and function in the world.

Health and Human Development

Scope of study

Through the study of VCE Health and Human Development, students investigate health and human development in local, Australian and global communities. At an individual level, the study of human development is about individual change, that is, a continuous lifelong process that begins at conception and continues until death. At a society level, the study takes a global perspective on health and human development and uses definitions of human development that are consistent with approaches taken by both the World Health Organization (WHO) and the United Nations (UN).

Rationale

VCE Health and Human Development provide students with the skills and knowledge to make informed decisions about their own health and to recognise the importance of health in society.

VCE Health and Human Development offers students a range of pathways and caters to those who wish to pursue further formal study in areas such as health promotion, community health research and policy development, humanitarian aid work, allied health practices, education and the health profession.

Aims

This study enables students to:

- develop an understanding of individual human development that occurs through the lifespan stages of prenatal, childhood, youth and adulthood
- develop an understanding of the physical, mental and social dimensions of health and the interrelationship between health and individual human development
- develop an understanding that variations in health and human development are influenced by a range of determinants
- critically examine health and human development from an individual, a community, a national and a global perspective
- analyse the role of governments and non-government agencies in achieving sustainable improvements in health and human development in Australia and globally.

Structure

The study is made up of four units:

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

Unit 2: Individual human development and health issues

Unit 3: Australia's health

Unit 4: Global health and human development

Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit.

Unit 1 and 2 Outline

Students look at health and wellbeing as a concept with varied and evolving perspectives and definitions. It takes the view that health and wellbeing are subject to a wide range of contexts and interpretations, with different meanings for different people. As a foundation to the understanding of health, students should investigate the World Health Organization's (WHO) definition and also explore other interpretations. Wellbeing is a complex combination of all dimensions of health, characterised by an equilibrium in which the individual feels happy, healthy, capable and engaged. For the purposes of this study, students should consider wellbeing to be an implicit element of health. In this unit students identify personal perspectives and priorities relating to health and wellbeing, and enquire into factors that influence health attitudes, beliefs and practices, including among Aboriginal and Torres Strait Islanders. Students look at multiple dimensions of health and wellbeing, the complex interplay of influences on health and wellbeing and the indicators used to measure and evaluate health status. With a focus on youth, students consider their own health as individuals and as a cohort. They build health literacy through interpreting and using data, through investigating the role of food, and through extended inquiry into one youth health focus area.

Students investigate transitions in health and wellbeing, and development, from lifespan and societal perspectives. Students look at changes and expectations that are part of the progression from youth to adulthood. This unit promotes the application of health literacy skills through an examination of adulthood as a time of increasing independence and responsibility, involving the establishment of long-term relationships, possible considerations of parenthood and management of health-related milestones and changes. Students enquire into the Australian healthcare system and extend their capacity to access and analyse health information. They investigate the challenges and opportunities presented by digital media and health technologies, and consider issues surrounding the use of health data and access to quality health care.

Unit 3 and 4 Outline

Students look at health, wellbeing and illness as multidimensional, dynamic and subject to different interpretations and contexts. Students begin to explore health and wellbeing as a global concept and to take a broader approach to inquiry. As they consider the benefits of optimal health and wellbeing and its importance as an individual and a collective resource, their thinking extends to health as a universal right. Students look at the fundamental conditions required for health improvement, as stated by the World Health Organization (WHO). They use this knowledge as background to their analysis and evaluation of variations in the health status of Australians. Area of Study 2 focuses on health promotion and improvements in population health over time. Students look at various public health approaches and the interdependence of different models as they research health improvements and evaluate successful programs. While the emphasis is on the Australian health system, the progression of change in public health approaches should be seen within a global context

Students examine health and wellbeing, and human development in a global context. Students use data to investigate health status and burden of disease in different countries, exploring factors that contribute to health inequalities between and within countries, including the physical, social and economic conditions in which people live. Students build their

understanding of health in a global context through examining changes in burden of disease over time and studying the key concepts of sustainability and human development. They consider the health implications of increased globalisation and worldwide trends relating to climate change, digital technologies, world trade and the mass movement of people. Area of Study 2 looks at global action to improve health and wellbeing and human development, focusing on the United Nations' (UN's) Sustainable Development Goals (SDGs) and the work of the World Health Organization (WHO). Students also investigate the role of non-government organisations and Australia's overseas aid program. Students evaluate the effectiveness of health initiatives and programs in a global context and reflect on their capacity to take action.

History

Scope of study

History involves inquiry into human action in the past, to make meaning of the past using primary sources as evidence. As historians ask new questions, revise interpretations or discover new sources, fresh understandings come to light. Although history deals with the particular – specific individuals and key events – the potential scope of historical inquiry is vast and formed by the questions that historians pursue, the availability of sources and the capacity of historians to interpret those sources. Twentieth century history examines the aftermath of the Great War, as well as the causes and consequences of World War Two. Australian History investigates national history from colonial times to the end of the twentieth century and includes the histories of Indigenous Peoples. Revolutions explore, the causes and consequences of revolution in America and France.

Rationale

The study of VCE History assists students to understand themselves, others and their world, and broadens their perspective by examining people, groups, events, ideas and movements. Through studying VCE History, students develop social, political, economic and cultural understanding. They also explore continuity and change; the world is not as it has always been, and it will be subject to change in the future. In this sense, history is relevant to contemporary issues.

The study of history fosters the ability to ask searching questions, to engage in independent research, and to construct arguments about the past based on evidence.

Aims

This study enables students to:

- develop an understanding of the nature of history as a discipline and to engage in historical inquiry
- ask questions about the past, analyse primary and secondary sources, and construct historical arguments based on evidence
- use historical thinking concepts such as significance, evidence, continuity and change, and causation
- explore a range of people, places, ideas and periods to develop a broad understanding of the past
- engage with debates between historians in an informed, critical and effective manner
- recognise that the way in which we understand the past informs decision-making in the present

Structure

The study is made up of four units:

Modern History

Unit 1: Change and conflict

Unit 2: The changing world order

Revolutions

Units 3 and 4 Revolutions

Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit.

Unit 1 and 2 Outline

Students investigate the nature of social, political, economic and cultural change in the later part of the 19th century and the first half of the 20th century. Modern History provides students with an opportunity to explore the significant events, ideas, individuals and movements that shaped the social, political, economic and technological conditions and developments that have defined the modern world.

The late 19th century marked a challenge to existing empires, alongside growing militarism and imperialism. Empires continued to exert their powers as they competed for new territories, resources and labour across Asia-Pacific, Africa and the Americas, contributing to tremendous change. This increasingly brought these world powers into contact and conflict. Italian unification and German unification changed the balance of power in Europe, the USA emerged from a bitter civil war and the Meiji Restoration brought political revolution to Japan. Meanwhile, China under the Qing struggled to survive due to foreign imperialism. Modernisation and industrialisation also challenged and changed the existing political, social and economic authority of empires and states. During this time the everyday lives of people significantly changed.

World War One was a significant turning point in modern history. It represented a complete departure from the past and heralded changes that were to have significant consequences for the rest of the twentieth century. The post-war treaties ushered in a period where the world was, to a large degree, reshaped with new borders, movements, ideologies and power structures and led to the creation of many new nation states. These changes had many unintended consequences that would lay the foundations for future conflict and instability in Europe, the Americas, Asia, Africa and the Middle East. Economic instability caused by the Great Depression contributed to great social hardship as well as to the development of new political movements.

The period after World War One, in the contrasting decades of the 1920s and 1930s, was characterised by significant social, political, economic, cultural and technological change. In 1920 the League of Nations was established, but despite its ideals about future peace, subsequent events and competing ideologies would contribute to the world being overtaken by war in 1939.

New fascist governments used the military, education and propaganda to impose controls on the way people lived, to exclude particular groups of people and to silence criticism. In Germany, the persecution of the Jewish people and other minorities intensified, resulting, during World War Two, in the Holocaust. In the Union of Soviet Socialist Republics (USSR), millions of people were forced to work in state-owned factories and farms and had limited personal freedom. Japan became increasingly militarised and anti-Western. Turkey emerged out of the ruins of the Ottoman Empire and embarked on reforms to establish a secular democracy. In the United States of America (USA), foreign policy was shaped by isolationism,

and the consumerism and material progress of the Roaring Twenties was tempered by the Great Depression in 1929. Writers, artists, musicians, choreographers and filmmakers reflected, promoted or resisted political, economic and social changes.

Students investigate the nature and impact of the Cold War and challenges and changes to social, political and economic structures and systems of power in the second half of the twentieth century and the first decade of the twenty-first century.

The establishment of the United Nations (UN) in 1945 was intended to take an internationalist approach to avoiding warfare, resolving political tensions and addressing threats to human life and safety. The Universal Declaration of Human Rights adopted in 1948 was the first global expression of human rights. However, despite internationalist moves, the second half of the twentieth century was dominated by the Cold War, competing ideologies of democracy and communism and proxy wars. By 1989 the USSR began to collapse. Beginning with Poland, Eastern European communist dictatorships fell one by one. The fall of the Berlin Wall was a significant turning point in modern history.

The period also saw continuities in and challenges and changes to the established social, political and economic order in many countries. The continuation of moves towards decolonisation led to independence movements in former colonies in Africa, the Middle East, Asia and the Pacific. New countries were created and independence was achieved through both military and diplomatic means. Ethnic and sectarian conflicts also continued and terrorism became increasingly global.

The second half of the twentieth century also saw the rise of social movements that challenged existing values and traditions, such as the civil rights movement, feminism and environmental movements, as well as new political partnerships, such as the UN, European Union, APEC, OPEC, ASEAN and the British Commonwealth of Nations.

The beginning of the twenty-first century heralded both a changing world order and further advancements in technology and social mobility on a global scale. However, terrorism remained a major threat, influencing politics, social dynamics and the migration of people across the world. The attack on the World Trade Centre on 11 September, 2001 was a significant turning point for what became known as the war on global terror and shaped the first decade of the twenty-first century, including the wars in Afghanistan and Iraq. The Global Financial Crisis challenged and contributed to some change in the social, political and economic features and structures; however, many continuities remained. Technology also played a key role in shaping social and political change in different contexts. The internet significantly changed everyday life and revolutionised communication and the sharing of information and ideas, some of which challenged authority, most notably the Arab Spring.

Unit 3 and 4 Outline

Students investigate the significant historical causes and consequences of political revolution. Revolutions represent great ruptures in time and are a major turning point in the collapse and destruction of an existing political order which results in extensive change to society. Revolutions are caused by the interplay of events, ideas, individuals and popular movements, and the interplay between the political, social, cultural, economic and environmental conditions. Their consequences have a profound effect on the political and social structures of the post-revolutionary society. Revolution is a dramatically accelerated process whereby the new regime attempts to create political, social, cultural and economic change and transformation based on the regime's ideology.

Change in a post-revolutionary society is not guaranteed or inevitable and continuities can remain from the pre-revolutionary society. The implementation of revolutionary ideology was often challenged internally by civil war and externally by foreign threats. These challenges can result in a compromise of revolutionary ideals and extreme measures of violence, oppression and terror.

In these units' students construct an argument about the past using historical sources (primary sources and historical interpretations) as evidence to analyse the complexity and multiplicity of the causes and consequences of revolution, and to evaluate the extent to which the revolution brought change to the lives of people. Students analyse the different perspectives and experiences of people who lived through dramatic revolutionary moments, and how society changed and/or remained the same. Students use historical interpretations to evaluate the causes and consequences of revolution and the extent of change instigated by the new regime.

Legal Studies

Scope of study

VCE Legal Studies investigates the ways in which the law and the legal system relate to and serve individuals and the community. This knowledge is central to understanding the workings of contemporary Australian society. Legal Studies examines the processes of law-making, dispute resolution and the administration of justice in Australia. Students develop an understanding of the impact of the legal system on the lives of citizens, and the implications of legal decisions and outcomes on Australian society. The study provides students with an appreciation of how individuals can be involved in decision-making within the legal system, encouraging civic engagement and helping them to become more informed and active citizens.

Aims

This study is designed to enable students to:

- understand and apply legal concepts, principles and terminology
- develop an awareness of the impact of the legal system on the lives of individuals and on society
- acquire an understanding of legal rights, responsibilities and ways in which individuals can engage in the legal system
- understand the need for effective laws and legal processes
- investigate the dynamic nature of laws and legal processes
- analyse the processes and procedures involved in law-making and dispute resolution
- understand the operation of the Australian legal system and compare selected aspects with international systems
- develop and use effective methods of legal enquiry and research in order to utilise and communicate information
- apply legal principles to legal problems, explore solutions to these problems, and form reasoned conclusions
- develop the techniques for interpretation and analysis of legal cases.

Structure

The study is made up of four units:

Unit 1: Criminal law in action

Unit 2: Issues in civil law

Unit 3: Law-making

Unit 4: Resolution and justice

Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit. Each outcome is described in terms of key knowledge and key skills.

Unit 1 and 2 Outline

Laws, including criminal law, aim to achieve social cohesion and protect the rights of individuals. Criminal law is aimed at maintaining social order. When a criminal law is broken, a crime is committed which is punishable and can result in criminal charges and sanctions.

In this unit, students develop an understanding of legal foundations, such as the different types and sources of law, the characteristics of an effective law, and an overview of parliament and the courts. Students are introduced to and apply the principles of justice. They investigate key concepts of criminal law and apply these to actual and/or hypothetical scenarios to determine whether an accused may be found guilty of a crime. In doing this, students develop an appreciation of the manner in which legal principles and information are used in making reasoned judgments and conclusions about the culpability of an accused. Students also develop an appreciation of how a criminal case is determined, and the types and purposes of sanctions. Students apply their understanding of how criminal cases are resolved and the effectiveness of sanctions through consideration of recent criminal cases from the past four years.

Civil law aims to protect the rights of individuals. When rights are infringed, a dispute may arise requiring resolution, and remedies may be awarded. In this unit, students investigate key concepts of civil law and apply these to actual and/or hypothetical scenarios to determine whether a party is liable in a civil dispute. Students explore different areas of civil law, and the methods and institutions that may be used to resolve a civil dispute and provide remedies. They apply knowledge through an investigation of civil cases from the past four years. Students also develop an understanding of how human rights are protected in Australia and possible reforms to the protection of rights, and investigate a contemporary human rights issue in Australia, with a specific focus on one case study.

Unit 3 and 4 Outline

The Victorian justice system, which includes the criminal and civil justice systems, aims to protect the rights of individuals and uphold the principles of justice: fairness, equality and access. In this unit, students examine the methods and institutions in the criminal and civil justice system, and consider their appropriateness in determining criminal cases and resolving civil disputes. Students consider the Magistrates' Court, County Court and Supreme Court within the Victorian court hierarchy, as well as other means and institutions used to determine and resolve cases.

Students explore topics such as the rights available to an accused and to victims in the criminal justice system, the roles of the judge, jury, legal practitioners and the parties, and the ability of sanctions and remedies to achieve their purposes. Students investigate the extent to which the principles of justice are upheld in the justice system. Throughout this unit, students apply legal reasoning and information to actual and/or hypothetical scenarios.

The study of Australia's laws and legal system includes an understanding of institutions that make and reform our laws. In this unit, students explore how the Australian Constitution establishes the law-making powers of the Commonwealth and state parliaments, and how it protects the Australian people through structures that act as a check on parliament in law-making. Students develop an understanding of the significance of the High Court in protecting and interpreting the Australian Constitution. They investigate parliament and the courts, and the relationship between the two in law-making, and consider the roles of the individual, the media and law reform bodies in influencing changes to the law, and past and

future constitutional reform. Throughout this unit, students apply legal reasoning and information to actual and/or hypothetical scenarios.

Mathematics

Scope of study

Mathematics is the study of function and pattern in number, logic, space and structure, and of randomness, chance, variability, and uncertainty in data and events. It is both a framework for thinking and a means of symbolic communication that is powerful, logical, concise and precise. Mathematics also provides a means by which people can understand and manage human and natural aspects of the world and interrelationships between these. Essential mathematical activities include conjecturing, hypothesising and problem-posing; estimating, calculating, computing and constructing; abstracting, proving, refuting and inferring; applying, investigating, modelling and problem-solving.

Rationale

This study is designed to provide access to worthwhile and challenging mathematical learning in a way which takes into account the interests, needs, dispositions and aspirations of a wide range of students, and introduces them to key aspects of the discipline and its applications. It is also designed to promote students' awareness of the importance of mathematics in everyday life in a technological society and globalised world, and to develop confidence and the disposition to make effective use of mathematical concepts, processes and skills in practical and theoretical contexts.

Aims

This study enables students to:

- develop mathematical concepts, key knowledge and key skills
- apply mathematics to analyse, investigate and model a variety of contexts and solve practical and theoretical problems in situations that range from well-defined and familiar to open-ended and unfamiliar
- apply computational thinking and algorithms and use technology effectively as a tool for working mathematically.

Structure

The study is made up of the following units:

- Foundation Mathematics Units 1–4
- General Mathematics Units 1–4
- Mathematical Methods Units 1–4

Each unit covers specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit. Each outcome is described in terms of key knowledge and keyskills. A glossary defining terms used across Units 1 to 4 in the *VCE Mathematics Study Design* is included in the Support materials.

The areas of study from which content is drawn as applicable to each unit are: Algebra, number and structure; Calculus; Data analysis, probability and statistics; Discrete Mathematics; Functions, relations and graphs; and Space and measurement.

Units 1–4 have been developed as a sequence, with Units 1 and 2 covering assumed key knowledge and key skills as preparation for Units 3 and 4.

Foundation Mathematics Units 1–4 provide for the continuing mathematical development of students with respect to problems encountered in practical contexts in everyday life at home, in the community, at work and in study.

General Mathematics Units 1–4 provide for the study of non-calculus and discrete mathematics topics. They are designed to be widely accessible and provide preparation for general employment, business or further study, in particular where data analysis, recursion and financial modelling, networks and matrices are important. Students who have done only Mathematical Methods Units 1 and 2 will have had access to assumed key knowledge and key skills for General Mathematics Units 3 and 4 but may also need to undertake some supplementary study.

Mathematical Methods Units 1–4 provide for the study of simple elementary functions, transformations and combinations of these functions, algebra, calculus, probability and statistics, and their applications in a variety of practical and theoretical contexts. They also provide background for further study in, for example, science, technology, engineering and mathematics (STEM), humanities, economics and medicine.

Combinations of mathematics units

Units 1 and 2	Units 3 and 4
Foundation Mathematics	Foundation Mathematics
General Mathematics	General Mathematics or Foundation Mathematics
Mathematical Methods	Mathematical Methods or General Mathematics
General Mathematics and Mathematical Methods	General Mathematics and Mathematical Methods
Mathematical Methods	Mathematical Methods and Specialist Mathematics*

*For this combination of units, students will need to undertake some supplementary study with respect to assumed knowledge and skills for Specialist Mathematics Units 3 and 4.

Foundation Mathematics

Unit 1 and 2 Outline

Foundation Mathematics Units 1 and 2 focus on providing students with the mathematical knowledge, skills, understanding and dispositions to solve problems in real contexts for a range of workplace, personal, further learning, and community settings relevant to contemporary society. They are also designed as preparation for Foundation Mathematics Units 3 and 4 and contain assumed knowledge and skills for these units.

In Unit 1 students consolidate mathematical foundations, further develop their knowledge and capability to plan and conduct activities independently and collaboratively, communicate their mathematical ideas, and acquire mathematical knowledge skills to make informed decisions in their lives. The areas of study for Foundation Mathematics Unit 1 are 'Algebra, number and structure', 'Data analysis, probability and statistics', 'Discrete mathematics', and 'Space and measurement'. The content should be developed using contexts present in students' other studies, work and personal or other familiar situations.

In undertaking these units, students are expected to be able to apply techniques, routines and processes involving integer, rational and real arithmetic, sets, lists and tables, contemporary data displays, diagrams, plans, geometric objects and constructions, algorithms, measures, equations and graphs, with and without the use of technology. They should have facility with relevant mental and by-hand approaches to estimation and computation. The use of numerical, graphical, geometric, symbolic, statistical and financial functionality of technology for teaching and learning mathematics, for working mathematically, and in related assessment, is to be incorporated throughout each unit as applicable.

The focus of Unit 2 is on extending breadth and depth in the application of mathematics to solving practical problems from contexts present in students' other studies, work and personal or other familiar situations. The areas of study for Foundation Mathematics Unit 2 are 'Algebra, number and structure', 'Data analysis, probability and statistics', 'Discrete mathematics', and 'Space and measurement'.

In undertaking these units, students are expected to be able to apply techniques, routines and processes involving integer, rational and real arithmetic, sets, lists and tables, contemporary data displays, diagrams, plans, geometric objects and constructions, algorithms, measures, equations and graphs, with and without the use of technology. They should have facility with relevant mental and by-hand approaches to estimation and computation. The use of numerical, graphical, geometric, symbolic, statistical and financial functionality of technology for teaching and learning mathematics, for working mathematically, and in related assessment, is to be incorporated throughout each unit as applicable.

Unit 3 and 4 Outline

Foundation Mathematics Units 3 and 4 focus on providing students with the mathematical knowledge, skills and understanding to solve problems in real contexts for a range of workplace, personal, further learning, community and global settings relevant to contemporary society. The areas of study for Units 3 and 4 are 'Algebra, number and

structure', 'Data analysis, probability and statistics', 'Discrete mathematics' and 'Space and measurement'. All four areas of study are to be completed over the two units, and content equivalent to two areas of study covered in each unit. The selected content for each unit should be developed using contexts present in students' other studies, work and personal or other familiar situations, and in national and international contexts, events and developments.

Assumed knowledge and skills for Foundation Mathematics Units 3 and 4 are contained in Foundation Mathematics 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 key skills for the outcomes.

In undertaking these units, students are expected to be able to apply techniques, routines and processes involving rational and real arithmetic, sets, lists and tables, contemporary data displays, diagrams, plans, geometric objects and constructions, algebra, algorithms, measures, equations and graphs, with and without the use of technology. They should have facility with relevant mental and by-hand approaches to estimation and computation. The use of numerical, graphical, geometric, symbolic and statistical functionality of technology for teaching and learning mathematics, for working mathematically, and in related assessment, is to be incorporated throughout each unit as applicable.

General Mathematics

Unit 1 and 2 Outline

General Mathematics Units 1 and 2 cater for a range of student interests, provide preparation for the study of VCE General Mathematics at the Units 3 and 4 level and contain assumed knowledge and skills for these units. The areas of study for Unit 1 of General Mathematics are 'Data analysis, probability and statistics', 'Algebra, number and structure', 'Functions, relations and graphs' and 'Discrete mathematics'.

In undertaking these units, students are expected to be able to apply techniques, routines and processes involving rational and real arithmetic, sets, lists, tables and matrices, diagrams and geometric constructions, algorithms, algebraic manipulation, recurrence relations, equations and graphs, with and without the use of technology. They should have facility with relevant mental and by-hand approaches to estimation and computation. The use of numerical, graphical, geometric, symbolic, financial and statistical functionality of technology for teaching and learning mathematics, for working mathematically, and in related assessment, is to be incorporated throughout each unit as applicable.

Unit 3 and 4 Outline

General Mathematics Units 3 and 4 focus on real-life application of mathematics and consist of the areas of study 'Data analysis, probability and statistics' and 'Discrete mathematics'.

Unit 3 comprises *Data analysis* and *Recursion and financial modelling*, and Unit 4 comprises *Matrices and Networks* and *decision mathematics*.

Assumed knowledge and skills for General Mathematics Units 3 and 4 are contained in General Mathematics 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 key skills for the outcomes of General Mathematics Units 3 and 4.

In undertaking these units, students are expected to be able to apply techniques, routines and processes involving rational and real arithmetic, sets, lists, tables and matrices, diagrams, networks, algorithms, algebraic manipulation, recurrence relations, equations and graphs. They should have facility with relevant mental and by-hand approaches to estimation and computation. The use of numerical, graphical, geometric, symbolic statistical and financial functionality of technology for teaching and learning mathematics, for working mathematically, and in related assessment, is to be incorporated throughout each unit as applicable.

Mathematical Methods

Unit 1 and 2 Outline

Mathematical Methods Units 1 and 2 provide an introductory study of simple elementary functions of a single real variable, algebra, calculus, probability and statistics and their applications in a variety of practical and theoretical contexts. The units are designed as preparation for Mathematical Methods Units 3 and 4 and contain assumed knowledge and skills for these units.

The focus of Unit 1 is the study of simple algebraic functions, and the areas of study are 'Functions, relations and graphs', 'Algebra, number and structure', 'Calculus' and 'Data analysis, probability and statistics'. At the end of Unit 1, students are expected to have covered the content outlined in each area of study, with the exception of 'Algebra, number and structure' which extends across Units 1 and 2. This content 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 between and across the areas of study being developed consistently throughout both Units 1 and 2.

In undertaking this unit, students are expected to be able to apply techniques, routines and processes involving rational and real arithmetic, sets, lists and tables, diagrams and geometric constructions, algorithms, algebraic manipulation, equations, graphs and differentiation, with and without the use of technology. They should have facility with relevant mental and by-hand approaches to estimation and computation. The use of numerical, graphical, geometric, symbolic and statistical functionality of technology for teaching and learning mathematics, for working mathematically, and in related assessment, is to be incorporated throughout the unit as applicable.

The focus of Unit 2 is the study of simple transcendental functions, the calculus of polynomial functions and related modelling applications. The areas of study are 'Functions, relations and graphs', 'Algebra, number and structure', 'Calculus' and 'Data analysis, probability and statistics'. At the end of Unit 2, students are expected to have covered the content outlined in each area of study.

Material from the 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.

In undertaking this unit, students are expected to be able to apply techniques, routines and processes involving rational and real arithmetic, sets, lists and tables, diagrams and geometric constructions, algorithms, algebraic manipulation, equations, graphs, differentiation and anti-differentiation, with and without the use of technology. They should have facility with relevant mental and by-hand approaches to estimation and computation. The use of numerical, graphical, geometric, symbolic and statistical functionality of technology for teaching and learning mathematics, for working mathematically, and in related assessment, is to be incorporated throughout the unit as applicable.

Unit 3 and 4 Outline

Mathematical Methods Units 3 and 4 extend the introductory study of simple elementary functions of a single real variable, to include combinations of these functions, algebra,

calculus, probability and statistics, and their applications in a variety of practical and theoretical contexts. Units 3 and 4 consist of the areas of study 'Algebra, number and structure', 'Data analysis, probability and statistics', 'Calculus', and 'Functions, relations and graphs', 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 Units 3 and 4 are contained in Mathematical Methods 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 key skills for the outcomes of Mathematical Methods Units 3 and 4.

For Unit 3 a selection of content would typically include the areas of study 'Functions, relations and graphs' and 'Algebra, number and structure', applications of derivatives and differentiation, and identifying and analysing key features of the functions and their graphs from the 'Calculus' area of study. For Unit 4, a corresponding selection of content would typically consist of remaining content from 'Functions, relations and graphs', 'Algebra, number and structure' and 'Calculus' areas of study, and the study of random variables, discrete and continuous probability distributions, and the distribution of sample proportions from the 'Data analysis, probability and statistics' area of study. 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, including to probability distributions of continuous random variables.

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 an area of study.

In undertaking these units, students are expected to be able to apply techniques, routines and processes involving rational and real arithmetic, sets, lists and tables, diagrams and geometric constructions, algorithms, algebraic manipulation, equations, graphs, differentiation, anti-differentiation, integration and inference, with and without the use of technology. They should have facility with relevant mental and by-hand approaches to estimation and computation. The use of numerical, graphical, geometric, symbolic and statistical functionality of technology for teaching and learning mathematics, for working mathematically, and in related assessment, is to be incorporated throughout each unit as applicable.

Music

Scope of study

VCE Music is based on active engagement in all aspects of music. Students develop and refine musicianship skills and knowledge and develop a critical awareness of their relationship with music as listeners, performers, creators and music makers. Students explore, reflect on and respond to the music they listen to, create and perform. They analyse and evaluate live and recorded performances, and learn to incorporate, adapt and interpret musical practices from diverse cultures, times and locations into their own learning about music as both a social and cultural practice. Students study and practise ways of effectively communicating and expressing musical ideas to an audience as performers and composers, and respond to musical works as an audience. The developed knowledge and skills provide a practical foundation for students to compose, arrange, interpret, reimagine, improvise, recreate and critique music in an informed manner.

In this study students are offered a range of pathways that acknowledge and support a variety of student backgrounds and music learning contexts, including formal and informal.

VCE Music equips students with personal and musical knowledge and skills that enable them to focus on their musicianship in particular areas and follow pathways into tertiary music study or further training in a broad spectrum of music related careers.

Aims

This study enables students to:

- develop and practise musicianship
- perform, create, arrange, improvise, analyse, recreate, reimagine and respond to music from diverse times, places, cultures and contexts including recently created music
- communicate understanding of cultural, stylistic, aesthetic and expressive qualities and characteristics of music
- explore and strengthen personal music interests, knowledge and experiences
- use imagination and creativity, and personal and social skills in music making
- access pathways to further education, training and employment in music
- participate and present in life-long music learning and the musical life of their community.

Structure

The study is made up of ten units. In 2024, we will be offering Unit 1 and 2 Music

Unit 1: Organisation in music

Unit 2: Effect in music

Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit. Each outcome is described in terms of key knowledge and key skills.

Unit 1 and 2 Outline

Students explore and develop their understanding of how music is organised. By performing, creating, analysing and responding to music works that exhibit different approaches, students explore and develop their understanding of the possibilities of musical organisation.

They prepare and perform ensemble and/or solo musical works to develop technical control, expression and stylistic understanding on their chosen instrument/sound source. At least two works should be associated with their study of approaches to music organisation.

They create (arrange, compose or improvise) short music exercises that reflect their understanding of the organisation of music and the processes they have studied.

They develop knowledge of music language concepts as they analyse and respond to a range of music, becoming familiar with the ways music creators treat elements of music and concepts and use compositional devices to create works that communicate their ideas.

Students focus on the way music can be used to create an intended effect. By performing, analysing and responding to music works/examples that create different effects, students explore and develop their understanding of the possibilities of how effect can be created. Through creating their own music, they reflect this exploration and understanding.

Students prepare and perform ensemble and/or solo musical works to develop technical control, expression and stylistic understanding using their chosen instrument/sound source. They should perform at least one work to convey a specified effect and demonstrate this in performance.

They create (arrange, compose or improvise) short music exercises that reflect their understanding of the organisation of music and the processes they have studied.

As they analyse and respond to a wide range of music, they become familiar with the ways music creators treat elements and concepts of music and use compositional devices to create works that communicate their ideas. They continue to develop their understanding of common musical language concepts by identifying, recreating and notating these concepts.

Physical Education

Scope of study

VCE Physical Education explores the complex interrelationships between anatomical, biomechanical, physiological and skill acquisition principles to understand their role in producing and refining movement, and examines behavioural, psychological, environmental and sociocultural influences on performance and participation in physical activity. VCE Physical Education enables students to critically evaluate influences that affect their own and others' performance and participation in physical activity. This study equips students with the appropriate knowledge and skills to plan, develop and maintain their involvement in physical activity, sport and exercise across their lifespan and to understand the physical, social, emotional and cognitive health benefits.

VCE Physical Education prepares students for employment and/or further study in fields such as exercise and sport science, health science, education, recreation, sport development and coaching, health promotion and related careers.

Aims

This study enables students to:

- use practical activities to underpin contemporary theoretical understanding of the influences on participation and performance in physical activity, sport and exercise
- develop an understanding of the anatomical, biomechanical, physiological and skill acquisition principles, and of behavioural, psychological, environmental and sociocultural influences on performance and participation in physical activity across the lifespan
- engage in physical activity and movement experiences to determine and analyse how the body systems work together to produce and refine movement
- critically evaluate changes in participation from a social-ecological perspective and performance in physical activity, sport and exercise through monitoring, testing and measuring of key parameters.

Structure

The study is made up of four units:

Unit 1: The human body in motion

Unit 2: Physical activity, sport and society

Unit 3: Movement skills and energy for physical activity

Unit 4: Training to improve performance

Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit. Each outcome is described in terms of key knowledge and key skills.

Unit 1 and 2 Outline

Students explore how the musculoskeletal and cardiorespiratory systems work together to produce movement. Through practical activities students explore the relationships between the body systems and physical activity, sport and exercise, and how the systems adapt and adjust to the demands of the activity. Students investigate the role and function of the main structures in each system and how they respond to physical activity, sport and exercise. They explore how the capacity and functioning of each system acts as an enabler or barrier to movement and participation in physical activity. Using a contemporary approach, students evaluate the social, cultural and environmental influences on movement. They consider the implications of the use of legal and illegal practices to improve the performance of the musculoskeletal and cardiorespiratory systems, evaluating perceived benefits and describing potential harms. They also recommend and implement strategies to minimise the risk of illness or injury to each system.

Students' understanding of physical activity, sport and society from a participatory perspective. Students are introduced to types of physical activity and the role participation in physical activity and sedentary behaviour plays in their own health and wellbeing as well as in other people's lives in different population groups. Through a series of practical activities, students experience and explore different types of physical activity promoted in their own and different population groups. They gain an appreciation of the level of physical activity required for health benefits. Students investigate how participation in physical activity varies across the lifespan. They explore a range of factors that influence and facilitate participation in regular physical activity. They collect data to determine perceived enablers of and barriers to physical activity and the ways in which opportunities for participation in physical activity can be extended in various communities, social, cultural and environmental contexts. Students investigate individual and population-based consequences of physical inactivity and sedentary behaviour. They then create and participate in an activity plan that meets the physical activity and sedentary behaviour guidelines relevant to the particular population group being studied. Students apply various methods to assess physical activity and sedentary behaviour levels at the individual and population level, and analyse the data in relation to physical activity and sedentary behaviour guidelines. Students study and apply the social-ecological model and/or the Youth Physical Activity Promotion Model to critique a range of individual- and settings-based strategies that are effective in promoting participation in some form of regular physical activity.

Unit 3 and 4 Outline

Students to the biomechanical and skill acquisition principles used to analyse human movement skills and energy production from a physiological perspective. Students use a variety of tools and techniques to analyse movement skills and apply biomechanical and skill acquisition principles to improve and refine movement in physical activity, sport and exercise. They use practical activities to demonstrate how correct application of these principles can lead to improved performance in physical activity and sport. Students investigate the relative contribution and interplay of the three energy systems to performance in physical activity, sport and exercise. In particular, they investigate the characteristics of each system and the interplay of the systems during physical activity. Students explore the causes of fatigue and consider different strategies used to postpone fatigue and promote recovery.

Students analyse movement skills from a physiological, psychological and sociocultural perspective, and apply relevant training principles and methods to improve performance

within physical activity at an individual, club and elite level. Improvements in performance, in particular fitness, depend on the ability of the individual and/ or coach to gain, apply and evaluate knowledge and understanding of training. Students analyse skill frequencies, movement patterns, heart rates and work to rest ratios to determine the requirements of an activity. Students consider the physiological, psychological and sociological requirements of training to design and evaluate an effective training program. Students participate in a variety of training sessions designed to improve or maintain fitness and evaluate the effectiveness of different training methods. Students critique the effectiveness of the implementation of training principles and methods to meet the needs of the individual, and evaluate the chronic adaptations to training from a theoretical perspective

Physics

Scope of study

The study of VCE Physics involves investigating, understanding and explaining the behaviour of physical phenomena in the Universe. Models, including mathematical models, are used to explore, simplify and predict how physical systems behave at varying scales from the very small (quantum and particle physics) through to the very large (astronomy and cosmology). Beginning with classical ideas and considering their limitations, and then being introduced to more modern explanations of the world, provides a novel lens through which students experience the world around them, drawing on their natural curiosity and wonder.

Conceptual understanding is developed as students study topics including light, atomic physics, radiation, thermal physics, electricity, fields, mechanics, quantum physics and the nature of energy and matter. Students are given agency through a choice of options and in designing and undertaking their own investigations.

As well as increasing their understanding of scientific processes, students develop insights into how knowledge in physics has changed, and continues to change, in response to new evidence, discoveries and thinking. They develop capacities that enable them to critically assess the strengths and limitations of science, respect evidence-based conclusions and gain an awareness of the ethical contexts of scientific endeavours. Students consider how science is connected to innovation in addressing contemporary physics challenges.

Through the study of VCE Physics students continue to develop skills to describe, explain, analyse and mathematically model diverse physical phenomena.

Rationale

VCE Physics enables students to use observations, experiments, measurements and mathematical analysis to develop qualitative and quantitative explanations for phenomena occurring from the subatomic scale to macroscopic scales. They explore the big ideas that changed the course of thinking in physics such as relativity and quantum physics. While much scientific understanding in physics has stood the test of time, many other areas continue to evolve, leading to the development of more complex ideas and technological advances and innovation. In undertaking this study, students develop their understanding of the roles of careful and systematic observation, experimentation and modelling in the development of theories and laws. They undertake practical activities and apply physics principles to explain and quantify phenomena.

In VCE Physics, students develop and extend a range of scientific inquiry skills including practical experimentation, research and analytical skills, problem-solving skills including critical and creative thinking, and communication skills. Students pose questions, formulate hypotheses, conduct investigations, and analyse and critically interpret qualitative and quantitative data. They assess the limitations of data, evaluate methodologies and results, justify their conclusions, make recommendations and communicate their findings. Students investigate and evaluate physics-related issues and the impacts of physics research both locally and globally and communicate their views from a position informed by their knowledge of physics.

VCE Physics provides for continuing study pathways within the discipline and can lead to a range of careers. Physicists may undertake research and development in specialist areas including acoustics, astrophysics and cosmology, atmospheric physics, computational physics, communications, education, engineering, geophysics, instrumentation, lasers and photonics, medical diagnosis and treatment, nuclear science, optics, pyrotechnics and radiography. Physicists also work in cross-disciplinary areas such as bushfire research, climate science, forensic science, materials science, neuroscience, remote sensing, renewable energy generation, sports science and transport and vehicle safety.

Aims

This study enables students to:

- apply physics models, theories and concepts to describe, explain, analyse and make predictions about diverse physical phenomena
- understand and use the language and methodologies of physics to solve qualitative and quantitative problems in familiar and unfamiliar contexts and more broadly to:
- develop attitudes that include curiosity, open-mindedness, creativity, flexibility, integrity, attention to detail and respect for evidence-based conclusions
- develop an understanding of the cooperative, cumulative, iterative and interdisciplinary nature of science as a human endeavour, including its possibilities, limitations and sociocultural, economic, political and legal influences and consequences
- develop a range of individual and collaborative science inquiry skills through a variety of investigation methodologies in the laboratory and field, refining investigations to improve data quality
- understand the research, ethical and safety guidelines that govern the study and practice of the discipline and apply these guidelines to generate, collate, analyse, critically evaluate and report data
- analyse and interpret qualitative and quantitative data to provide evidence, recognising patterns, relationships and limitations of data
- develop an informed and critical perspective, as local and global citizens, on contemporary science-based issues
- develop knowledge and understanding of key models, concepts, theories and laws of science to explain scientific processes and phenomena, and apply this understanding in familiar and unfamiliar situations, including personal, sociocultural, environmental and technological contexts
- communicate clearly and accurately an understanding of the discipline using appropriate terminology, conventions and formats.

Structure

The study is made up of four units, structured under a series of curriculum-framing questions that reflect the inquiry nature of the discipline.

- Unit 1: How is energy useful to society?
- Unit 2: How does physics help us to understand the world?

- Unit 3: How do fields explain motion and electricity?
- Unit 4: How have creative ideas and investigation revolutionised thinking in physics?

Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit. Each outcome is described in terms of key knowledge and is complemented by a set of key science skills.

Unit 1 and 2 Outline

Students examine some of the fundamental ideas and models used by physicists in an attempt to understand and explain energy. Models used to understand light, thermal energy, radioactivity, nuclear processes and electricity are explored. Students apply these physics ideas to contemporary societal issues: communication, climate change and global warming, medical treatment, electrical home safety and Australian energy needs.

Students explore the power of experiments in developing models and theories. They investigate a variety of phenomena by making their own observations and generating questions, which in turn lead to experiments. Students investigate the ways in which forces are involved both in moving objects and in keeping objects stationary and apply these concepts to a chosen case study of motion. Students choose one of eighteen options related to climate science, nuclear energy, flight, structural engineering, biomechanics, medical physics, bioelectricity, optics, photography, music, sports science, electronics, astrophysics, astrobiology, Australian traditional artefacts and techniques, particle physics, cosmology and local physics research. The selection of an option enables students to pursue an area of interest through an investigation and using physics to justify a stance, response or solution to a contemporary societal issue or application related to the option.

A student-adapted or student-designed scientific investigation is undertaken in Area of Study 3. The investigation involves the generation of primary data and draws on the key science skills and key knowledge from Area of Study 1 and/or Area of Study 2.

Unit 3 and 4 Outline

Students use Newton's laws to investigate motion in one and two dimensions. They explore the concept of the field as a model used by physicists to explain observations of motion of objects not in apparent contact. Students compare and contrast three fundamental fields – gravitational, magnetic and electric – and how they relate to one another. They consider the importance of the field to the motion of particles within the field. Students examine the production of electricity and its delivery to homes. They explore fields in relation to the transmission of electricity over large distances and in the design and operation of particle accelerators.

A student-designed practical investigation involving the generation of primary data and including one continuous, independent variable related to fields, motion or light is undertaken either in Unit 3 or Unit 4, or across both Units 3 and 4, and is assessed in Unit 4, Outcome 2.

A complex interplay exists between theory and experiment in generating models to explain natural phenomena. Ideas that attempt to explain how the Universe works have changed over time, with some experiments and ways of thinking having had significant impact on the understanding of the nature of light, matter and energy. Wave theory, classically used to

explain light, has proved limited as quantum physics is utilised to explain particle-like properties of light revealed by experiments. Light and matter, which initially seem to be quite different, on very small scales have been observed as having similar properties. At speeds approaching the speed of light, matter is observed differently from different frames of reference. Matter and energy, once quite distinct, become almost synonymous.

In this unit, students explore some monumental changes in thinking in Physics that have changed the course of how physicists understand and investigate the Universe. They examine the limitations of the wave model in describing light behaviour and use a particle model to better explain some observations of light. Matter, that was once explained using a particle model, is re-imagined using a wave model. Students are challenged to think beyond how they experience the physical world of their everyday lives to thinking from a new perspective, as they imagine the relativistic world of length contraction and time dilation when motion approaches the speed of light. They are invited to wonder about how Einstein's revolutionary thinking allowed the development of modern-day devices such as the GPS.

A student-designed practical investigation involving the generation of primary data and including one continuous, independent variable related to fields, motion or light is undertaken either in Unit 3 or Unit 4, or across both Units 3 and 4, and is assessed in Unit 4, Outcome 2.

Psychology

Scope of study

Psychology is a multifaceted discipline that seeks to describe, explain, understand and predict human behaviour and mental processes. It includes many sub-fields of study that explore and seek to better understand how individuals, groups, communities and societies think, feel and act.

There are many different approaches to the study of psychology. VCE Psychology applies a biopsychosocial approach to the systematic study of mental processes and behaviour. Within this approach, different perspectives, models and theories are considered. Each of these has strengths and weaknesses, yet considered together they allow students to develop their understanding of human behaviour and mental processes and the interrelated nature of biological, psychological and social factors. Biological perspectives focus on how physiology influences individuals through exploring concepts such as hereditary and environmental factors, nervous system functioning and the role of internal biological mechanisms. Psychological perspectives consider the diverse range of cognitions, emotions and behaviours that influence individuals. Within the social perspective, factors such as cultural considerations, environmental influences, social support and socioeconomic status are explored. The biopsychosocial approach can be applied to understand a variety of mental processes and behaviours.

Students study contemporary research, models and theories to understand how knowledge in psychology has developed and how this knowledge continues to change in response to new evidence and discoveries in an effort to solve day-to-day problems and improve psychological wellbeing. Where possible, engagement with Aboriginal and Torres Strait Islander ways of doing, being and knowing has been integrated into the study, providing students with the opportunity to contrast the Western paradigm of psychology with Indigenous psychology. An understanding of the complexities and diversity of psychology provides students with the opportunity to appreciate the interconnectedness of concepts both within psychology and across psychology and the other sciences.

As well as increasing their understanding of scientific processes, students develop insights into how knowledge in psychology has changed, and continues to change, in response to new evidence, discoveries and thinking. They develop the capacity to critically assess the strengths and limitations of science, they develop respect for evidence-based conclusions, and they gain an awareness of the ethical and cultural contexts of scientific endeavours. Students consider how science is connected to innovation in addressing contemporary psychological challenges.

Rationale

VCE Psychology is designed to enable students to explore the complex interactions between thought, emotions and behaviour. They develop an insight into biological, psychological and social factors and the key science skills that underpin much of psychology. VCE Psychology is designed to promote students' understanding of how society applies such skills and psychological concepts to resolve problems and make scientific advancements. The study is designed to promote students' confidence and their disposition to use the information they learn in the study in everyday situations.

Studying VCE Psychology enables students to develop their capacity to think, question and analyse psychological research and critically reflect on the findings of experiments and research. They are encouraged to use their problem-solving skills, including critical and creative thinking, to establish and articulate their understandings through their class discussions, practical work and written responses – all of which may help students to think deeply and critically about their own lives, manage life circumstances and reach personal goals.

Students who study VCE Psychology can consider a pathway within this discipline that can lead to a range of careers and roles that work with diverse populations and communities. Areas that registered psychologists may work in include clinical, developmental, educational, environmental, forensic, health, neuropsychology, sport and exercise, and organisational psychology. Psychologists can also work in cross-disciplinary areas such as academia and research institutions, medical research, management and human resources, and government, corporate and private enterprises, or as part of ongoing or emergency support services in educational and institutional settings. Students exposed to the study of VCE Psychology recognise the diverse nature of the discipline and career opportunities within the field. These opportunities include careers and roles that do not involve being a registered psychologist, including roles in aged, family and child services; case managers; communications specialists; counsellors; community health and welfare roles; health services support roles; human resource specialists; managers; marketing and market research roles; office administration roles; policy and planning roles; probation and parole services roles; and social work and teaching roles.

Aims

This study enables students to:

- develop knowledge and understanding of psychological models, theories and concepts to describe, explain, analyse and predict human thoughts, emotions and behaviour
- understand and apply a biopsychosocial approach to human thoughts, emotions and behaviour
- apply psychological models, theories and/or concepts to everyday situations to enhance understanding of mental wellbeing and more broadly to:
- develop attitudes that include curiosity, open-mindedness, creativity, flexibility, integrity, attention to detail and respect for evidence-based conclusions and Aboriginal and Torres Strait Islander knowledges
- develop an understanding of the cooperative, cumulative, iterative and interdisciplinary nature of science as a human endeavour, including its possibilities, limitations and sociocultural, economic, political and legal influences and consequences
- develop a range of individual and collaborative science inquiry skills through a variety of investigation methodologies in the laboratory and field, refining investigations to improve data quality
- understand the research, ethical and safety guidelines that govern the study and practice of the discipline and apply these guidelines to generate, collate, analyse, critically evaluate and report data
- analyse and interpret qualitative and quantitative data to provide evidence, recognising patterns, relationships and limitations of data

- develop an informed and critical perspective, as local and global citizens, on contemporary science-based issues
- develop knowledge and understanding of key models, concepts, theories and laws of science to explain scientific processes and phenomena, and apply this understanding in familiar and unfamiliar situations, including personal, sociocultural, environmental and technological contexts
- communicate clearly and accurately an understanding of the discipline, using appropriate terminology, conventions and formats.

Structure

The study is made up of four units, structured as a series of curriculum-framing questions that reflect the inquiry nature of the discipline:

- Unit 1: How are behaviour and mental processes shaped?
- Unit 2: How do internal and external factors influence behaviour and mental processes?
- Unit 3: How does experience affect behaviour and mental processes?
- Unit 4: How is mental wellbeing supported and maintained?

Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit. Each outcome is described in terms of key knowledge and is complemented by a set of key science skills.

Unit 1 and 2 Outline

Students examine the complex nature of psychological development, including situations where psychological development may not occur as expected. Students examine the contribution that classical and contemporary knowledge from Western and non-Western societies, including Aboriginal and Torres Strait Islander peoples, has made to an understanding of psychological development and to the development of psychological models and theories used to predict and explain the development of thoughts, emotions and behaviours. They investigate the structure and functioning of the human brain and the role it plays in mental processes and behaviour and explore brain plasticity and the influence that brain damage may have on a person's psychological functioning.

A student-directed research investigation into contemporary psychological research is undertaken in Area of Study 3. The investigation involves the exploration of research, methodology and methods, as well as the application of critical and creative thinking to evaluate the validity of a research study by analysing secondary data. The investigation draws on the key science skills and key knowledge from Area of Study 1 and/or Area of Study 2.

Students evaluate the role social cognition plays in a person's attitudes, perception of themselves and relationships with others. Students explore a variety of factors and contexts that can influence the behaviour of individuals and groups, recognising that different cultural groups have different experiences and values. Students are encouraged to consider Aboriginal and Torres Strait Islander people's experiences within Australian society and how these experiences may affect psychological functioning.

Students examine the contribution that classical and contemporary research has made to the understandings of human perception and why individuals and groups behave in specific ways. Students investigate how perception of stimuli enables a person to interact with the world around them and how their perception of stimuli can be distorted.

A student-adapted or student-designed scientific investigation is undertaken in Area of Study 3. The investigation involves the generation of primary data and is related to internal and external factors that influence behaviour and mental processes. The investigation draws on key knowledge and key science skills from Area of Study 1 and/or Area of Study 2.

Unit 3 and 4 Outline

Students investigate the contribution that classical and contemporary research has made to the understanding of the functioning of the nervous system and to the understanding of biological, psychological and social factors that influence learning and memory.

Students investigate how the human nervous system enables a person to interact with the world around them. They explore how stress may affect a person's psychological functioning and consider stress as a psychobiological process, including emerging research into the relationship between the gut and the brain in psychological functioning.

Students investigate how mechanisms of learning and memory lead to the acquisition of knowledge and the development of new and changed behaviours. They consider models to explain learning and memory as well as the interconnectedness of brain regions involved in memory. The use of mnemonics to improve memory is explored, including Aboriginal and Torres Strait Islander peoples' use of place as a repository of memory.

A student-designed scientific investigation involving the generation of primary data related to mental processes and psychological functioning is undertaken in either Unit 3 or Unit 4, or across both Units 3 and 4, and is assessed in Unit 4 Outcome 3.

Students explore the demand for sleep and the influences of sleep on mental wellbeing. They consider the biological mechanisms that regulate sleep and the relationship between rapid eye movement (REM) and non-rapid eye movement (NREM) sleep across the life span. They also study the impact that changes to a person's sleep-wake cycle and sleep hygiene have on a person's psychological functioning and consider the contribution that classical and contemporary research has made to the understanding of sleep.

Students consider ways in which mental wellbeing may be defined and conceptualised, including social and emotional wellbeing (SEWB) as a multidimensional and holistic framework to wellbeing. They explore the concept of mental wellbeing as a continuum and apply a biopsychosocial approach, as a scientific model, to understand specific phobia. They explore how mental wellbeing can be supported by considering the importance of biopsychosocial protective factors and cultural determinants as integral to the wellbeing of Aboriginal and Torres Strait Islander peoples.

A student-designed scientific investigation involving the generation of primary data related to mental processes and mental wellbeing is undertaken in either Unit 3 or Unit 4, or across both Units 3 and 4, and is assessed in Unit 4 Outcome 3.

Visual Communication Design

Scope of study

The Visual Communication Design study examines the way visual language can be used to convey ideas, information and messages in the fields of communication, environmental and industrial design. Designers create and communicate through visual means to influence everyday life for individuals, communities and societies. Visual communication design relies on drawing as the primary component of visual language to support the conception and visualisation of ideas. Consequently, the study emphasises the importance of developing a variety of drawing skills to visualise thinking and to present potential solutions.

Rationale

Visual communication design can inform people's decisions about where and how they live and what they buy and consume. The visual presentation of information influences people's choices about what they think, what they need or want. The study provides students with the opportunity to develop informed, critical and discriminating approaches to understanding and using visual communications and nurtures their ability to think creatively about design solutions. Design thinking, which involves the application of creative, critical and reflective techniques, supports skill development in areas beyond design, including science, business, marketing and management. The rapid acceleration of the capabilities and accessibility of digital design technologies has brought new challenges to visual communication design practices. The study of Visual Communication Design can provide pathways to training and tertiary study in design and design-related studies.

Aims

This study enables students to:

- develop and apply drawing skills using a range of techniques
- develop design thinking
- develop a range of skills in selecting and applying media, materials and manual and digital methods to support design processes
- apply a design process to create visual communications
- understand how key design elements, design principles, media, materials and manual and digital methods contribute to the creation of their own visual language
- develop a capacity to undertake ongoing design thinking
- understand how historical, social, cultural, environmental, legal, ethical and contemporary factors influence visual communications.

Structure

The study is made up of four units.

Unit 1: Introduction to visual communication design

Unit 2: Applications of visual communication within design fields

Unit 3: Visual communication design practices

Unit 4: Visual communication design development, evaluation and presentation

Each unit deals with specific content contained in areas of study and is designed to enable students to achieve a set of outcomes for that unit. Each outcome is described in terms of key knowledge and key skills.

Unit 1 and 2 Outline

Students are introduced to the practices and processes used by designers to identify, reframe and resolve human-centred design problems. They learn how design can improve life and living for people, communities and societies, and how understandings of good design have changed over time. Students learn the value of human-centred research methods, working collaboratively to discover design problems and understand the perspectives of stakeholders. They draw on these new insights to determine communication needs and prepare design criteria in the form of a brief.

This process of discovery introduces students to the phases of the VCD design process and to the modes of divergent and convergent thinking. Students integrate these ways of thinking and working into future design projects, together with their newly evolved conceptions of good design across specialist fields.

Practical projects in Unit 1 focus on the design of messages and objects, while introducing the role of visual language in communicating ideas and information. Students participate in critiques by sharing ideas in progress and both delivering and responding to feedback. Students learn to apply the Develop and Deliver phases of the VCD design process and use methods, media and materials typically employed in the specialist fields of communication and industrial design. Student projects invite exploration of brand strategy and product development, while promoting sustainable and circular design practices. They also consider how design decisions are shaped by economic, technological, cultural, environmental and social factors, and the potential for design to instigate change.

Students draw on conceptions of good design, human-centred research methods and influential design factors as they revisit the VCD design process, applying the model in its entirety. Practical tasks across the unit focus on the design of environments and interactive experiences. Students adopt the practices of design specialists working in fields such as architecture, landscape architecture and interior design, while discovering the role of the interactive designer in the realm of user-experience (UX). Methods, media and materials are explored together with the design elements and principles, as students develop spaces and interfaces that respond to both contextual factors and user needs.

Student learning activities highlight the connections between design and its context, and the emotive potential of interactive design experiences in both physical and digital spaces. Students also look to historical movements and cultural design traditions as sources of inspiration, and in doing so consider how design from other times and places might influence designing for the future. Design critiques continue to feature as an integral component of design processes, with students refining skills in articulating and justifying design decisions, and both giving and receiving constructive feedback.

Connections between design, time and place are also central to the study of culturally appropriate design practices in Area of Study 2. Students learn about protocols for the creation and commercial use of Indigenous knowledge in design, with a particular focus on

Aboriginal and Torres Strait Islander design traditions and practices. Students also consider how issues of ownership and intellectual property impact the work of designers across contexts and specialist fields.

Unit 3 and 4 Outline

Students explore and experience the ways in which designers work, while also analysing the work that they design. Through a study of contemporary designers practising in one or more fields of design practice, students gain deep insights into the processes used to design messages, objects, environments and/or interactive experiences. They compare the contexts in which designers work, together with their relationships, responsibilities and the role of visual language when communicating and resolving design ideas. Students also identify the obligations and factors that influence the changing nature of professional design practice, while developing their own practical skills in relevant visual communication practices.

Students study not only how designers work but how their work responds to both design problems and conceptions of good design. They interrogate design examples from one or more fields of design practice, focusing their analysis on the purposes, functions and impacts of aesthetic qualities. This exposure to how, why and where designers work, what they make and the integral role of visual language in design practice provides the foundation for students' own investigation of the VCD design process.

Students explore the Discover, Define and Develop phases of the VCD design process to address a selected design problem. In the Discover and Define phases, research methods are used to gather insights about stakeholders and a design problem, before preparing a single brief for a real or fictional client that defines two distinct communication needs. Students then embark on the Develop phase of the VCD design process, once for each communication need. They generate, test and evaluate design ideas and share these with others for critique. These design ideas are further developed in Unit 4, before refinement and resolution of design solutions.

Students continue to explore the VCD design process, resolving design concepts and presenting solutions for two distinct communication needs. Ideas developed in Unit 3, Outcome 3 are evaluated, selected, refined and shared with others for further review. An iterative cycle is undertaken as students rework ideas, revisit research and review design criteria defined in the brief. Manual and digital methods, media and materials are explored together with design elements and principles, and concepts tested using models, mock-ups or low-fidelity prototypes.

When design concepts are resolved, students devise a pitch to communicate and justify their design decisions, before responding to feedback through a series of final refinements. Students choose how best to present design solutions, considering aesthetic impact and the communication of ideas. They select materials, methods and media appropriate for the presentation of final design solutions distinct from one another in purpose and presentation format, and that address design criteria specified in the brief.

