



# VILLANOVA COLLEGE

YEAR 9 STUDIES GUIDE



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#### **Our Overarching Goal for Learning**

Empowering learners of all ages to understand, shape and enrich our changing world, by living the Gospel of Jesus Christ in the spirit of St Augustine.

#### **Our Beliefs**

#### **About Learners:**

- Each person is created in the image and likeness of God.
- Every person is a unique lifelong learner.

#### **Foundations of Learning**

- The person of Jesus gives meaning to life and learning.
- Every person can achieve success in learning.
- Learning is an interior process.
- Learning is the active process of searching for and constructing meaning.
- Learning occurs within a community of fellow learners in a safe, connected, supportive and inclusive environment.
- Opportunities for learning encompass the richly diverse aspects of all life experience.
- Learning is directed towards knowing Truth, which is God.

#### **Our Learning Community**

- Promotes the educational mission of Villanova College as an Augustinian Catholic school.
- Gives witness to the Gospel and the integration of faith, life and culture.
- Maintains the focus on learning as the core business of our college.
- Recognises that the heart of our learning community is the relationship between the teacher and the student.
- Focuses on the future and is flexibly structured.

#### **Our Values**

As an Augustinian Catholic school we value: the Catholic Christian Tradition, dignity and justice for each person, the building of community, high quality learning, the principles of collaboration and subsidiarity, creativity, stewardship and mutual accountability.

In particular, our Augustinian heritage calls us to love God and one's neighbour, to solidarity with the poor and the marginalised, to value interiority and humility, to be devoted to study and the pursuit of truth, to promoting freedom, to actively building and nurturing community, to be devoted to the common good in a spirit of service, and to friendship and prayer.

#### Our aims for each Villanova student

- To be a faithful, responsible person with integrity
- To be a knowledgeable person with deep understanding
- To be a complex thinker
- To be a designer/creator
- To be a reflective, self-directed learner
- To be an effective communicator
- To be a community contributor
- To be an active investigator
- To be a quality producer
- To be a leader and collaborator

## Year 8

#### In the Year 8 program, the core curriculum was divided into two (2) strands:

- the Humanities (including English, Religious Education and Personal Development and History) and
- Mathematics and Science.

In addition to these major core areas, students were exposed to a number of elective subjects and completed minor studies in two languages other than English, and Health and Physical Education.

#### In Year 8, all students did the same core program and chose term electives.

## Year 9

#### In Year 9, the core curriculum consists of the following full year subjects:

- Religious Education and Personal Development
- English
- Mathematics
- History
- Science
- Health and Physical Education

On the pages that follow are descriptions of the core subjects studied in Year 9. Later in the booklet are descriptions of the elective subjects on offer for Year 9.

In Year 9, in addition to the core program, all students take four (4) elective units - two (2) in Semester 1, and a further two (2) in Semester 2. Choosing these elective units is the subject of this booklet.

## Year 9 Flowchart of Subjects

#### Semester 1

- Religious Education and Personal Development
- English
- Mathematics
- History
- Science
- Health and Physical Education
- Elective subject 1
- Elective subject 2

#### Semester 2

- Religious Education and Personal Development
- English
- Mathematics
- History
- Science
- Health and Physical Education
- Elective subject 3
- Elective subject 4

Religious Education is a core curriculum area in each year level at Villanova College. As a Catholic school in the Archdiocese of Brisbane, Villanova's Religious Education program is modelled on the established guidelines of the Brisbane Catholic Education Curriculum. This is organised into four (4) interrelated strands; Sacred Texts, Beliefs, Church and Christian Life. Across each year, students engage with these four strands.

The Middle School Religious Education curriculum is designed to optimise student engagement while also preparing students with the necessary skills for their Senior Religious Education studies. Within the units, students develop their religious literacy, participate actively in the religious life of the College and develop cross-curricular links to see how faith exists in all aspects of our lives. Student engagement is developed through an inquiry based learning model that promotes discussion, collaboration, reflection and creativity, and contextualises our faith traditions into their contemporary experiences and lives.

The Year 9 Religious Education curriculum covers four (4) units over two (2) semesters. Students explore the divergent understandings of God (G\*d, Allah, God) in the monotheistic religions (Judaism, Islam, Christianity), while also deepening their understanding of sin and forgiveness within the monotheistic traditions. Students develop their understanding of prayer and faith in the Christian tradition through exploration of the writings of key religious and lay leaders throughout Church history. A cross-curriculum link builds on the investigations conducted within their History studies.

Students deepen their understanding of New Testament texts by engaging in biblical criticism to better understand the purpose and message of these texts, while also bringing these into relevance to their modern lives. Students also consider sources of inspiration, strength and guidance for believers today, including the Catholic Social Teachings, the Sacrament of Healing (Penance and Anointing of the Sick) and communal prayer experiences. The focus of each unit is to allow students to engage and bring religious texts and understandings into their contemporary lives.

### HISTORY

History is a disciplined inquiry into the past that develops students' curiosity and imagination. The units develop understanding of the cultural, social and political events, and processes and issues that have shaped humanity from our earliest times. History in Year 9 aims to enrich student appreciation of how the world and its people have changed, and the significant continuities that exist into the present. In this way, the study of History enables students to contribute more effectively in shaping our future.

Historical study is based on the evidence of the remains of the past. The unit develops skills in interpretation, promotes debate and encourages thinking about values both in past and present times, with a view to encouraging students to consider future challenges. History skills are essential skills that can be utilised across all disciplines and areas of life. These include the ability to ask relevant questions, critically analyse and interpret sources and different contexts, respect and explain different perspectives and values, and to also communicate more effectively.

The Year 9 History course covers the period from 1750 – 1918. Taking a world history approach the units focus on how humanity has worked towards the creation of a better world. Students investigate the movement of people across our world over time, the making of Australia as a nation and the impact of World War I. Within these units there is scope to develop all the skills students require for future study in History. One of the key aims is to equip students for the world in which they live by enhancing their appreciation of Australia's history and our position in the Asia-Pacific region, moving towards developing an understanding of the global relationships which are essential for participation in our modern society.

The ability to comprehend and interpret written and spoken English in its various forms, together with the ability to express oneself in a variety of ways, is vital for personal well-being and that of the community in general. It is also the basis for learning in other spheres.

The Year 9 English course is concerned with the development of students' ability to interpret and use language in a wide variety of ways. In Year 9, students interact with peers, teachers, individuals and groups in a range of face to face and online environments. They will experience familiar and unfamiliar contexts, both local and global. The key aim is to promote the student's ability to communicate effectively in a wide range of contexts. In line with the Australian Curriculum, the students engage with a variety of texts, which involve students in the practice of writing, speaking and creating, and listening, viewing and reading. The students learn to create, evaluate, discuss and perform a wide range of texts. They will learn how to engage with texts designed to inform and persuade. To this end, during Year 9 English, students encounter a wide variety of differing forms of English expression such as novels, plays, poetry, films, short stories, dramatic performances, newspapers and video clips. These texts will explore themes of human experience and cultural significance, interpersonal relationships and ethical and global dilemmas within both real world and fictional settings. Students will create a range of imaginative, analytical and persuasive types of texts.

Students' understanding of themselves and the world depends on language. At the very fundamental level, thinking itself depends on language. Clarity and precision in language are the keys to thinking critically, solving problems and reasoning logically. Language is a means by which students can share the insight, feeling and experiences of others. The exploration of human issues highlighted in literature, film and drama opens up to students the experience and insight of others. Through the language, literature and literacy in the Year 9 English course, and in keeping with the Australian Curriculum, students are provided with the opportunity to develop empathy with others and the world.

## MATHEMATICS

Effective mathematical thinking can be an advantage when measuring and marking a cut on a piece of timber, checking the bill at a restaurant, choosing from a variety of loan repayment options, evaluating statistical tests used in research or surveying an irregular piece of land.

Through their learning experiences in the Middle School Mathematics course, students are encouraged to develop the skills and productive habits of mind for mathematics. The course content is structured along the strands Chance and Data, Measurement, Number, Space and Algebra. Learning experiences in the course are shaped by the view that students learn best by active, rather than passive, participation; they learn by doing and not just by watching.

The assessment strategies are designed to extend, measure and record what students can do. An individual profile, which is maintained throughout the year, enables the student, teacher and parent to constantly monitor progress and devise strategies to overcome difficulties. Information from a variety of sources is used to update the student's folio. Assignments, in-class tests and investigations provide valuable data to build the student profile.

One of the keys to success in Mathematics is to work consistently. Each student should therefore do about 15 to 20 minutes of mathematics study each school evening. Though this figure is a guide only, and may vary at times during the term, the teacher should be contacted if the student is regularly spending much more or much less time on homestudy in Mathematics.

A range of courses in Mathematics in Years 10, 11 and 12 are offered to Villanova College students. Some of these involve a level of technical difficulty and are not suitable for all students. Entry to these courses is not automatic. Students need to demonstrate the desired level of competency before commencing these later courses. Students will determine the appropriate Senior Mathematics subject for them during the course of their studies in Year 9.

So many issues which touch our everyday lives are intertwined with scientific questions. A good knowledge of the principles and theories involved in issues such as technology, the environment and nuclear energy is needed by all. Likewise, students must become equipped to evaluate their own knowledge of science as it relates to our society and the ethical use of the rapidly advancing scientific understanding.

The Middle School Science course is based on the Australian Curriculum and focuses on the key understandings of Biological Science, Chemical Science, Earth and Space Science, and Physical Science. There is an increasing emphasis on the development of scientific skills such as questioning, planning, analysis and evaluation of data. The course is broadly based and provides a background for all future studies in this area at Villanova College. However, this is not to say it is only for those who wish to pursue a scientific career. On the contrary, it attempts to equip all students with an understanding of their own bodies and the world in which they live.

In addition to completing set homework, which is given on a regular basis, students should endeavour to develop mature study habits that include, for example, a weekly revision program, reading ahead of the work at hand and reading beyond the material presented in the course.

## HEALTH AND PHYSICAL EDUCATION

The continuing physical development of students and their growing understanding of relevant health issues are considered in the design of the Health and Physical Education program in Year 9. The program combines a practical dimension (sport and physical activity) with a theoretical dimension (Health) in addressing the priorities as outlined in the Australian Curriculum.

In the physical performance domain, students will participate in a variety of sports and physical activities which promote physical fitness, skill development, team work and socialisation. These physical activities may include Cricket, Lifesaving, Futsal, Touch, Basketball and NFL. The specific physical activities a class participates in is dependent upon the timetable and available facilities. Each activity is formally assessed against the descriptors and standards of the new Australian Curriculum.

Each semester, each Health and Physical Education class will complete and be assessed in one Health topic. In Semester 1, students will study a comprehensive drug education course, adopting the harm minimisation approach to the design and implementation of the unit. Student learning in Health Education is formally appraised through the completion of one major project.

Additionally, students complete the 20-metre shuttle run test (beep test) regularly throughout the year to monitor their cardiovascular endurance. It is hoped that this information will prove to be an opportunity for students and parents to reflect on the type and level of physical activity that is taking place, and the physical, social, emotional and intellectual benefits that follow.

#### How to choose elective subjects

The elective choices a student makes in Year 8 was an opportunity for him to explore and discover his own particular talents and interests. This is developed further in Year 9.

Developing and discovering one's own values, talents, skills and interests is:

- for their own personal development; things they would like to do in their leisure time both now and in the future
- about discovering what kind of work a student might like to do in the future. This is a gradual process and will most likely involve changing one's mind several times over the next few years.

This whole process will take place in a student's core subjects as well as in his elective subjects. However, elective subjects require a student to do something even before they start. A student must think about the things he might like to do and investigate the subjects.

In the elective subjects, students have a number of key areas where they can follow very personal preferences.

These may:

- develop a personal interest or hobby
- allow a student to pursue their family heritage
- encourage a student to select and follow a particular career
- select a career in an allied field
- be of assistance to a career in a different field.

#### **Career Choices**

Students are not being asked to make career choices at this particular moment. Due to the way the courses are structured at Villanova, most career paths will still be open, even after a student has completed Year 10.

At this stage of a student's education, he should choose electives because he has an interest in them or because he would like to try something new or unknown to see if he has a talent or interest in these areas.

Year 9 students study two (2) semester length elective subjects in each semester, in addition to their core subjects from the following areas below. Throughout the year, all students will study four (4) electives.

*Elective units may not be conducted in all semesters/years. Actual timetabled subjects in any year depend on student demand and the capacity of the College to conduct the courses.* 

#### **Extension Electives**

**Physical Education** 

- English Extension
- Mathematics Extension

#### Science Extension

**Sports Science** 

#### Languages Other Than English

- Chinese
- Italian

#### **Business Studies and Hospitality**

- Business Studies
- Financial Literacy
- Food Studies

### Creative Arts

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- Art
- Drama
- Media
- Music

#### **Social Sciences**

• Geography

#### **Technologies**

- Design Fundamentals
- Digital Fundamentals
- Engineering Fundamentals
- Workshop Fundamentals

#### **English Extension**

The English Extension course will be delivered over one (1) semester in Year 9. It is designed to enhance and develop skills in English language and literature and to broaden the knowledge of the students who study the core English units.

Typically, the focus will be on a broad spectrum of skills in English language linked to an area of English literature. For example, Classic Literature, Shakespearean Studies or The American Novel would represent the richness and variety of what this elective can offer. Only one area would be the focus of study per semester.

While running independently of the core English syllabus in Year 9, this elective provides an opportunity to extend and challenge students in English.

Students must have achieved the minimum overall grade of a "B' in Year 8 English to apply.

#### **Mathematics Extension**

This elective is designed for students who excel in Mathematics. Its purpose is to give students the opportunity to explore other areas of Mathematics outside the regular Year 9 Mathematics curriculum. Many of these experiences are not available to students at school except in the Specialist Maths program.

Topics covered in the course include:

- Cryptography
- Techniques of counting
- Probability
- Permutations and Combinations
- Complex Numbers

Assessment in this subject consists of a multi-media presentation and two (2) examinations.

This Mathematics elective is an extension subject, and as such is not designed to suit all students.

#### **Science Extension**

This course is designed to extend and challenge passionate and able students who wish to improve their scientific skills.

A range of directed research and practical activities are envisaged as a mechanism for students to enhance their abilities to design and conduct experimental work and write scientific reports. Further experimental work is an opportunity to analyse and evaluate a range of methodologies and how they relate to key areas of learning in the sciences.

Topics covered in the course may include:

- Biochemistry
- Earth Science
- Impact of Disease
- Microbiology
- Physics
- Physiology

Assessment in this subject consists of formal tests, written scientific reports, presentations and practical skills.

#### **Sport Science**

In this course, students build on the foundation work of Year 8 Sport Science by studying two significant disciplines associated with training and sports performance – Exercise Physiology and Biomechanics.

After covering the theory underpinning training methods and planning, students will be involved in a series of fitness tests and training activities. Students will then write up the test procedures and results, and submit this at the end of the unit for assessment, where they will link the group's test results to their suitability for a range of positions in a selected sport. Students will study introductory anatomy and physiology, and apply knowledge acquired in the course to a variety of physical activities.

Topics include:

- Anatomy
- Physical activity guidelines
- Benefits of fitness
- Components of fitness
- Fitness testing
- Body systems introduction cardiovascular and respiratory systems
- Energy systems
- Heart rate response to exercise

The biomechanics aspect of the course examines the application of physics principles to the efficiency of movement in a sporting context. Students will select a skill and then present a multi-modal assessment task that analyses their performance against an elite performer.

Topics covered include:

- Force production
- Levers
- Newton's Laws
- Acceleration and velocity
- Impulse
- Summation of forces
- Projectile motion

Students will make recommendations as to how to improve their overall performance based on these biomechanical principles.

#### Geography

Geography in Year 9 explores the interconnectedness and specific characteristics of places and spaces, providing students the opportunity to develop a range of core skills including:

- Observing and questioning
- Planning, collecting and evaluating
- Processing, analysing, interpreting and concluding
- Communicating
- Reflecting and responding

The units in Year 9 build student inquiry skills, moving towards developing a greater understanding and appreciation of global relationships while also exploring our impact on the world. The units investigate the contemporary issues facing our world. Year 9 Geography actively builds the essential skills required for future studies in the Social Sciences. The Year 9 units are:

#### Unit 1 – Biomes and Food Security

This unit examines the personal and global patterns of food production and consumption and the impact this has on the natural environment. Students investigate the idea of food security and the ability to sustainably feed the projected future populations in the face of competing land uses, such as biofuel production and urbanisation.

#### **Unit 2 – Geographies of Interconnections**

This unit is focused on transport and the communication technologies which connect people and places across the globe. Students investigate the impacts our consumption has on places of production. The unit focuses on studies drawn from Australia and the wider world.

#### Chinese

Australia's links with Asia are becoming more and more important and many nations throughout Asia also have large Chinese communities. Australia's links with China itself are also becoming increasingly important. Chinese is, therefore, a very valuable language for Australians to learn. It has relevance to careers in commerce, diplomacy, law and tourism to name a few.

In this one semester course, topics are introduced through dialogues, role play, simple texts and games. Materials are related to everyday activities such as family and community relationships, likes and dislikes, interests, school and food. Thus, language can be seen not as an academic exercise but as a medium of communication. Amongst the goals of the course are familiarity with the basic Chinese characters, the Romanization of Chinese, and the tonal quality of the language. Included also is the development of an understanding of language as a communication process.

Student skills are developed in four major areas - listening, reading, speaking and writing. The kinds of tasks students master include: Responding in English to questions in English about a text; Retelling in English the essence of a message spoken in Chinese; Role play, one to one interview; Reading a variety of texts that differ in length, purpose and style (e.g. timetables, maps, menus, articles); directed writing, e.g. postcard, letter, invitation; Writing of narrative and descriptive paragraphs and dialogues. Some of these tasks will be completed at home. Students will be required to spend 20 minutes working on Chinese at home for each lesson they have during the week.

NB: Students wishing to study Chinese in Year 10 are required to study Chinese in Year 9.

#### Italian

Italian is a language in which it is relatively easy to achieve a basic degree of social proficiency. Italy is a leading industrial nation and, therefore, Italian is a major language of trade and commerce. The student of Italian gains access to cultural traditions which go back thousands of years and which have had a profound effect on western society. For students with an Italian family heritage, the study of Italian may fill in gaps in literacy or give access to the standard form of the language.

Italian is one of the easiest languages for English speakers to learn, as Italian and English are related. It has many similarities to English in grammar and vocabulary and is no trouble to write as the language is phonetic.

In this one semester course, topics are introduced through dialogues, role play, simple texts and games. Materials are presented as realistically as possible so that language can be seen not as an academic exercise but as a medium of communication. Topics include:

Recognise some Italian cities and landmarks, understand new Italian words, say the Italian alphabet, pronounce some Italian words, count to 20, say hello, say your name, ask and give information about age, say where you come from, use different greetings, ask people how they are, ask where someone is from, give information about nationality, give a physical description, say which sports you like and don't like.

Student's skills are developed in four major areas - listening, reading, speaking and writing. The kinds of tasks students master include: Responding in English to questions in English about a text; Retelling in English the essence of a message spoken in Italian; Role play, one to one interview; Reading a variety of texts that differ in length, purpose and style, (e.g. recipe, menu, TV guide, newspaper); Directed writing, e.g. postcard, letter, invitation and writing of narrative and descriptive paragraphs and dialogues. Some of these tasks will be completed at home. Students will be required to spend 15 to 20 minutes working on Italian at home for each lesson they have during the week.

NB: Students wishing to study Italian in Year 10 are required to study Italian in Year 9.

#### **Business Studies**

Business Studies is a contextual approach to business which allows students to interact with the individual disciplines of accounting, business and economics, as well as, a holistic approach to business operation. Core concepts for each subject area will be addressed, while maintaining the flexibility to examine contemporary issues. Experiencing the range of business disciplines will enable students to make more informed business subject choices.

#### **Core Concepts:**

#### Accounting

#### Business

- Basic accounting concepts
- Sources of funding
- Interpretation of financial reports
- Profitability

- Business Structure
- Business life cycle
- Interpretation of business plan
- Market profile
- Marketing

#### Economics

- Price mechanism
- Supply and demand
- Opportunity cost
- Scarcity
  - Circular flow

#### **Financial Literacy**

A financially literate person has the ability to act rationally and ethically when making personal consumer and financial decisions. Concepts of financial literacy assist students to make better judgments about their financial affairs, when they understand the relationship between their own finances and the wider community.

'Financial education can make a difference. It can empower and equip young people with the knowledge, skills and confidence to take charge of their lives and build a more secure future for themselves and their families.' (OECD 2012)

The course consists of the following units:

- Managing money
  - Budgeting
  - Saving and investing
  - Understanding tax
  - Superannuation
- Sharemarket
- Consumer Protection Smart Consumer

#### **Food Studies**

Food Studies provides students with an introduction to food and the food industry. The subject is designed to develop skills in:

- Management the effective use of time, energy and money.
- Food preparation the safe, effective storage and cooking of foodstuffs.
- Nutrition understanding what is in food and how the body uses food.

Food Studies involves cooking practicals and theory in the following topic areas:

- The Working Environment safety, hygiene, recipes, measurement and working with food.
- Technology in the Kitchen kitchen resources, technology and the environment and genetic engineering.
- Food and You What is food? Why eat food? The body's need for food, food requirements and nutrition.

#### Art

Studying Art will build firm foundations for students to develop confidence using a range of expressive mediums and materials to successfully create 2D and 3D artworks. Students will be encouraged to think creatively to generate concept-driven artworks that demonstrate effective visual communication skills. Clear communication is achieved by developing an understanding of visual representations of cultures, viewpoints and experiences to develop meaningful artworks.

In this semester of study, students will:

- learn how to control and manipulate a range of drawing, painting and sculptural materials such as: charcoal, graphite, acrylic paint and clay/glaze;
- develop an understanding of the visual language of Art (Art Elements, Design Principles, Forms and Symbolism) to discuss and appraise artists' works;
- research, develop and reflect on the processes of art making in a visual diary.

#### Drama

Do you enjoy creativity, group focused learning and viewing live performances? Drama challenges and supports students to make meaning of their world and enables them to express and communicate ideas. The process of making and presenting drama gives students opportunities to develop skills in interpreting, researching, negotiating, revising and refining, problem-solving, goal-setting and decision-making. Students will become not only more confident in themselves, but in how they undertake all of their studies by learning vital skills in a fun, learning environment.

Across the semester of study, students will:

- Workshop improvisation skills and acting techniques
- Create an extension scene based on the popular play *Blowout*, written for and about boys' culture at Villanova
- Rehearse and present a short script
- View and write a response to live theatre

## **CREATIVE ARTS**

#### Media

The Media Arts course examines one of the most persuasive forms of media - *advertising*. We are constantly surrounded by advertising in our daily lives, whether by reading the newspaper, watching television, engaging in social media or reading the packaging on the food we eat.

As active consumers of this constant bombardment of advertising and corporate branding, this unit invites students to peel back the glossy facade of modern marketing and explore the ways in which audiences are lured by the power of the TVC and the representations of contemporary society they offer.

Or, students could explore their own culture and identity and that of indigenous Australians by examining the language of the soundtrack. Students will study the history of the Radio Play and explore the fundamentals of sound and its various dimensions by analysing soundtracks, sound effects and musical scores of a range of media texts. This will culminate in an individual production of a Youtube Tutorial that demonstrates a personal interpretation of the effects social media has on their identity.

#### Music

What do James Morrison, Cat Empire, Cold Chisel, Percy Grainger, Yothu Yindi, Violent Soho and Paul Kelly all have in common? All of these artists form the basis of learning in Year 9 Music when the unit 'Aussie Icons' is explored. Throughout the semester, students will get to explore what made these artists influential in our country and beyond. Learn how their music is constructed, get an opportunity to play and perform some of their works as well as develop skills to be able to compose pieces that replicate these musical styles.

It is essential that students electing to study Music are able to play a musical instrument in order to complete the performing task – whether this is as a soloist or an ensemble member.

Music is a great opportunity to further develop students' musicianship and gain a deeper understanding. It is a highly interactive, hands on class with lots of opportunities to develop all areas of music.

#### **Design Fundamentals**

In an increasingly technological and complex world, it is important for students to develop knowledge and confidence to critically analyse and creatively respond to design challenges. This course focuses on the design process and communication through drawing to explain and visualise designs.

Students will produce designed solutions to identified needs or opportunities of relevance to individuals and communities. Using a range of technologies, including a variety of graphical representation techniques for communicating ideas, they will generate and represent original ideas and production plans in two and threedimensions. Students will create prototypes of designs and present a range of technical drawings including orthographic projections, pictorial views and detail drawings. They will create rendered, illustrated views for marketing and use graphic visualisation software to produce dynamic views of virtual products.

In this course, students will investigate and make judgments on how design factors inform decision making. They will use an iterative design process and evaluate their design ideas against criteria for success.

Laptops: A 13" screen is the minimum recommended for Technologies subjects. All software used is free to download. As some software is only available for Windows systems, if a student has a Mac, he will need to install BootCamp to use this software.

#### **Digital Fundamentals**

The unit within Digital Technologies introduces students to different computer/networking hardware and software. Students will develop an understanding of how these work together to allow for the sharing of data both locally and globally. They will learn about the nature, structure, operation and control of online systems, and consider ethical and social issues and risks of digital technologies and environments. They will explore security strategies and protocols to protect information, rights, identity and personal safety. They will design interfaces and use HTML5, Javascript and CSS in creating interactive webpages.

Activities in this course will provide students with opportunities to :

- understand data transfer in networks and the internet
- learn about network topologies, file structures, file storage systems, web browsers, search engines and a variety of protocols
- develop a working knowledge of computing and network technology within their own environment
- use HTML5, JavaScript and CSS to structure and present information on the internet
- use PHP to develop web applications

Laptops: A 13" screen is the minimum recommended for Technologies subjects. All software used is free to download. As some software is only available for Windows systems, if a student has a Mac, he will need to install BootCamp to use this software.

#### **Engineering Fundamentals**

This semester long unit introduces the Engineering problem-solving process to students and allows them to develop a range of skills for producing solutions and prototypes. Students will develop solutions by applying a problem-solving process that is both analytical and technical to open-ended real world problems. Students will develop and apply systems thinking, creativity, innovation and project management. They will build, test and evaluate prototypes and maintain folios of their work on the solutions. This unit incorporates some aspects of other Technologies subjects in the Senior School and requires the application of Science and Maths concepts.

Students will use the design process to design and develop their solutions to solve real world problems. They will prototype and test their solutions using a range of technologies. The design will require drawing circuits, calculating resistances and currents in the circuits, communicating algorithms using standard tools and sketching and annotating to explain ideas and decisions. Students will have opportunities to define and decompose problems taking into account function and non-functional requirements. An emphasis on developing and representing solutions to problems will help develop the essential skills required for Technologies subjects in the Senior School.

Students will use critical and creative thinking, communication, collaboration and teamwork when designing and developing solutions. The solution products or prototypes will be built, developing a range of skills such as soldering, 3D-printing and laser cutting.

Laptops: A 13" screen is the minimum recommended for Technologies subjects. All software used is free to download. As some software is only available for Windows systems, if a student has a Mac, he will need to install BootCamp to use this software.

#### **Workshop Fundamentals**

In this unit, within the Technologies area, students will identify the steps involved in planning the production of designed solutions. They will identify and establish safety procedures that minimise risk and manage projects with safety and efficiency in mind, maintaining safety standards and management procedures to ensure success. They will learn to transfer theoretical knowledge to practical activities across a range of projects.

In producing a variety of projects, students will undertake activities that:

- develop skills and techniques in the use of hand and powered tools and machinery used in workshop situations
- develop the ability to plan and design simple projects which they will then construct and evaluate
- develop both knowledge of and adherence to safe working habits suitable for working with hand tools and powered equipment in the workshop
- develop knowledge of woodworking materials (including plastic polymers) and hardware and the ability to select suitable materials for given situations.

The approach in this subject emphasises learning by doing. By making simple objects students gain knowledge and skills in production. The theory work involves design processes, online activities and a research assignment, which is completed during class time and through home study. It is important for students to develop good workshop attitudes and to work on their skills and techniques.

This publication was produced by the Curriculum Office. The details about the various courses on offer contained in this guide were correct at the time of publication but may change from time to time as necessary to respond appropriately to student needs and the College's response to the Australian Curriculum.

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