Foreword

To the students of Year 12 (2014):

Choosing your VCE subjects is a complex task. No doubt you will be influenced by your studies in the current year, by parents and friends, even the media. The ‘other side’ of the issue though, is your own needs and skills. Trying to bring these two influences together to determine the program you undertake requires time and patience for all involved.

Warrandyte High School offers a diverse curriculum which aims to meet the needs of each individual. The school will provide you with an extensive, formal counselling program. In addition you will have access to other expertise, to computer programs and to information sessions. But it is essential that you consider your own capabilities.

Your ‘may make changes to the subjects you have chosen at a later date, as you improve your understanding of various subjects on offer or as you further consider your career options. You should also be aware that the final subject offerings will be dependent on the teaching resources we have available. A small number of subjects may not run if student demand is not sufficient.

In addition to the extensive academic program offered throughout the school, you are encouraged to participate in a wide variety of enrichment programs. These include the school production, instrumental music, interschool sport, debating and the SRC. Whilst life at VCE level is both busy and challenging, our purpose is to provide an environment in which you can develop as an independent learner, and in an atmosphere which is supportive and caring.

I urge you to be thoughtful about your choice. Do not be afraid of a challenge. At Warrandyte High School we will provide all the support we can to ensure you make a sensible, realistic choice. It has to be a choice that best suits you.

I wish you well.

Stephen Parkin
Principal
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VCE Procedures and processes

The Victorian Certificate of Education (VCE) is normally a two year course of study but may be taken over a longer period. At Warrandyte High School the normal program is:

- 12 units at Year 11 (6 units each semester)
- 10 units at Year 12 (5 units each semester)
- capable students in Year 11 may undertake study in two Year 12 subject
- capable students in Year 10 may undertake study in two Year 11 subject

1. Requirements for Satisfactory Completion
In order for the VCE to be awarded, students must satisfactorily complete 16 units of study, including:

- The English requirement is 3 units of English from the English group (English, Literature, English Language) with at least one unit at unit 3 or unit 4 level (both if seeking tertiary entrance score i.e. ATAR score).
- at least 3 sequences of units at level 3 and 4, in addition to English.

Satisfactory completion of a unit is based upon completion of all Outcomes specified for that unit. Decisions as to whether the Outcomes have been satisfactorily completed are made by the school in accordance with Victorian Curriculum Assessment Authority (VCAA) regulations.

2. Assessment and Reporting
Satisfactory completion of a unit is based on satisfactory achievement of the Outcomes for each study as specified by the VCAA.

Year 11
Graded assessment for units 1 & 2 of the VCE is determined by the school. A written report from the school will be given at the end of each semester for units 1 & 2. The school report will provide a:

- letter symbol “S” (Satisfactory Completion) or “N” (Non-satisfactory Completion) for each Outcome
- letter symbol grading on Assessment Tasks
- written comment by each teacher.

Year 12
Assessment of units 3 & 4 is based on:

- performance in coursework assessment tasks completed in class
- performance in examinations set by VCAA

Students receive a written report at the end of semester one for unit 3 only. The school report will provide a letter symbol “S” (Satisfactory Completion) or “N” (Non-satisfactory Completion) for each Outcome.
3. Grading
A+ to E 10 levels of satisfactory achievement
UG assessment task not satisfactory
NA [not assessed] assessment task not done
(Assessment tasks completed but not graded due to lateness or resubmission of unsatisfactory work)

4. Procedures to be followed if absent from an Assessment Task
If students are absent for an assessment task they must:
   a) Contact the school as soon as possible
   b) Provide a medical certificate when they return to school

If students are absent for a School Assessed Coursework (SAC) or School Assessed Task (SAT) for non-medical reasons they must also consult with their year level leader prior to the task and provide appropriate documentation to support their application. Extension of time will not be automatically granted.
If students are absent without meeting the above criteria they will receive an N for that Outcome.

Completing missed school assessed tasks
Students whose absences are approved will be required to complete the assessment at the earliest opportunity as determined by the class teacher and/or the Year Level Leader.

5. Student Attendance
It is important that students are present in all classes so that they can achieve as well as possible.
   • Classroom attendance is compulsory and a requirement of the VCE. Students must attend 90% of classes or they may receive an N for the unit.
   • Students who miss classes cannot expect teachers to spend additional time assisting them with missed coursework. It is the student's responsibility to catch up on any missed work.
   • Students may be expected to provide a doctor’s certificate if absences are to be excessive.
   • Periods without scheduled classes are study time and are to be used for study purposes. On occasion, scheduled study sessions may involve students being required at school for planned activities. At other times, it may involve students in unsupervised excursions and research outside the school. Students without scheduled classes must study in the library or the VCE Centre. It is not free time.
   • Students must not leave the school before they have finished all classes for each day. VCE students can arrive late and leave early if they have no scheduled classes. However, once at school they cannot leave the school until their formal classes for that day are completed.
   • It is important that students fully utilise private study periods. Regular study together with a balanced social life is the best guarantee of success in the VCE.
6. Authentication
Authentication is the term used to cover the procedures for ensuring that the work submitted by students for School Assessed Coursework (SACs) and School Assessed Tasks (SATs) is genuinely their own.
Students must submit for assessment only work that is their own. All assistance received by the student producing the work must be acknowledged and be obvious to the reader.
Students must be responsible for ensuring that the teacher has no difficulty in authenticating their work. They should understand that teachers cannot authenticate work about which they have doubts until further evidence is provided. Attendance and completing work in class are safeguards in authenticating work.

VCAA rules
If there is doubt as to the authenticity of work, the student may be requested to present before a panel of up to three teachers — the study teacher and up to two representatives of the Principal. In these cases the student will be given at least 24 hours’ notice in writing and may be accompanied by a parent or friend in a support role. At this interview the student will be given the opportunity to convince the panel of the authenticity of the work.
Where the school is satisfied, on the basis of evidence, that a student has submitted work that is not his or her own, the Principal determines the resulting action for the breach of rules in accordance with VCAA guidelines.
This action could include:
- making arrangements for a student to resubmit the work;
- refusing to accept the work;
- cancelling the result of the School Assessed Coursework.

7. Special Provision
Special provision may need to be given for students who for particular reasons are not able to fully meet the criteria for satisfactory completion of course work.
Criteria for determining eligibility for Special Provision
Special provision criteria apply to students who are affected to a significant degree by permanent disability or illness, by any factors relating to personal environment, or by other serious cause during the period in which course work has been undertaken.
It is the responsibility of the student to formally notify the Year Level Leader of the details of circumstances relating to the student’s application.

8. Course Changes
Amendments will be accepted only after appropriate negotiations take place between the student, parent, Sub-School Co-ordinator and Careers Advisor. Parents must agree to course amendments in writing prior to any changes being affected.
These decisions must be made within TWO weeks of the new semester commencing in order to ensure that:
- the increased workload for staff is not unreasonable
- the student’s workload does not become excessive. It is the student’s responsibility to ensure that all class work conducted prior to his/her arrival is completed.
VET (Vocational Education and Training)

Features of VET
- It enables students to complete a nationally-recognised vocational qualification (e.g. Certificate II in Hospitality Operations) and the Victorian Certificate of Education (VCE) at the same time
- Students can receive credit towards further study
- It is one of several vocationally-orientated school programs designed to meet the needs of industry
- It helps make school leavers more ‘job ready’ providing them with broad vocational skills and a high standard of general education

Contribution to the VCE
VET is incorporated into the VCE. Key features include:
- VET programs reflect a four unit structure
- Up to eight of the units of study may be VET units obtained across two VET programs
- Up to two of the three sequences other than English can be approved VET Unit 3 & 4 sequences
- Most VET programs contribute directly to the ATAR score

VET at Warrandyte High School
VET Interactive Digital Media and VET Sport and Recreation Units 1 & 2 are usually taken by Year 10 students but some places may be available for Year 11 students.

VET in the Mullum and Inner Melbourne Cluster
- Associations of schools established to share the delivery of VET
- State, Catholic and Independent schools are members of the Clusters
- VET information will be available from the careers office in October
- Most programs are on Wednesday afternoon
- Students are responsible for transport arrangements
- VET programs available to our students will be outlined to them during our careers counselling sessions. Please note these programs incur a cost.
Glossary

VCAA
The Victorian Curriculum Assessment Authority is the government authority responsible to the Minister of Education for conducting the VCE.

ATAR (AUSTRALIAN TERTIARY ADMISSION RANK)
The overall ranking on a scale of zero to 99.95 that a study receives based on his/her study scores. The ATAR is calculated by VTAC and used by universities and TAFE institutes to select students for courses. Formerly known as Equivalent National Tertiary Entrance Rank (ENTER).

GAT
The General Achievement Test has been established by the VCAA as a means of determining those SACs and SATs which will be reviewed. Each student undertaking a unit 3 and 4 study must complete the GAT.

LEARNING OUTCOMES
What students must know, or be able to do, by the time they have finished a unit. These outcomes are assessed by student performance in SACs and SATs.

SATISFACTORY COMPLETION
When a student has passed a unit, they get an ‘S’ for the unit. If students do not satisfactorily complete a unit, they get an ‘N’ for it.

SCHOOL ASSESSED COURSEWORK (SAC)
This assesses each student’s level of achievement on the Assessment Tasks specified in the study design. These are done in class as timed activities.

SCHOOL ASSESSED TASK (SAT)
A folio or product produced by a student in an Art or Technology study. These tasks are set and assessed using criteria set by VCAA.

SEMESTER
The equivalent of half a school year.

SEQUENCE OF UNITS
Most studies are being developed as a sequence of four units, with one unit being designed to be taken at each semester level. Units at the third and fourth semester levels are designed to be taken as a pair due to the requirements of external assessment.
STATEMENT OF RESULTS
A set of documents which formally state the results you achieved in the VCE, and whether you have graduated.

STUDIES
The subjects available in the VCE.

STUDY DESIGN
VCAA develops and approves a study design for each VCE study. The study design describes the units available within the study and outlines the objectives, broad areas of content, outcomes and assessment procedures for each unit. Schools will develop courses for units of study.

STUDY SCORE (RELATIVE POSITION)
The measure of the student’s relative position in the cohort of students undertaking the study. This is reported as a score out of 50 for each study.

UNIT
Semester length component of a study representing 50 - 60 hours of formal class time.

VCE
The VCE (Victorian Certificate of Education) is a common certificate to mark the successful completion of secondary schooling. It will be awarded to students who satisfactorily complete a program of studies normally undertaken over four semesters in Years 11 & 12.

VET
Vocational Education and Training

VTAC
Victorian Tertiary Admissions Centre. This body is involved with compilation of tertiary entrance requirements and determining aggregate scores for tertiary institutions.
Course and Career Information

It is essential Tertiary Entrance Requirements are checked before selecting VCE program.

Resources
- www.vtac.edu.au (comprehensive information for Year 10-12 students)
- The Age/Herald Sun-Tertiary Entrance Requirement supplement for Year 10 students
- VTAC guide (for Year 12 students) available online in July
- Job Guide - all students have been issued with a copy
- Careers room has all the latest tertiary information

Tertiary institutions include:
- www.latrobe.edu.au
- www.monash.edu.au
- www.deakin.edu.au
- www.rmit.edu.au
- www.swin.edu.au
- www.unimelb.edu.au
- www.acu.edu.au
- www.vu.edu.au
- www.ballarat.edu.au
- www.bhtafe.edu.au
- www.nmit.vic.edu.au
- www.angliss.edu.au

Accelerated VCE program
Year 11 students may elect to study a 3 & 4 unit (Year 12 subject) in their program. It would be expected that these students would be highly committed and have achieved high grades in Year 10. Application needs to be made to be considered for this program.
## Unit Descriptions

### COMPULSORY

- Unit 3 & 4 English

### Arts

- Unit 3 & 4 Studio Arts
- Unit 3 & 4 VET Interactive Digital Media (Certificate III)
- Unit 3 & 4 Theatre Studies
- Unit 3 & 4 Music Performance

### Business

- Unit 3 & 4 Business Management

### Health & PE

- Unit 3 & 4 Health & Human Development
- Unit 3 & 4 Physical Education

### History

- Unit 3 & 4 History (Revolutions)

### Mathematics

- Unit 3 & 4 Further Mathematics
- Unit 3 & 4 Mathematical Methods (CAS)
- Unit 3 & 4 Specialist Mathematics

### Science

- Unit 3 & 4 Chemistry
- Unit 3 & 4 Physics
- Unit 3 & 4 Psychology
- Unit 3 & 4 Biology

### Technology

- Unit 3 & 4 Food and Technology
- Unit 3 & 4 Product Design and Technology

The VCE requires at least three units of English and/or Literature to be passed, with university entry requiring a pass in both Units 3 and 4. ESL is only offered in mainstream English classes.

The following pages contain detailed descriptions of all the above listed subjects. These detailed descriptions are listed in alphabetical order by subject with the exception that all mathematics subjects are grouped together and presented in the order as listed above.
Biology

Unit 3  Signatures of Life
This unit first examines the activities of cells at a molecular level. It explores the synthesis of the major big molecules such as enzymes and DNA as well as key chemical processes such as respiration and photosynthesis. The second area of study investigates how the activities of cells are controlled and how organisms protect themselves against infection.

Outcomes
- Explain and analyse evidence from practical investigations related to biochemical processes.
- To describe and explain the coordination and regulation of an organism’s immune responses to antigens at a molecular level.

Unit 4  Continuity and Change
The first area of study focuses on molecular genetics and the mechanisms for the transmission of heritable traits. This will include a study of DNA and the technologies that allow the manipulation of genetic material. The second area of study focuses on change to genetic material over time and the nature of evidence supporting the theory of evolution. Students investigate changes in species and examine the process of natural selection. This includes an investigation of human evolution.

Outcomes
- Analyse evidence for the molecular basis of heredity and patterns of inheritance.
- Analyse and evaluate evidence for evolutionary change and relationships and describe mechanisms for change including the effect of human intervention on evolutionary processes.

Subject Levy: $20
Approximate compulsory materials cost: $30
Business Management

Unit 3
Corporate management
In this unit students investigate how large-scale organisations operate. Students examine the environment (both internal and external) in which large-scale organisations conduct their business, and then focus on aspects of individual business' internal environment and how the operations of the business are managed. Students develop an understanding of the complexity and challenge of managing large-scale organisations and have the opportunity to compare theoretical perspectives with practical applications.

Outcomes
- Discuss and analyse the context in which large-scale organisations operate.
- Discuss and analyse major aspects of the internal environment of large-scale organisations.
- Discuss and analyse strategies related to operations management.

Unit 4
Managing people and change
This unit continues the examination of corporate management. It commences with a focus on the human resource management function. Students learn about the key aspects of this function and strategies used to most effectively manage human resources. The unit concludes with analysis of the management of change. Students learn about key change management processes and strategies and are provided with the opportunity to apply these to a contemporary issue of significance.

Outcomes
- Analyse and evaluate practices and processes related to human resource management.
- Analyse and evaluate the management of change in large-scale organisations and evaluate the impact of change on the internal environment of a large scale organisation.

Entry
There are no prerequisites for entry to Units 1, 2 and 3. Students must undertake Unit 3 prior to undertaking Unit 4.

Subject Levy: $20
Chemistry

Unit 3
Chemical Pathways
This unit adopts a global perspective by examining the large scale industrial production of some chemicals. The work of chemists in these industries is examined. The investigation of quality control introduces students to a range of analytical techniques and the work of analytical chemists. The design and performance of experiments, including the generation, collection and evaluation of experimental data, are emphasised. We also look at the theory and practical applications of organic chemistry.

Outcomes
- Explain how evidence is used to develop or refine chemical ideas, knowledge and techniques.
- Use models of structure and bonding to explain the properties and applications of organic chemicals.

Unit 4
Chemistry at Work
This unit looks at the industrial production of chemicals and the energy changes associated with chemical reactions. The effects of factors such as temperature, concentration, pressure and catalysts are studied. The use of chemicals to make electricity in electric cells is emphasised.

Outcomes
- Analyse how different factors affect chemical production.
- Analyse chemical and energy changes in chemical reactions.

Subject Levy: $20
Approximate compulsory materials cost: $30
English

Unit 3
The focus of this Unit is on reading and responding both orally and in writing to a range of texts. Students analyse how the authors of texts create meaning and the different ways in which texts can be interpreted. They develop competence in creating written texts by exploring ideas suggested by their reading within the chosen context, and the ability to explain choices they have made as authors.

Outcomes:
- Reading and Responding
- Creating and Presenting
- Using Language to Persuade

Unit 4
The focus of this unit is on reading and responding in writing to a range of texts in order to analyse their construction and provide an interpretation. Students create written multimodal texts suggested by their reading within the chosen Context and explain creative choices they have made as authors in relation to form, purpose, language, audience and context.

Outcomes:
- Reading and Responding
- Creating and Presenting

Subject Levy: $20
Food and Technology

Unit 3
Food Preparation, Processing and Food Controls
In this unit students develop an understanding of food safety in Australia and the relevant national, state and local authorities and their regulations, including the Hazard Analysis and Critical Control Points (HACCP) system. They investigate the causes of food spoilage and food poisoning and apply safe work practices while preparing food.

Students demonstrate understanding of key foods, analyse the functions of the natural components of key foods and apply this information in the preparation of foods. They investigate cooking techniques and justify the use of the techniques they select when preparing key foods. Students develop an understanding of the primary and secondary processes that are applied to key foods, including food processing techniques to prevent spoilage. They also preserve food using these techniques.

Students devise a design brief from which they develop a detailed design plan. Evaluation criteria are developed from the design brief specifications. In preparing their design plan, students conduct research and incorporate their knowledge about key foods, properties of food, tools, equipment, safety and hygiene, preparation, cooking and preservation techniques. They make decisions related to the specifications of the brief. In developing the design plan, students establish an overall production timeline to complete the set of food items (the product) to meet the requirements of the brief for implementation in Unit 4.

Outcomes

- Explain the roles and responsibilities of and the relationship between national, state and local authorities in ensuring and maintaining food safety within Australia.
- Analyse preparation, processing and preservation techniques for key foods, and prepare foods safely and hygienically using these techniques.
- Develop a design brief, evaluation criteria and a design plan for the development of a food product.

Unit 4
Food Product Development and Emerging Trends
In this unit students develop individual production plans for the proposed four to six food items and implement the design plan they established in Unit 3. In completing this task, students apply safe and hygienic work practices using a range of preparation and production processes, including some which are complex. They use appropriate tools and equipment and evaluate their planning, processes and product.

Students examine food product development, and research and analyse driving forces that have contributed to product development. They investigate issues underpinning the emerging trends in product development, including social pressures, consumer demand, technological developments, and environmental considerations. Students also investigate food packaging, packaging systems and marketing.
Outcomes

- Safely and hygienically implement the production plans for a set of four to six food items that comprise the product, evaluate the sensory properties of the food items, evaluate the product using the evaluation criteria, and evaluate the efficiency effectiveness of production activities.
- Analyse driving forces related to food product development, analyse new and emerging food products, and explain processes involved in development and marketing of food products.

Subject Levy: $20
Approximate compulsory materials cost: $180
Health and Human Development

Unit 3
Australia’s Health
In this unit students will develop an understanding of the health status of Australians by investigating the burden of disease, researching the health of population groups in Australia and accounting for inequities in health status. Students will explore the determinants of health to explain variations in health status and investigate the government and non-government initiatives designed to promote health and development.

Outcomes
- Measurement of health status and the variation in health status of specific population groups
- Roles and responsibilities of governments and non-government organisations in promoting health and evaluation of diet and non-diet related initiatives to optimise health and development.

Unit 4
Global health and human development
This unit focuses on the global health and individual development exploring the factors that influence health in developing countries. It explores the interrelationship between health, human development and sustainability. Evaluation of programs related to types of aid, literacy, food security, malaria, safe water and sanitation.

Outcomes
- Similarities and differences between the health status of developing countries and Australia.
- The interrelationship between health, human development and sustainability.

Subject Levy: $20
History (Revolutions)

Unit 3
Revolutions
This unit focuses on the Russian Revolution as a means of understanding revolution as a process of dramatically accelerated social change. It examines the nature of the crisis in the old regime and considers the different theories put forward to explain the cause of revolution. It also examines the ideas utilised in the revolutionary struggle and the role of groups and individuals in bringing about radical change. The unit evaluates the consolidation of the revolution and the creation of a new society.

Outcomes
- Evaluate the role of ideas, leaders, movements and events in the revolution.
- Analyse the challenges facing the emerging new order, and the way in which attempts were made to create a new society, and evaluate the nature of the society created by the revolution.

Unit 4
Revolutions
This unit focuses on the revolution in China. It examines the nature of the crisis in the old regime and considers the different theories put forward to explain the cause of revolution. It also examines the ideas utilised in the revolutionary struggle and the role of groups and individuals in bringing about radical change. The unit evaluates the consolidation of the revolution and the creation of a new society.

Outcomes
- Evaluate the role of ideas, leaders, movements and events in the revolution.
- Analyse the challenges facing the emerging new order, and the way in which attempts were made to create a new society, and evaluate the nature of the society created by the revolution.

Subject Levy: $20
Maths flow chart

Year 7
Year 8
Year 9
Year 10

Year 11 Foundation Maths
Year 11 General Maths
Year 11 Math Methods

Year 12 Further Maths
Year 12 Math Methods
Year 12 Specialist Maths
Maths – Further Mathematics

Unit 3
Students practise mathematical algorithms, routines and techniques and use them to solve standard problems; apply mathematical knowledge and skills in unfamiliar situations which require investigative, modelling or problem-solving approaches and use technology to learn mathematics and apply it in different contexts.

Unit 3 consists of the study of the core section of ‘data analysis’ which covers the presentation, summary, description and analysis of univariate data and bivariate simple data. The module of ‘geometry and trigonometry’ covers the trigonometric ratios, similar triangles, Pythagoras theorem, basic properties of triangles and applications to regular polygons and applications to various two-dimensional and three-dimensional shapes.

Outcomes
- Knowledge of key concepts, skills and applications.
- Application of data analysis skills and concepts.
- Use of technology in mathematical investigations.

Unit 4
Unit 4 involves the study of two of the modules. The ‘graphs and relations’ module covers the graphical representation and analysis of linear and non-linear relations as model for various practical contexts as well as graphical and algebraic approaches to solving equations and inequalities. The ‘matrices’ module covers the matrix representation of discrete data in regular arrays, and the application of matrix arithmetic to the analysis of problems in practical situations. Technology is to be used to carry out computations as applicable.

Outcomes
- Knowledge of key concepts, skills and applications.
- Application of data analysis skills and concepts.
- Use of technology in mathematical investigations.

Subject Levy: $20
Maths – Mathematical Methods CAS

Assumed knowledge and skills for Mathematical Methods (CAS) Units 3 & 4 are Mathematical Methods (CAS) Units 1 & 2.

Unit 3
Students practise mathematical algorithms, routines and techniques and use them to solve standard problems; apply mathematical knowledge and skills in unfamiliar situations which require investigative, modelling or problem-solving approaches and use technology appropriately and effectively to learn mathematics and apply it in different contexts.

Unit 3 has a focus on the following areas of study including: Functions and graphs which cover polynomials and modulus functions. Exponential and logarithmic functions, circular functions, graphs of sum, difference, product and composite functions, graphical and numerical solution of equations, graphs of inverse functions: Application and interpretation of combinations of these graphs. Algebra covers the functions including composition of functions, simple functional equations, inverse functions and the solution of equations. This area of study includes the identification of appropriate solution processes for solving equations, and systems of simultaneous equations, presented in various forms. It covers recognition of equations and systems of equations that are solvable using inverse operations or factorisation and the use of graphical and numerical approaches for problems involving equations where exact value solutions are not required or which are not solvable by other methods. This should support work in the other areas of study.

Outcomes
- Knowledge of key concepts and skills
- Application of mathematical processes in non-routine contexts
- Use of the (CAS) calculator and other technologies in mathematical investigations.

Unit 4
Unit 4 has a focus on the following areas of study including calculus continuity and limits; the gradient function; derivatives of polynomials and other functions; the chain rule; the product rule; the quotient rule. Applications of differentiation, rates of change, stationary points, maximum and minimum values, related rates of change. Integration and its applications, anti-differentiation of algebraic expressions and other functions, areas under curves, definite integrals, the areas between two curves. Probability covers discrete random variables and discrete probability distributions; the binomial probability distribution. Continuous random variables and Continuous probability distributions; the normal distribution.

Outcomes
- Knowledge of key concepts and skills
- Application of mathematical processes in non-routine contexts
- Use of the (CAS) calculator and other technologies in mathematical investigations.

Subject Levy: $20
Maths - Specialist Mathematics

**Specialist Mathematics Units 3 & 4 assumes concurrent or previous study of Mathematics Methods (CAS) Units 3 & 4.**

**Unit 3**
It involves the study of material from the areas of study: ‘coordinate geometry’, ‘functions, relations and graphs’, ‘algebra’, ‘calculus’, ‘vectors’ and ‘mechanics’. This extends and further develops material from Mathematical Methods Units 3 and 4 and also introduces new content.

Students practise mathematical algorithms, routines and techniques and use them to solve standard problems, apply mathematical knowledge and skills in unfamiliar situations which require investigative, modelling or problem-solving approaches and use technology appropriately and effectively to learn mathematics and apply it in different contexts.

Unit 3 has a focus on functions, relations and graphs which covers simple power functions of integer powers, reciprocal functions of quadratic functions and circular functions, inverse circular functions, relations representing circles, simple ellipses and hyperbolas in Cartesian and parametric forms, graphical representation of these functions and relations and the analysis of key features of their graphs. The area of algebra is covered with the focus on complex numbers and calculus including differential and integral calculus. The arithmetic and algebra of vectors topic is also covered.

**Outcomes**
- Knowledge of key concepts, skills and applications.
- Application of mathematical processes in non-routine contexts.
- Use of technology in mathematical investigations.

**Unit 4**
Unit 4 covers Kinematics including rectilinear motion, the calculus of differential equations and vector calculus. The area of mechanics is also covered which involves statics and an introduction to Newtonian mechanics, for both constant and variable acceleration.

**Outcomes**
- Knowledge of key concepts, skills and applications.
- Application of mathematical processes in non-routine contexts.
- Use of technology in mathematical investigations

**Subject Levy: $20**
Music Performance

Unit 3: Music Performance
This unit prepares students to present convincing performances of selected group and solo music works representing a range of styles and diversity of character for performance. They develop instrumental techniques that enable them to interpret and expressively shape their performances. They also develop an understanding of performance conventions they can use to enhance their performance. Students develop skills in unprepared performances, aural perception and comprehension, transcription, music theory and analysis. The focus for analysis in Area of Study 3 is works and performances by Australian Musicians

Outcomes
- **Performance**: Present an informed, accurate and expressive performance of a program of group and solo works.
- **Performance technique**: Demonstrate performance techniques technical work and exercises, and describe their relevance to the performance of their program.
- **Musicianship**: Identify, re-create, notate and transcribe short excerpts of music and discuss the interpretation of expressive elements in pre-recorded works.

Unit 4: Music Performance
In this unit students refine their ability to present convincing performances of selected group and solo music works selected in Unit 3. They further develop and refine instrumental techniques that enable them to interpret and expressively shape their performances and communicate their understanding of the style of each work. Students continue to develop skills in unprepared performances, aural perception and comprehension, transcription, music theory and analysis. Students continue to study ways in which Australian performers interpret works that have been created since 1910 by Australian composers/songwriters.

Outcomes
- **Performance**: Prepare and present accurate and expressive of informed interpretations of a program of group and solo works.
- **Performance technique**: Demonstrate performance techniques and technical work and exercises, and discuss their relevance to performance of selected works, and present an unprepared performance.
- **Musicianship**: Identify, re-create, notate and transcribe short excerpts of music and analyse the interpretation of expressive elements of music have been interpreted in pre-recorded works.

Subject Levy: $20
** Additional ensemble and instrumental music fees will apply
Physical Education

Unit 3
Physical Activity Participation & Physiological Performance
This unit introduces students to an understanding of physical activity and sedentary behaviour from a participatory and physiological perspective. Students apply methods to assess physical activity levels, study and apply the social-ecological model in promoting participation in regular physical activity. Students investigate the contribution of energy systems to performance in physical activity, the causes of fatigue and ways to manage fatigue, promoting recovery.

Outcomes
- **Monitoring and promotion of physical activity**: analysing individual and population levels of sedentary behaviour and participation. Evaluating initiatives / strategies that promote the National Physical Activity Guidelines.
- **Physiological responses to physical activity**: explore the various systems and mechanisms associated with the energy required for human movement. Students also consider the contributing factors to fatigue as well as recovery strategies.

Unit 4
Enhancing Performance
Students undertake an activity analysis investigating the required fitness components, participating in a training program designed to improve/maintain selected components. Students critically evaluate different techniques practices and looking at the rationale for the banning or inclusion of various practices from sporting competition.

Outcomes
- **Planning, implementing and evaluating a training program**: ability to plan, implement and evaluate training programs to enhance specific fitness components.
- **Performance enhancement and recovery practices**: explores nutritional, physiological and psychological strategies used to enhance performance and promote recovery.

Subject Levy: $20
Approximate compulsory materials cost: $30
Physics

Unit 3
Area 1: MOTION
Topics covered include: Newton’s Laws, circular motion, forces projectiles, relative speeds, momentum, energy and gravity.
Area 2: ELECTRONICS & PHOTONICS
Topics covered include: current, voltage & power in series and parallel circuits, LEDs, LDRs, amplifiers, rectification, circuit design, transducers, light sensitive devices, energy changes in circuits, information transfer and safety.
Area 3: STRUCTURES & MATERIALS
Topics include: Forces on buildings & structures (compression, tension, shear, bending), Young’s Modula, stress and strain, material strength, strain energy, stress Vs strain graphs, toughness, plastic stretch, stiffness, brittleness, ductility, reinforcing, safety in building and torques.

Outcomes
- The ability to use the Newtonian model in 1 & 2 dimensions to describe and explain transport, motion and related aspects of safety and motion in space
- The ability to compare and explain the operation of electronic and photonic devices and analyse their use in domestic and industrial systems
- The ability to compare and explain the properties of construction materials, and model the effects on structures and materials of forces and loads.

Unit 4
Area 1: ELECTRIC POWER
Topics covered include: Magnetic fields, magnetic flux, Faraday’s Law, Lenz’s Law, AC/DC generators and motors, RMS values, transformers, power generation and transmission.
Area 2: LIGHT & MATTER
Topics covered include: wave nature of light, interference patterns, diffraction, photoelectric effect, photons, quantum effects, wave-particle duality, atomic spectra, standing energy waves.
Area 3: SOUND
Topics covered include: sound waves, intensity and loudness, resonance, microphones and loudspeakers, hi-fidelity sound, diffraction, sound recording and reproduction.

Outcomes
- The ability to explain the operation of electric motors, generators and alternators and the generation, transmission and use of electric power
- The ability to use wave and photon models to explain the interactions of light and matter and the quantised energy levels of atoms
- The ability to use a “wave model” of sound to describe and evaluate the recording of sound.

Subject Levy: $20
Approximate compulsory materials cost: $30
Product Design and Technology

Unit 3: Applying the Product Design Process
In this unit students are engaged in the design and development of a product that meets the needs and expectations of a client and/or an end-user, developed through a design process and influenced by a range of complex factors. These factors include the purpose, function and context of the product; human centred design factors; innovation and creativity; visual, tactile and aesthetic factors; sustainability concerns; economic limitations; legal responsibilities; material characteristics and properties; and technology. Design and product development and manufacture occur in a range of settings. An industrial setting provides a marked contrast to that of a ‘one-off situation’ in a small ‘cottage’ industry or a school setting. Although a product design process may differ in complexity or order, it is central to all of these situations regardless of the scale or context. This unit examines different settings and takes students through the Product design process as they design for others.

In the initial stage of the Product design process, a design brief is prepared. It outlines the context or situation around the design problem and describes the needs and requirements in the form of constraints or considerations.

Outcomes
- Able to explain the roles of the designer, client and/or end-user/s, the Product design process and its initial stages, including investigating and defining a design problem, and explain how the design process leads to product design development.
- Able to explain and analyse influences on the design, development and manufacture of products within industrial settings.
- Able to present a folio that documents the Product design process used while working as a designer to meet the needs of a client and/or an end-user, and commence production of the designed product.

Unit 4: Product Development and Evaluation
In this unit students learn that evaluations are made at various points of product design, development and production. In the role of designer, students judge the suitability and viability of design ideas and options referring to the design brief and evaluation criteria in collaboration with a client and/or an end-user. Comparisons between similar products help to judge the success of a product in relation to a range of Product design factors. The environmental, economic and social impact of products throughout their life cycle can be analysed and evaluated with reference to the Product design factors.

Outcomes
- Able to compare, analyse and evaluate similar commercial products, taking into account a range of factors and using appropriate techniques.
- Able to safely apply a range of production skills and processes to make the product designed in Unit 3, and manage time and resources effectively and efficiently.

- Able to evaluate the outcomes of the design, planning and production activities, explain the product’s design features to the client and/or an end-user and outline its care requirements.

**Subject Levy: $20**
**Approximate compulsory materials cost: $90**
Psychology

Unit 3
This unit focuses on the study of the relationship between the brain and the mind through examining the basis of consciousness, behaviour, cognition and memory. Advances in brain research methods have opened new ways to understanding the relationship between mind, brain and behaviour. Students study the structure and functioning of the human brain and nervous system, and explore the nature of consciousness and altered states of consciousness including sleep. The brain continually receives and processes vast amounts of information from its internal and external environment. Memory involves the selective retention and retrieval of this information and it plays an important role in determining behaviour. Students consider the function of the nervous system in memory and investigate the ways in which information is processed, stored and utilised. They apply different theories of memory and forgetting to their everyday learning experiences.

Outcomes
- Mind, Brain and Body: relationship between the brain, states of consciousness including sleep, and behaviour.
- Memory: compare theories that explain the neural basis of memory and factors that affect its retention, and evaluate the effectiveness of techniques for improving and manipulating memory.

Unit 4
This unit focuses on the interrelationship between learning, the brain and its response to experiences, and behaviour. Students investigate learning as a mental process that leads to the acquisition of knowledge, development of new capacities and changed behaviours. Students build on their conceptual understanding of learning to consider it as one of several important facets involved in a bio-psychosocial approach to the analysis of mental health and illness. They consider different concepts of normality, and learn to differentiate between normal responses such as stress to external stimuli, and mental disorders. Students use a bio-psychosocial framework – a conceptual model which includes psychological and social factors in addition to biological factors in understanding a person’s mental state – to explore the nature of stress and a selected mental disorder.

Outcomes
- Learning: explain the neural basis of learning, and compare and contrast different theories of learning and their applications
- Mental Health: differentiate between mental health and mental illness, and use a bio-psychosocial framework to explain the causes and management of stress and a selected mental disorder.

Subject Levy: $20
Studio Arts

Unit 3
Studio production and professional art practices
This unit focuses on the implementation of an individual design process leading to the production of a range of potential directions. Students develop and use an exploration proposal to define an area of creative exploration. They plan and apply a design process to explore and develop their individual ideas. Analysis of these explorations and the development of the potential directions is an intrinsic part of the design process to support the making of finished artworks in Unit 4.

Outcomes
- Prepare an exploration proposal that formulates the content and parameters of an individual design process, that includes a plan of how the proposal will be undertaken.
- Present an individual design process that produces a range of potential directions and which reflects the concepts and ideas documented in the exploration proposal.
- Discuss art practices in relation to particular artworks of at least two artists and analyse ways in which artist develop their styles.

Unit 4
Studio production and art industry contexts
This unit focuses on the production of a cohesive folio of finished art works. To support the creation of the folio, students present visual and written documentation explaining how selected potential directions generated in Unit 3 were used to produce the cohesive folio of finished artworks. These artworks should reflect the skilful application of materials and techniques, and the resolution of ideas and aesthetic qualities.

- Present a cohesive folio of finished artworks, based on selected potential directions developed through the design process, that demonstrates skilful application of materials and techniques and that realises and communicates the student’s ideas.
- Provide visual and written documentation that identifies the folio focus and evaluates the extent to which the finished artworks reflect the selected potential directions, and effectively demonstrates a cohesive relationship between the works.
- Examine and explain the preparation and presentation of artworks in at least two different exhibition spaces, and discuss the various roles, processes and methods involved in the exhibition of art works.

Subject Levy: $20
Approximate compulsory materials cost: $90
Theatre Studies

Unit 3
Production development
Students develop an interpretation of a playscript through the four designated stages of production: planning, production development, production season, and production evaluation. Students analyse the influence of stagecraft on the shaping of the production. Students also attend a performance selected from the prescribed Theatre Studies Unit 3 Playlist published annually in the VCAA Bulletin, and analyse and evaluate the interpretation of the playscript in the performance.

Outcomes
- Apply stagecraft to interpret a playscript for performance to an audience and demonstrate understanding of the stages of the production process.
- Analyse the use of stagecraft in the development of a playscript for production, incorporating the specifications appropriate for each stage of the production process.
- Analyse and evaluate ways in which a written playscript selected from the prescribed playlist is interpreted in its production to an audience.

Unit 4
Performance interpretation
Students study a scene and associated monologue from the Theatre Studies Performance Examination (monologue list) published annually by the Victorian Curriculum and Assessment Authority, and develop a theatrical brief that includes the creation of a character by an actor, stagecraft possibilities, and appropriate research. Students interpret a monologue from within a specified scene through acting and other appropriate areas of stagecraft. Students attend a performance selected from the prescribed Theatre Studies Unit 4 Playlist published annually in the VCAA Bulletin and analyse and evaluate acting in the production.

Outcomes
- Perform an interpretation of a monologue from a playscript.
- Develop a theatrical brief that presents an interpretation of a scene.
- Analyse and evaluate acting in a production from the prescribed playlist.

Subject Levy: $20
VET Interactive Digital Media

Unit 3 and 4
The aims of the Certificate III in Interactive Digital Media are to provide students with the skills, knowledge and attitudes for employment and training in interactive multimedia.

This qualification provides a wide range skill development including:
- graphic design using software applications such as Photoshop, Illustrator and Flash
- writing and instructional design
- sound recording and editing
- video recording and editing
- webpage design and editing using applications such as Dreamweaver
- Web 2.0 technologies

Upon successful completion of Units 1, 2, 3 and 4 students will receive a nationally recognised TAFE certificate. The Unit 3 & 4 sequence also comprises units for the completion of VCE. Unit 3 & 4 scored assessment tasks contribute to the student’s tertiary entrance score

Units 3 & 4 comprise the following modules:
- Create 2D digital animations
- Write content for a range of media
- Explore and apply the creative design process to 2D forms
- Author interactive sequences
- Prepare video assets
- Create visual design components

Assessment is made up of three coursework tasks, worth 66% of the overall study score and an end of year examination, worth 34% of the overall study score.

Subject Levy: $0