



Springside  
West

Secondary College

# Senior Years Course Selection Handbook

2020

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# INTRODUCTION

This handbook is a resource for students and parents/guardians, which outlines the Victorian Certificate of Education [VCE] curriculum and Victorian Certificate of Applied Learning [VCAL] programs offered at Springside West Secondary College across Years 11 and 12.

This handbook is designed to assist students and parents in understanding the structure of the VCE and VCAL and the various options available to students. It is also designed as a tool to assist with the subject selection process, in order to support students' career aspirations and associated pathways beyond secondary school.

This handbook has three sections:

- Post-Compulsory Education Options
- Course Selection Process
- Description of Course Options\*

*\*Please note: All subject offerings at Springside West Secondary College are dependent upon sufficient student numbers per class.*

In addition to this handbook, students are able to access a wide variety of resources to assist with their course planning for Years 11 and 12. These include:

- VTAC website - <http://www.vtac.edu.au/>
- VCAA *Where To Now Guide* - <http://www.vcaa.vic.edu.au/vce/publications/wheretonow/index.html>
- VTAC *ABC of Scaling* - <http://www.vtac.edu.au/pdf/publications/abcofscaling.pdf>
- VCAL *Information Guide* - <http://www.vcaa.vic.edu.au/pages/vcal/students/index.aspx>

Students should also take advantage of any career or course related opportunities that arise, including open days and career expos. A list of tertiary sector open days can be found at the VTAC website [above]. Alternatively, students can seek assistance from their All You Can Be teacher and Year Level Coordinator.

# YEAR 11 & 12

## POST COMPULSORY EDUCATION OPTIONS

There are two types of programs available to students at Springside West Secondary College:

- Victorian Certificate of Education [VCE]
- Victorian Certificate of Applied Learning [VCAL]

Within each of these programs students have the opportunity to participate in a Vocational Education and Training (VET) course of their choice.

### VICTORIAN CERTIFICATE OF EDUCATION [VCE]

Participation in a VCE program provides students with the opportunity of completing a senior school certificate by selecting from a range of studies including VET. Students are able to focus on studies that will provide a pathway to University, TAFE or employment.

The Victorian Certificate of Education is a program that is designed to be taken over a minimum of two years. Each subject offered at VCE is broken up into 4 units. Each unit lasts one semester. Most studies offer four units, but students do not necessarily have to take all four units for a particular subject.

### SUMMARY OF VCE REQUIREMENTS:

A VCE program will normally be made up of 22 units completed over two years. Students usually complete 12 Units [6 subjects] of Units 1 & 2 in Year 11 before proceeding to 10 Units [5 subjects] of Units 3 & 4 in Year 12. It is possible for Year 11 students who have demonstrated ability to select a Unit 3 & 4 study in their first year. This is subject to approval from the school and is also dependent upon availability within classes.

Understanding the two levels of units within the VCE:

- Units 1 and 2 - These are usually taken in the first year of the VCE program in Year 11. Most students take both units in a study, but it is possible in Year 11 [subject to timetabling constraints] to take only one unit of a particular study.
- Units 3 and 4 - These are more advanced and are mostly taken in Year 12. Units 3 and 4 must be studied as a sequence - that is, if you take Unit 3 of any study, you must also take Unit 4.

### SATISFACTORY COMPLETION OF THE VCE

The Victorian Curriculum and Assessment Authority [VCAA] sets these minimum requirements for satisfactory graduation of the VCE.

The VCE is awarded on the basis of satisfactorily completing at least 16 units. This minimum of 16 must include:

- At least 3 units of an English study [*of either English, EAL, English Language or Literature*] from Units 1-4 in all, including a Unit 3 and 4 sequence AND
- At least three unit 3 and 4 studies other than the compulsory English study

These are the minimum graduation requirements for the VCE. Please note that entry into certain tertiary courses may require prerequisite subjects and ATAR scores well beyond the minimum requirements.

## THE ENGLISH REQUIREMENT

In order to qualify for an Australian Tertiary Admission Rank [ATAR] you must obtain a pass in a Unit 3 and 4 English study. The English study may be selected from any of the following studies:

- English [Units 3 & 4]
- English Language [Units 3 & 4]
- Literature [Units 3 & 4]
- English as an Additional Language [Units 3 & 4]

*Please note: Eligibility criteria apply for EAL. The range of English studies on offer [other than 'English' Units 3 & 4] in a particular year is subject to timetable constraints.*

If a student does more than the four units of English studies, the extra units will be counted simply as additional VCE units, as is the case with any other VCE subject.

In calculating the ATAR, any English Units 3 & 4 will be counted as part of the primary four studies. [For more information on how the ATAR is calculated, see below]

## SATISFACTORY COMPLETION OF UNITS

Procedures for the assessment of levels of achievement in Units 1 and 2 are a matter for each school to decide in alignment with the Victorian Curriculum and Assessment Authority [VCAA] VCE Study Designs. The award of satisfactory completion for a unit is based on a decision that the student has demonstrated achievement of the set of outcomes specified for the unit. This decision will be based on the teacher's assessment of the student's performance in the unit. This includes, but is not limited to, student performance in assessment tasks. Students must also abide by all school and VCAA policies including authentication and attendance policies. The school's VCE and VCAL Handbook provides more details about these policies and can be accessed on the SWSC website.

In Units 3 and 4, the VCAA will supervise the assessment of all students. Students' levels of achievement will be determined by a combination of School-Assessed Coursework [SAC], School-Assessed Tasks [SAT - relevant to only a few subjects], and end-of-year examinations, which may be written, oral or performance. Students undertaking a Unit 3 & 4 sequence will also sit the General Achievement Test [GAT] each year.

At Unit 3 and 4 level, there are three Graded Assessments for each study, consisting of School-assessed Coursework (SACs), School-assessed Tasks (SATs) and examinations. The Graded Assessments are different for each study and contribute towards the study score in different ways. If you complete at least two Graded Assessments, and have satisfactorily completed both Unit 3 and 4, you will be awarded a study score. The study score is reported on a scale of 0 - 50. This is a measure of how well the student performed in relation to all others who took the study.

Information about specific assessments and timelines will be provided by teachers at the beginning of each school year in line with the appropriate VCAA Study Design and Assessment Handbooks.

## CALCULATION OF THE ATAR

For each study, VCE students will obtain a Study Score [relative position] out of 50 based on the grades awarded for examinations, school-assessed tasks [SAT] and school-assessed coursework [SAC]. The ATAR will take into account the study score for:

- An approved Unit 3 & 4 sequence in the English group,
- The applicant's best three other scores, and
- 10% of the applicant's next two best scores

English and the best three other scores are called the *primary four*.

Important points to note about the ATAR:

- Prerequisite studies are not necessarily required to be in the best four when calculating the ATAR; therefore students have greater freedom in subject choice. However, note that many universities have minimum study scores as part of their prerequisites.
- No more than two studies within the following subject areas may be included in the primary four:
  - LOTE
  - Mathematics
  - Music
  - Information Technology
  - History
  - English [with the exception of English and EAL]
- See the document ABC of Scaling for an explanation of the subject scaling process <http://www.vtac.edu.au/pdf/publications/abcofscaling.pdf>
- To encourage the study of languages, a further adjustment is made during the scaling process. Each LOTE is adjusted up by adding five to the initial ATAR subject score average. All students of a LOTE receive an adjustment, but it is not a uniform adjustment. For scores at or close to 30, the adjustment is 5, but the adjustment decreases as the score moves away from 30. This bonus on the study scores is also added on to a second LOTE.
- There will be no penalty for taking VCE over more than two years. However, time taken to complete the VCE may be taken into account by some tertiary institutions. Please check with individual universities. Accumulation of a further study or studies in a later year will lead to the calculation of a new ATAR. Any subsequent ranking and course entry will be based on the most current ATAR.

## PREREQUISITE STUDIES FOR ADMISSION TO PARTICULAR TERTIARY COURSES

Knowledge of tertiary prerequisites is important as it will help students to select subjects which keep career pathways and options open. Information about prerequisites is published by the Victorian Tertiary Admissions Centre [VTAC] in July of each year. Students are encouraged to obtain information from a range of institutions when making their subject selections, as prerequisites vary between different tertiary providers.

# VICTORIAN CERTIFICATE OF APPLIED LEARNING [VCAL]

Participation in a VCAL program provides students the opportunity of completing a senior secondary certificate. The program is designed for students with a clear career focus in a particular industry/trade. Students selecting this pathway will improve their literacy and numeracy skills, complete industry specific training and undertake regular work placement.

Students who complete a VCAL program may go on to undertake a TAFE course, pre-apprenticeship, apprenticeship or begin full time employment. It is possible for VCE students to transfer into a VCAL program.

## SUMMARY OF VCAL REQUIREMENTS

A VCAL program comprises of:

- Four core strands of learning in the classroom at school:
  - Numeracy
  - Literacy
  - Personal Development
  - Work related skills
- Industry Specific Skills [either a VET program or a TAFE program in a specific industry]
- Structured Workplace Learning

## SATISFACTORY COMPLETION OF THE VCAL

Students generally complete 12 VCAL units each year and complete their VCAL Senior certificate over two years. A unit can consist of a VCAL strand, a VCE unit or a VET unit.

A student is awarded a VCAL Senior Certificate when they gain credits for 10 units. Of these 10 units, at least six must be of senior (Year 12) level. Of these six:

- At least one must be senior literacy and one must be senior personal development
- At least two must be VCAL units
- At least one must be a numeracy unit
- At least one must be a VET unit
- At least one must be a work related skills unit

## SATISFACTORY COMPLETION OF UNITS

Students completing the VCAL undertake competency based assessment. Their skills must be directly observed several times by the teacher. Students have multiple opportunities to seek feedback and resubmit tasks to be able to demonstrate competency.

Assessment methods include but are not limited to: observation, portfolio, reports, debates, case studies and workplace logs.



## MORE INFORMATION

For more detailed information about the VCAL program in schools, including frequently asked questions, please visit the Victorian Curriculum and Assessment Authority website at: <http://www.vcaa.vic.edu.au/Pages/vcal/students/studentfaq.aspx>

## VOCATIONAL EDUCATION AND TRAINING [VET]

VET courses are nationally recognised programs enabling students to obtain an accredited qualification in a number of areas. These courses can be used as part of a student's VCE or VCAL program contributing towards their ATAR or VCAL Certificate.

The VET clusters available to students at Springside West Secondary College are:

- Brimbank Cluster
- Melton Cluster

# IMPORTANT QUESTIONS TO CONSIDER

## HOW DO YOU BEGIN PLANNING?

Students should plan their units in VCE so that they have a number of options after VCE. This may mean a number of choices within a general interest area, or a number of choices that run across interest areas. This approach is important for a number of reasons:

During the VCE students often change their mind about what they want to do after Year 12 and therefore must have enough flexibility in their unit choice to permit this.

Some students will start individual subjects and find that they are not interested or motivated in that area. Therefore they should have sufficient subject breadth to be able to change direction.

Other students will find they do not perform well in a particular unit and need to change units or particular career paths.

VCE unit choice must provide the student with flexibility and a number of options at the end of Year 12. Unit choice that locks a student into one career direction is not a realistic approach.

Students are able to change their subject choices at the end of Semester 1 for Unit 1 & 2 studies but Units 3 & 4 studies must be completed as a sequence. Year 11 students are encouraged to consult subject and careers teachers before making requests to change subjects.

Finally, students must face the realities of life at the end of VCE. Work is extremely difficult to obtain and further education is highly competitive. Therefore, students must be flexible enough in their subject choice and attitude to be able to consider a number of different career paths after VCE or the VCAL.

## HOW DO YOU CHOOSE YOUR SUBJECTS?

Find out about prerequisites (units in the VCE that you must satisfactorily complete to be eligible to apply for a University or TAFE course). Remember that prerequisites can include Unit 1 & 2 studies as well as Units 3 & 4 studies. In addition to prerequisites some courses will also consider your performance in other studies to assist them to pick the student most suited to their course.

After identifying studies that you **MUST** do, students should then consider two other factors -studies that they enjoy and studies that they are good at. Students should carefully read the subject descriptions and consider the content of each subject and ways in which each subject is taught.

It is worth checking for the studies you are interested in, whether there is advice about doing some units before attempting others. For example, if you are interested in studying Chemistry it is recommended that you do Unit 1 or Unit 2, or both, before attempting a sequence of Units 3 and 4 [or have equivalent experience or be willing to do some preparatory work].

## WHAT DO THE NUMBERS IN THE VCE UNIT TITLES MEAN?

Each unit has a number: 1, 2, 3 or 4. Most studies are made up of four units. Each unit lasts for one semester or a half year, and represents approximately 100 hours of work conducted both within and outside the classroom. Units 1 and 2 are usually undertaken in the first year of VCE (Year 11). Units 1 and 2 can be studied separately or as a sequence. Units 3 and 4 are generally taken after Units 1 and 2 (in Year 12) and are of a higher level of difficulty. Units 3 and 4 must be studied as a sequence. Unit 3 can only be offered in the first half of the year and Unit 4 can only be offered in the second half of the year. This means that if you enrol in Unit 3 of a study, you are expected to go on and do the Unit 4 that makes up the pair. It also means that you cannot do a Unit 4 without doing the Unit 3 that precedes it.

## CAN YOU DO A UNIT 3 & 4 VCE STUDY IN YEAR 11?

Yes. Students can undertake a Unit 3 & 4 study in their first year of the VCE. Students should only choose this option if they are a highly able student and should carefully consider the advice of their course counsellor as to the best Unit 3 & 4 study to select. Not all VCE courses can be accessed at Unit 3 & 4 level without completion of the respective Unit 1 & 2 course. It is advised that all students undertake VCE courses with the aim of completing the full Units 1 - 4 sequence of study.

## CAN YOU STUDY A VCE UNIT TWICE?

Yes. You can do a unit twice if you want to, but you can only get credit once for that unit towards the award of the certificate.

## CAN YOU REPEAT A VCE UNIT 3 & 4 STUDY?

Yes. Students can repeat a Unit 3 & 4 study in the hope of improving their Study Score. There is no penalty imposed. The best Study score will be the only one considered in the calculation of your ATAR.

## CAN YOU INCLUDE VET AS PART OF YOUR VCE PROGRAM?

Yes, most VET courses can contribute to the completion of the VCE Certificate and also your ATAR score. Some 1st Year VET courses are equivalent to the completion of VCE Units 1 and 2 while 2nd Year VET courses are equivalent to the completion of VCE Units 3 and 4. The list of VCE VET programs can be found here: <http://www.vcaa.vic.edu.au/Pages/vet/programs/index.aspx>.

## CAN YOU MOVE BETWEEN VCE AND VCAL CERTIFICATES?

Students who are unsure about whether they should complete a VCE or VCAL certificate, or have been recommended to complete VCAL but wish to attempt VCE, should enrol in a VET subject. Enrolling in a VET subject ensures that students have the option of moving from VCE in to VCAL. Any previously completed VCE units can subsequently contribute to the VCAL Senior Certificate. Please note however, a student cannot move from VCAL in to VCE.

## WHAT HAPPENS IF I HAVE PROBLEMS COMPLETING WORK ON TIME?

A written description of the *Assessment Tasks* to be completed for each unit will be provided for each student along with a definite due date set by the teacher for all these tasks. Students who expect difficulty meeting the due date should discuss this with their class teacher well before the due date. In some cases an extension of time may be granted in accordance with the SWSC Assessment Policy.

## WHAT HAPPENS IF I FACE PROBLEMS DURING MY VCE?

Special Provision is designed to allow students who are experiencing significant hardship or difficulties and who are unable to perform at an optimum level, the opportunity to demonstrate what they know and what they can achieve. There are a number of special applications which can be made:

1. Special attendance arrangements or variations to school assessment coursework (SACs) are available for students seriously affected with short term hardship.
2. Special examination arrangements, such as extra time, use of a scribe etc...: are available for students who require specific assistance during exams. .
3. The calculation of a *derived score* is available for a student who is unable to sit an exam or is seriously disadvantaged at the time.
4. VTAC Access and Equity Applications are available for a number of disadvantage categories such as social disadvantage or family circumstances.
5. VTAC Chronic Circumstances Application is available for students who have been seriously disadvantaged for a prolonged period during their studies.

# PATHWAYS AFTER SENIOR SECONDARY SCHOOL

When a student moves from Year 10 into the VCE or VCAL, it is important to make a subject plan for the two years that follow. While students may change subjects and possible directions within these two years, an overall plan allows for clarity and flexibility.

At the end of Senior Secondary School, students face a number of post-secondary options:

- Work: many forms of work will involve on-the-job training or skills retraining and updating.
- Training: Traineeship or apprenticeship.
- Further Education: within the TAFE or Higher Education Sector/University [see below]

## THE TAFE SECTOR

Colleges of TAFE offer a wide range of courses for students, from short courses (including pre-apprenticeships) to Certificate, Advanced Certificate, Diploma and Associate Diploma courses. Many of the longer courses now require completion of Year 12 and/or an ATAR as an entry requirement.

## HIGHER EDUCATION SECTOR / UNIVERSITY

Entry into degree and diploma courses at the higher education level requires successful completion of Year 12 with scored assessment, ATAR, (with many institutions requiring specific prerequisite units) or completion of a TAFE pathway course.

It is important that students consider a variety of actual career directions in each of the areas; so that they are able to plan when selecting subjects and so they have a choice at the end of Year 12

## VOCATIONAL GUIDANCE AND COURSE RESEARCH DIRECTORY

TAFE Course Directories -This book lists all the available courses in the TAFE system, the colleges (and campuses) at which they are offered and the prerequisites required. Tertiary Institution Handbooks -Lists all the courses available and the prerequisites.

Centrelink Career Information Centre: First Floor, 176 Bridge Road Richmond Vic 3121

JOB GUIDE: <http://www.jobguide.deewr.gov.au/> lists approximately 600 occupations, the description involved and the training required.

COURSELINK [www.vtac.edu.au](http://www.vtac.edu.au) A computer program where students are able to list their VCE subjects and the program will give them a list of institutions and courses for which they are eligible. Follow link at VTAC website.

VCAA: [www.vcaa.vic.edu.au](http://www.vcaa.vic.edu.au) for all VCE information, including course outlines and past exams.

MYFUTURE: [www.myfuture.edu.au](http://www.myfuture.edu.au) is a comprehensive career information service. It has a career exploration tool, career information, advice for those supporting others making decisions. GOING TO UNI: [www.goingtouni.gov.au](http://www.goingtouni.gov.au) gives information for Commonwealth supported students about costs and payments of fees. It replaces HECS.

CAREER ONE: [www.careerone.com.au](http://www.careerone.com.au) Australian Government's key employment program

CAREERS THAT GO: [www.careersthatgo.com.au](http://www.careersthatgo.com.au) is designed to give students a better understanding of where the study of science, technology, and maths can take them.

JOBSEARCH: <http://jobsearch.gov.au/> Education site of Department of Youth Affairs. Includes Australian Job Search – providing a listing of jobs available, in categories and locations.

CAREERS ONLINE: [www.careersonline.com.au](http://www.careersonline.com.au) Excellent Job Search Site, with information modelled on Job Guide, including details of training and descriptions of 1000+ jobs.

APPRENTICESHIPS AND TRAINEESHIPS: <http://www.australianapprenticeships.gov.au/>. Targets students, employees, job seekers and careers teachers with information on all aspects of new apprenticeships, training, wages and case studies of individuals.

## TERTIARY INSTITUTIONS INFORMATION

Monash:	<a href="http://www.monash.edu.au">www.monash.edu.au</a>
Melbourne:	<a href="http://www.unimelb.edu.au">www.unimelb.edu.au</a>
Latrobe:	<a href="http://www.latrobe.edu.au">www.latrobe.edu.au</a>
Deakin:	<a href="http://www.deakin.edu.au">www.deakin.edu.au</a>
Ballarat:	<a href="http://www.ballarat.edu.au">www.ballarat.edu.au</a>
Swinburne:	<a href="http://www.swin.edu.au">www.swin.edu.au</a>
Victoria Uni:	<a href="http://www.vu.edu.au">www.vu.edu.au</a>
RMIT:	<a href="http://www.rmit.edu.au">www.rmit.edu.au</a>
Holmesglen:	<a href="http://www.holmesglen.vic.edu.au">www.holmesglen.vic.edu.au</a>
Box Hill:	<a href="http://www.bhtafe.edu">www.bhtafe.edu</a>
Swinburne TAFE:	<a href="http://www.tafe.swin.edu.au">www.tafe.swin.edu.au</a>

# COURSE SELECTION PROCESS

When designing your pathway remember to:

- Choose a program which is realistic in terms of your academic ability.
- Choose a program which is consistent with your future career. Be aware of any prerequisites for a particular career. Ensure you choose Year 11 units which are required as prerequisites for the related Year 12 [Unit 3 & 4] study.
- Choose subjects you like and are good at. Seek guidance from a wide range of people rather than rely on the judgement of any one person:
  - Parents
  - Relatives
  - Careers Advisors
  - Year 10 teachers

## SUBMITTING COURSE SELECTIONS

Students will submit their course selections online and in paper form. The online system will be open during weeks 1 - 3 of Term 3, with a link to the website on Compass. Students will be given advice on how to access this system. The hardcopy of selections must be signed by the student, a parent and their homegroup teacher. This must be submitted to the Careers Office [in the library] by Friday 31st July 2020.

Once students have settled on a range of subjects that enable a balance of interests, abilities and tertiary requirements, some choices will need to be made. The selection of subjects should be guided by the information in this handbook, which contains descriptions of Unit 1 - 4 VCE studies being offered at Springside West Secondary College. Please note, whether a subject proceeds or not will depend on sufficient students numbers applying for the course in that particular year. Preliminary selection of Year 12 subjects can be assisted by reference to the relevant descriptions of Unit 3 & 4 courses included in this handbook as well as descriptions of the Units 1 & 2 sequence. Students will also have access to course counselling sessions prior to the final submission of their course selections.

## ALTERING SUBJECT SELECTIONS

The new VCE timetable is built based upon the initial subject selections of students. Depending on the timetabling options and available spaces in classes, changing a Unit 1 course or, changing from a Unit 1 study in Semester 1 to a different Unit 2 study in Semester 2, may be possible for students who realise that a particular subject does not suit their interests, strengths and aspirations. However, this change may not always be possible or sensible:

- Class size and timetabling constraints may prevent a transfer from one subject to another
- Attaining success in a VCE Study depends on learning specific knowledge and skills, so it is important to undertake both Units 1 and 2 in a sequence whenever possible.

Consequently, it is in each student's best interests to think seriously and thoroughly about their selections in the first place, to avoid late changes at that beginning, or later in Year 11.

As mentioned above, students must undertake their Unit 3 & 4 units as a sequence and cannot change their selections after the beginning of Term 1.

## STUDYING VCE UNITS THAT ARE NOT OFFERED AT SWSC

Students can gain credit for any VCE studies that are satisfactorily completed at an approved VCE provider. These include a study of a VCE Language Other Than English [LOTE] at community schools and subjects completed through Distance Education Victoria.

Students who choose to include their external study within their program must study at an *approved* VCE provider. Approved providers may be the Victorian School of Languages [VSL] and community LOTE schools. Please include details of this subject on your Course Selection form. Any student undertaking an external subject should see the VCE coordinator to discuss their enrolment, prior to the due date for submission.

Students will be required to attend Springside West Secondary College in a full time capacity, which equates to 6 studies / 12 units in Year 11, and 5 studies / 10 units in Year 12. For all students, an external study via Distance Education or at evening or weekend schools will be additional to their full course here at Springside West Secondary College. Any variations to the standard Year 11 and 12 program will be managed on an individual basis in conjunction with the VCE coordinator and Curriculum leader. Please see your Year Level Coordinator for more information.

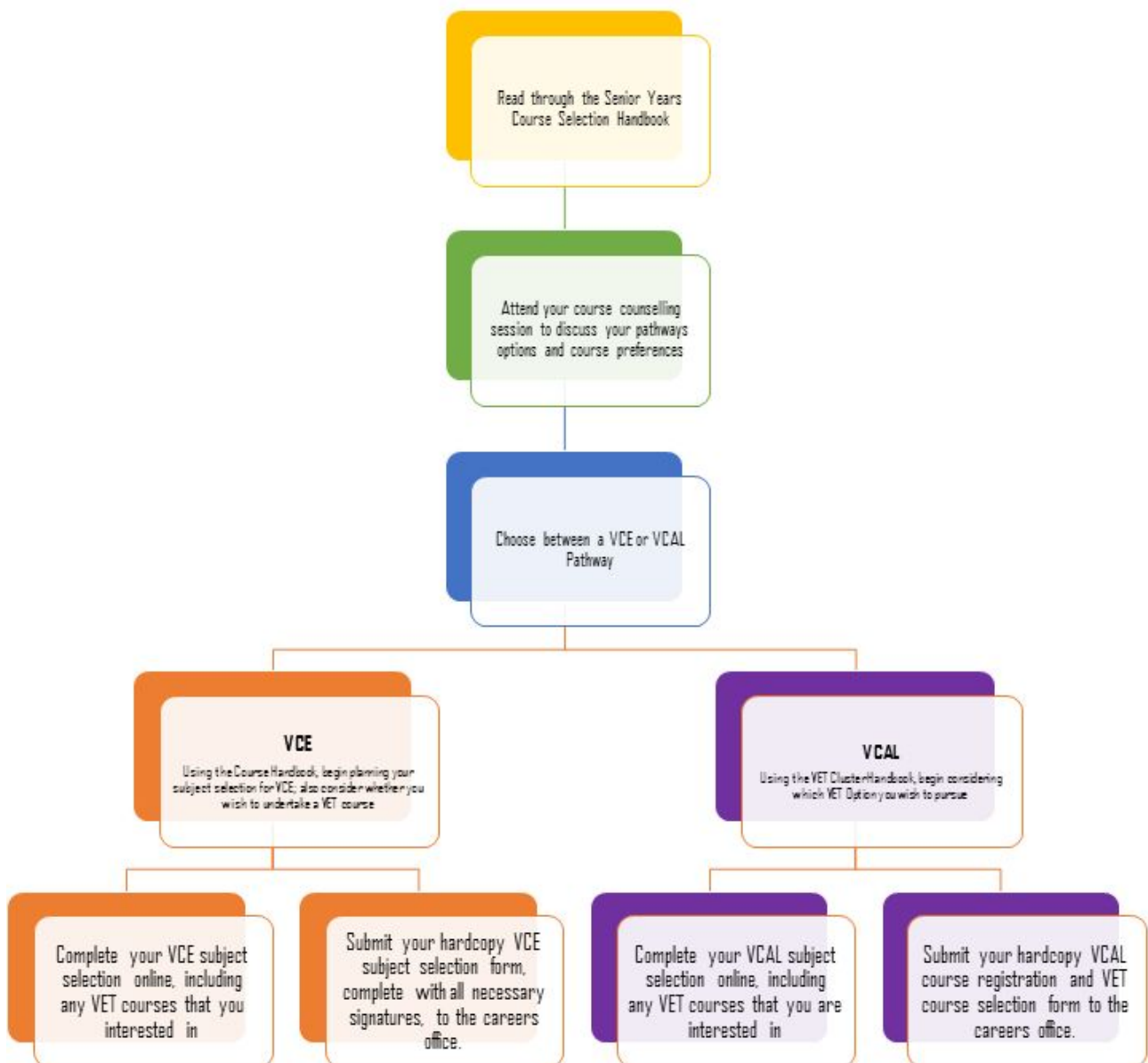
## ENGLISH AS AN ADDITIONAL LANGUAGE [EAL] ELIGIBILITY

A student is considered eligible for English as an Additional Language [EAL] status if both of the following conditions are satisfied:

1. The student has been a resident in Australia or other predominantly English speaking country for no more than seven [7] years. Note: The period of seven [7] years is to be calculated cumulatively over the student's whole life. Calculation is made prior to January 1 of the year in which the study is taken at Units 3 & 4 level.
2. English has been the students major language of instruction for a total period of not more than seven [7] years prior to the commencement of the year in which the study is taken at Units 3 & 4.

Students can apply for EAL status on a form available from the VCE coordinator. Supporting evidence will be required and the responsibility to supply the evidence rests with the student. Completed applications must be submitted by the due date noted on the form.

# COURSE SELECTION PROCESS OVERVIEW





# 2021 VCE PROGRAMS

The following subjects are offered at Units 1 - 4 inclusive. Subjects will only run if there is sufficient demand.

Subject Area	Study	Page
English	English	17
Humanities	Business Management	19
	Legal Studies	21
	History - Modern History / Revolutions	23
Mathematics	General Mathematics	26
	Further Mathematics	27
	Mathematical Methods	30
Science	Biology	32
	Chemistry	35
	Physics	37
	Psychology	39
The Arts	Media	41
	Studio Arts	43
Design & Technology	Product Design and Technology	45
Health & Physical Education	Physical Education	47

All information listed below has been gathered from the Victorian Curriculum and Assessment Authority website. For more detailed study designs of each of the courses offered, please visit: <http://www.vcaa.vic.edu.au>

## INTRODUCTION

VCE English focuses on how English language is used to create meaning in written, spoken and multimodal texts of varying complexity. Literary texts selected for study are drawn from the past and present, from Australia and from other cultures. Other texts are selected for analysis and presentation of an 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.

The study of English contributes to the development of literate individuals capable of critical and creative thinking, aesthetic appreciation and creativity. This study also develops students' ability to create and analyse texts, moving from interpretation to reflection and critical analysis. Through engagement with texts from the contemporary world and from the past, and using texts from Australia and from other cultures, students studying English become confident, articulate and critically aware communicators and further develop a sense of themselves, their world and their place within it. English helps equip students for participation in a democratic society and the global community. This study will build on the learning established through AusVELS English in the key discipline concepts of language, literature and literacy, and the language modes of listening, speaking, reading, viewing and writing.

## ACCREDITATION PERIOD

- Units 1 and 2: 1 January 2016 – 31 December 2021
- Units 3 and 4: 1 January 2017 – 31 December 2021

COURSE CONTENT OVERVIEW	
<b>UNIT 1</b>	<b>UNIT 2</b>
In this unit, students read and respond to texts analytically and creatively. They analyse arguments and the use of persuasive language in texts and create their own texts intended to position audiences. Students develop their skills in creating written, spoken and multimodal texts.	In this unit students compare the presentation of ideas, issues and themes in texts. They analyse arguments presented and the use of persuasive language in texts and create their own texts intended to position audiences. Students develop their skills in creating written, spoken and multimodal texts.
<b>UNIT 3</b>	<b>UNIT 4</b>
In this unit students read and respond to texts analytically and creatively. They analyse arguments and the use of persuasive language in texts. Texts selected for study in Area of Study 1 must be chosen from the Text List published annually by the VCAA. The texts selected for study in Unit 3 Area of Study 2 must have appeared in the media since 1 September of the previous year. The term 'selected text' refers to a text chosen from the list of prescribed texts in the Text List published by the VCAA.	In this unit students compare the presentation of ideas, issues and themes in texts. They create an oral presentation intended to position audiences about an issue currently debated in the media. Texts selected for Area of Study 1 must be chosen from the Text List published annually by the VCAA. The issues selected for Area of Study 2 must have appeared in the media since 1 September of the previous year, but need not be the same as the issue selected for study in Unit 3. The term 'selected texts' refers to a combination of texts chosen from the list of prescribed texts for comparative study in the Text List published by the VCAA.
<b>CHOOSE THIS SUBJECT IF YOU ENJOY:</b>	<b>LEARNING ACTIVITIES WILL INCLUDE:</b>
<ul style="list-style-type: none"> <li>• Reading</li> <li>• Learning about different styles of writing [expository, analytical, persuasive and imaginative]</li> <li>• Writing in a variety of forms</li> </ul>	<ul style="list-style-type: none"> <li>• Reading, listening and viewing of multimodal texts</li> <li>• Creative writing in response to a literary text</li> <li>• Close analysis of literary features in print and non-print texts</li> </ul>

- Discussing ideas, themes and characters within literary texts
- Working in groups
- Participating in discussions and debates about topical issues
- Listening to and delivering oral presentations

- Comparative analysis of ideas, themes and issues presenting in texts
- Sustained and timed writing exercise and re-drafting activities
- Group discussions about themes, ideas and characters in texts
- Reading, watching and discussing persuasive texts

#### CAREERS CAN INCLUDE:

- Writer
- Lawyer
- Journalist
- Editor
- Politician
- Diplomat
- Teacher
- Lecturer

# BUSINESS MANAGEMENT

## INTRODUCTION

VCE Business Management examines the ways businesses manage resources to achieve objectives. The VCE Business Management study design follows the process from the first 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 continued success of a business. Students develop an understanding of the complexity of the challenges facing decision makers in managing these 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 to contemporary challenges in establishing and maintaining a business.

In contemporary Australian society there are a range of businesses managed by people who establish systems and processes to achieve a variety of objectives. These systems and processes are often drawn from historical experience and management theories 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 socially responsible and ethical members, managers and leaders of the business community, and as informed citizens, consumers and investors. The study of 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.

## ACCREDITATION PERIOD

- Units 1–4: 1 January 2017 – 31 December 2021

COURSE CONTENT OVERVIEW	
UNIT 1	UNIT 2
Businesses of all sizes are major contributors to the economic and social wellbeing of a nation. Therefore how businesses are formed 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, and the effect of these on planning a business.	This unit focuses on the establishment phase of a business's life. Establishing a business involves complying with legal requirements as well as making 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 satisfied 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 various management practices in this area by applying this knowledge to contemporary business case studies from the past four years.
UNIT 3	UNIT 4
In this unit students explore the key processes and issues concerned with managing a business efficiently and effectively to achieve the business objectives. Students examine the different types of businesses and their respective objectives. They consider corporate culture, management styles, management skills and the relationship between each of these. Students investigate strategies to manage both staff and business operations to meet objectives. Students develop an understanding of the complexity and challenge of managing businesses and through the use of contemporary business case studies from the past four years have the opportunity to	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 leadership in change management. Using a contemporary business case study from the past four years, students evaluate business practice against theory.

compare theoretical perspectives with current practice.	
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CHOOSE THIS SUBJECT IF YOU ENJOY:		LEARNING ACTIVITIES WILL INCLUDE:	
<ul style="list-style-type: none"><li>• Learning about the business sector</li><li>• Managing or leading people</li><li>• Learning about motivation and behaviour management</li><li>• Keeping up with current affairs</li></ul>		<ul style="list-style-type: none"><li>• Interviewing a small business operator and large business operator</li><li>• Speakers from small or large businesses</li><li>• Analysis of current media issues affecting businesses</li><li>• Undertaking the role of a small business owner</li><li>• Undertaking the role of management</li></ul>	
CAREERS CAN INCLUDE:			
<ul style="list-style-type: none"><li>• Human Resource Management</li><li>• Business</li><li>• Finance</li><li>• Any industry or retail-based management positions</li></ul>			

## INTRODUCTION

VCE Legal Studies examines the institutions and principles which are essential to Australia’s legal system. Students develop an understanding of the rule of law, law-makers, key legal institutions, rights protection in Australia, and the justice system. Through applying knowledge of legal concepts and principles to a range of actual and/or hypothetical scenarios, students develop their ability to use legal reasoning to argue a case for or against a party in a civil or criminal matter. They consider and evaluate recent and recommended reforms to the criminal and civil justice systems, and engage in an analysis of the extent to which our legal institutions are effective and our justice system achieves the principles of justice. For the purposes of this study, the principles of justice are fairness (fair legal processes are in place, and all parties receive a fair hearing); equality (all people treated equally before the law, with an equal opportunity to present their case); and access (understanding of legal rights and ability to pursue their case).

In contemporary Australian society there is a range of complex laws that exist to protect the rights of individuals and to achieve social cohesion. These laws are made by bodies such as parliament and the courts and are upheld by a number of institutions and processes within the legal system. Members of society interact with the laws and the legal system in many aspects of their lives and can influence lawmakers. The study of VCE Legal Studies enables students to become active and informed citizens by providing them with valuable insights into their relationship with the law and the legal system. They develop knowledge and skills that enhance their confidence and ability to access and participate in the legal system. Students come to appreciate how legal systems and processes aim to achieve social cohesion, and how they themselves can create positive changes to laws and the legal system. VCE Legal Studies equips students with the ability to research and analyse legal information and apply legal reasoning and decision-making skills, and fosters critical thinking to solve legal problems. Further study in the legal field can lead to a broad range of career opportunities such as lawyer, paralegal, legal secretary and careers in the courtroom.

## ACCREDITATION PERIOD

- Units 1–4: 1 January 2018 – 31 December 2022

COURSE CONTENT OVERVIEW	
UNIT 1	UNIT 2
Criminal law and civil law aim to achieve social cohesion and protect the rights of individuals. Criminal law is aimed at maintaining social order and infringing criminal law can result in charges. Civil law deals with the infringement of a person’s or group’s rights and breaching civil law can result in litigation. In this unit students develop an understanding of legal foundations, such as the different types and sources of law and the existence of a court hierarchy in Victoria. Students investigate key concepts of criminal law and civil law and apply these to actual and/or hypothetical scenarios to determine whether an accused may be found guilty of a crime, or liable in a civil dispute. In doing so, students develop an appreciation of the way in which legal principles and information are used in making reasoned judgments and conclusions about the culpability of an accused, and the liability of a party in a civil dispute.	Criminal law and civil law aim to protect the rights of individuals. When rights are infringed, a case or dispute may arise which needs to be determined or resolved, and sanctions or remedies may be imposed. This unit focuses on the enforcement of criminal law and civil law, the methods and institutions that may be used to determine a criminal case or resolve a civil dispute, and the purposes and types of sanctions and remedies and their effectiveness. Students undertake a detailed investigation of two criminal cases and two civil cases from the past four years to form a judgment about the ability of sanctions and remedies to achieve the principles of justice. Students develop their understanding of the way rights are protected in Australia and in another country, and possible reforms to the protection of rights. They examine a significant case in relation to the protection of rights in Australia.
UNIT 3	UNIT 4
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	The study of Australia’s laws and legal system involves an understanding of institutions that make and reform our laws, and the relationship between the Australian people, the Australian Constitution and law-making

<p>methods and institutions in the 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 Victorian legal institutions and bodies available to assist with cases. Students explore matters 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. They discuss recent reforms from the past four years and recommended reforms to enhance the ability of the justice system to achieve the principles of justice. Throughout this unit, students apply legal reasoning and information to actual and/or hypothetical scenarios.</p>	<p>bodies. In this unit, students explore how the Australian Constitution establishes the law-making powers of the Commonwealth and state parliaments, and 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 law reform. Throughout this unit, students apply legal reasoning and information to actual scenarios.</p>
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CHOOSE THIS SUBJECT IF YOU ENJOY:	LEARNING ACTIVITIES WILL INCLUDE:
<ul style="list-style-type: none"> <li>● Finding out more about your legal rights and responsibilities</li> <li>● Investigating crime in society</li> <li>● Understanding how trials operate</li> <li>● Exploring how laws evolve over time</li> <li>● Exploring Human Rights issues</li> <li>● Environmental issues</li> </ul>	<ul style="list-style-type: none"> <li>● Reading and reviewing test cases</li> <li>● Understanding and unpacking sections of law in Australia</li> <li>● Coursework around rights and responsibilities</li> </ul>
CAREERS CAN INCLUDE:	
<ul style="list-style-type: none"> <li>● Lawyer [private practice, government, in-house counsel, Community Law Centres]</li> <li>● Judges</li> <li>● Solicitors</li> <li>● Tribunal Members</li> <li>● Police [State / Federal officers]</li> <li>● Foreign affairs and trade</li> <li>● Administration</li> <li>● Legal Researcher or Secretary</li> </ul>	

# HISTORY - MODERN HISTORY / REVOLUTIONS

## INTRODUCTION

History is a dynamic discipline that involves structured inquiry into the human actions, forces and conditions (social, political, economic, cultural, environmental and technological) that have shaped the past and present. To make meaning of the past, historians use historical sources, which include primary sources and historical interpretations. Historians analyse and evaluate evidence and use this when constructing historical arguments. As historians ask new questions, revise interpretations, or discover new sources, fresh understandings about the past 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 historical sources, and the capacity of historians to interpret those sources. VCE History reflects this by enabling students to explore a variety of eras and periods, events, people, places and ideas.

Ancient History investigates individuals and societies (Mesopotamia, Egypt, Greece, Rome and China) across three millennia. Empires explores the ideas and power relations accompanying the growth of empires in the early modern period. Modern History examines the causes and consequences of conflict and change in the modern era. Australian History investigates continuity and change from pre-colonial times to the modern day. Revolutions explores the causes and consequences of significant social upheaval (America, France, Russia and China) in the modern period.

NOTE: Students undertaking history will study the following sequence from the VCE study design:

- Unit 1 & 2: Modern History
- Unit 3 & 4: Revolutions

## ACCREDITATION PERIOD

- Units 1–4: 1 January 2021 – 31 December 2025

COURSE CONTENT OVERVIEW	
UNIT 1	UNIT 2
<p>In this unit 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.</p> <p>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</p>	<p>In this unit 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.</p> <p>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.</p> <p>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</p>



<p>people significantly changed.</p> <p>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.</p> <p>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.</p> <p>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.</p>	<p>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.</p> <p>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.</p> <p>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.</p>
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**UNIT 3 & 4: Revolutions**

In Units 3 and 4 Revolutions 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.

In developing a course, teachers select two revolutions to be studied, one for Unit 3 and one for Unit 4 from the list below. The revolution selected in Unit 3, Area of Study 1, must be selected for Unit 3, Area of Study 2. The revolution selected in Unit 4, Area of Study 1, must be selected for Unit 4, Area of Study 2.

- The American Revolution
- The French Revolution
- The Russian Revolution
- The Chinese Revolution.

CHOOSE THIS SUBJECT IF YOU ENJOY:	LEARNING ACTIVITIES WILL INCLUDE:
<ul style="list-style-type: none"><li>● Arguing about issues</li><li>● Reading</li><li>● Thinking and learning about the past</li><li>● Questioning accepted truths</li></ul>	<ul style="list-style-type: none"><li>● Debates / group discussions</li><li>● Looking at maps and timelines</li><li>● Short writing tasks</li><li>● Essays / Document / Source analysis</li></ul>
CAREERS CAN INCLUDE:	
<ul style="list-style-type: none"><li>● Any career that requires writing coherently and reading critically</li><li>● Law / Education / Public Government / Journalism / Arts and Entertainment industry</li></ul>	

# GENERAL MATHEMATICS

## INTRODUCTION

General Mathematics provides for different combinations of student interests and preparation for study of VCE Mathematics at the Unit 3 and 4 level. The areas of study for General Mathematics Unit 1 and Unit 2 are 'Algebra and structure', 'Arithmetic and number', 'Discrete mathematics', 'Geometry, measurement and trigonometry', 'Graphs of linear and non-linear relations' and 'Statistics'.

For Units 1 and 2, to suit the range of students entering the study, content must be selected from the six areas of study using the following rules:

- for each unit, content covers four or more topics in their entirety, selected from at least three different areas of study
- courses intended as preparation for study at the Units 3 and 4 level should include a selection of topics from areas of study that provide a suitable background for these studies
- topics can also be selected from those available for Specialist Mathematics Units 1 and 2
- content covered from an area of study provides a clear progression in knowledge and skills from Unit 1 to Unit 2.

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, algebraic manipulation, 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.

## ACCREDITATION PERIOD

- Units 1 and 2: 1 January 2016 – 31 December 2021

COURSE CONTENT OVERVIEW	
UNIT 1	UNIT 2
In Unit 1 students focus on topics including investigating and comparing data distributions, specifically univariate data, frequency tables, bar charts and dot plots, measures of central tendency and spread: mean, median and mode, range, interquartile range, variance, standard deviation, stem plots, frequency tables, histograms, relative and cumulative frequency. Students also study Geometry, Measurement and Trigonometry, including 3D surface area and volume, Pythagoras in two and three dimensions, similarity and scale models, trigonometric ratios and rules, exact values and solution of triangles. In the Matrices topic, students study matrix arithmetic and inverses, applications including costing or pricing problems and solving simultaneous linear equations and transformations. In Linear relations and equations, students focus on formula and equation solution, substitution and transportation, developing formulas from word descriptions, using algebraic techniques to solve real world applications, and using calculator technology to determine solutions.	In Unit 2 students focus on topics including Linear Graphs, determining gradients, intercepts and the equations of straight lines, plotting and sketching graphs and equations and determining points of intersection, and simple applications of linear modelling. In studying Investigating relationships between two numerical variables, students create scatter plots and interpret their patterns and features, investigate Pearson correlation coefficients and use of the least squares line to model and observed linear association. Students also study Graphs and networks including the description of networks in terms of faces or regions, vertices and edges, the application of Euler's formula traversability of a network, rules for following a path, and applications of networks to simply distance or time minimisation problems. In Financial arithmetic students study cash flow in common savings and credit accounts including interest calculations, applications of simple interest and compound interest formulas, comparison of purchase options including cash, credit and debit cards, personal loans, time payments and recursion.

CHOOSE THIS SUBJECT IF YOU ENJOY:	LEARNING ACTIVITIES WILL INCLUDE:
<ul style="list-style-type: none"> <li>● Problem solving</li> <li>● Using theory to explain everyday phenomena</li> <li>● Applications of Mathematics</li> <li>● Using Technology</li> </ul>	<ul style="list-style-type: none"> <li>● Real life problem solving</li> <li>● Practical investigations</li> <li>● Analysis Tasks</li> <li>● Group work</li> <li>● Projects</li> <li>● Extensive use of CAS calculator</li> <li>● Topic Tests</li> </ul>
<b>CAREERS CAN INCLUDE:</b>	
<ul style="list-style-type: none"> <li>● Economics</li> <li>● Commerce</li> <li>● IT</li> <li>● Biology</li> <li>● Business</li> </ul>	

# FURTHER MATHEMATICS

## INTRODUCTION

Further Mathematics consists of two areas of study, a compulsory Core area of study to be completed in Unit 3 and an Applications area of study to be completed in Unit 4. The Core comprises 'Data analysis' and 'Recursion and financial modelling'. The Applications comprises two modules to be completed in their entirety, from a selection of four possible modules: 'Matrices', 'Networks and decision mathematics', 'Geometry and measurement' and 'Graphs and relations'. 'Data analysis' comprises 40 per cent of the content to be covered, 'Recursion and financial modelling' comprises 20 percent of the content to be covered, and each selected module comprises 20 percent of the content to be covered. Assumed knowledge and skills for the Core are contained in the General Mathematics Units 1 and 2 topics: 'Computation and practical arithmetic', 'Investigating and comparing data distributions', 'Investigating relationships between two numerical variables', 'Linear graphs and modelling', 'Linear relations and equations', and 'Number patterns and recursion'. For each module there are related topics in General Mathematics Units 1 and 2. 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, algebraic manipulation, equations, and graphs. They should have a 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.

## ACCREDITATION PERIOD

- Units 3 and 4: 1 January 2016 – 31 December 2021

COURSE CONTENT OVERVIEW	
UNIT 3	UNIT 4
<p>In the Data Analysis core study, students focus on investigating data distributions, including representation, display and description of the distributions of numerical variables; five-number summary and boxplots; sample mean and standard deviation; use of distributions to answer statistical questions; normal distributions and z-scores; population parameters and sample statistics. Students also focus on investigating associations between two variables, including response and explanatory variables; contingency [two-way] frequency tables; stem plots, parallel dot plots and scatter plots; Pearson correlation coefficient and non-causal explanations for observed associations.</p> <p>Areas include: Depreciation of assets; compound interest investment and loans; reducing balance loans [compound interest loans with periodic re-payments]; annuities and perpetuities [compound interest and investments with periodic payments made from the investment]; and compound interest investment with periodic and equal additions to the principal [annuity investments].</p>	<p>Students will study two of the following four modules:</p> <p>Matrices and their application:</p> <ul style="list-style-type: none"> <li>• Including matrix arithmetic; the inverse of a matrix and its determinant; the use of matrices to represent tabular numerical information; binary and permutation matrices; communication and dominance matrices; transition matrices, and the use of matrices to solve systems of linear equations.</li> </ul> <p>Networks and decision mathematics:</p> <ul style="list-style-type: none"> <li>• Including graphs and network terminology; travelling problems, including Eulerian circuits and Hamiltonian paths; Trees and minimum connector problems; flow problems; shortest path problems; Bipartite graph matching problems; sketching problems and critical path analysis.</li> </ul> <p>Geometry and measurement:</p> <ul style="list-style-type: none"> <li>• Including measurement and trigonometry; surface area and volume of composite shapes; application of linear scale factors; methods for solving right and non-right-angled triangles; specification of location using three-figure bearings; spherical geometry; circle mensuration; areas of sectors and segments; use of trigonometry and Pythagoras' theorem in two and three dimensions; use of meridians and great circles</li> </ul>

	<p>Graphs and relations:</p> <ul style="list-style-type: none"> <li>• Including construction and interpretation of graphs; straight-line, line segment and step graphs; simultaneous linear equations in two unknowns; nonlinear graphs; linear programming; graphs of systems of linear inequalities; and solving linear programming problems with two decision variables.</li> </ul>
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CHOOSE THIS SUBJECT IF YOU ENJOY:	LEARNING ACTIVITIES WILL INCLUDE:
<ul style="list-style-type: none"> <li>• Problem solving</li> <li>• Using theory to explain everyday phenomena</li> <li>• Applications of Mathematics</li> <li>• Using Technology</li> </ul>	<ul style="list-style-type: none"> <li>• Real life problem solving</li> <li>• Practical investigations</li> <li>• Analysis Tasks</li> <li>• Group work</li> <li>• Projects</li> <li>• Extensive use of CAS calculator</li> <li>• Topic Tests</li> </ul>
CAREERS CAN INCLUDE:	
<ul style="list-style-type: none"> <li>• Economics</li> <li>• Commerce</li> <li>• IT</li> <li>• Biology</li> <li>• Business</li> </ul>	

# MATHEMATICAL METHODS

## INTRODUCTION

Mathematics is the study of function and pattern in number, logic, space and structure. It provides both a framework for thinking and a means of symbolic communication that is powerful, logical, concise and precise. It also provides a means by which people can understand and manage their environment.

## ACCREDITATION PERIOD

- Units 1-4: 1 January 2016 – 31 December 2021

COURSE CONTENT OVERVIEW	
UNIT 1	UNIT 2
<p>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. They 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 and graphs', 'Algebra', 'Calculus' and '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' 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, 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.</p>	<p>In Unit 2 students focus on the study of simple transcendental functions and the calculus of simple algebraic functions. The areas of study are 'Functions and graphs', 'Algebra', 'Calculus', and 'Probability and statistics'. At the end of Unit 2, students are expected to have covered the material outlined in each area of study. Material from the 'Functions and graphs', 'Algebra', 'Calculus', and 'Probability and statistics' 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, 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.</p>
UNITS 3 & 4	
<p>Mathematical Methods Units 3 and 4 are completely prescribed and 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 'Functions and graphs', 'Calculus', 'Algebra' and 'Probability and statistics', 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 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 and graphs' and 'Algebra', and applications of derivatives and differentiation, and identifying and analysing key features of the functions and their graphs from the 'Calculus' area of study. For Unit 4, this selection would typically consist of remaining content from the areas of study:</p>	

'Functions and graphs', 'Calculus' and 'Algebra', and the study of random variables and discrete and continuous probability distributions and the distribution of sample proportions. For Unit 4, the content from the 'Calculus' area of study would be likely to include the treatment of anti-differentiation, integration, the relation between integration and the area of regions specified by lines or curves described by the rules of functions, and simple applications of this content. The selection of content from the areas of study should be constructed so that there is a development in the complexity and sophistication of problem types and mathematical processes used (modelling, transformations, graph sketching and equation solving) in application to contexts related to these areas of study. There should be a clear progression of skills and knowledge from Unit 3 to Unit 4 in each area of study. 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, 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.

CHOOSE THIS SUBJECT IF YOU ENJOY:	LEARNING ACTIVITIES WILL INCLUDE:
<ul style="list-style-type: none"> <li>● Investigating and solving problems in a variety of mathematical situations</li> <li>● Rigorous application of mathematical methods to analysis, application and logical reasoning tasks</li> <li>● Using technology to solve mathematical problems</li> </ul>	<ul style="list-style-type: none"> <li>● Efficient and accurate operation of CAS calculators</li> <li>● Skills practice in standard mathematical routines</li> <li>● Analysis / problem solving tasks</li> <li>● Application / modelling tasks</li> <li>● Tests</li> </ul>
<b>CAREERS CAN INCLUDE:</b>	
<ul style="list-style-type: none"> <li>● Accounting</li> <li>● Engineering</li> <li>● Information Technology</li> <li>● Science</li> <li>● Business</li> <li>● Medicine</li> <li>● Veterinary Studies</li> <li>● Dentistry</li> <li>● Optometry</li> </ul>	



## INTRODUCTION

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.

An important feature of undertaking a VCE science study is the opportunity for students to engage in a range of scientific investigation methodologies, to develop key science skills, and to interrogate the links between knowledge, theory and practice. Students work collaboratively as well as independently on a range of scientific investigations involving controlled experiments, fieldwork, case studies, correlational studies, classification and identification, modelling, simulations, literature reviews, and the development of a product, process or system. Knowledge and application of the safety and ethical guidelines associated with biological investigations is integral to the study of VCE Biology.

As well as increasing their understanding of scientific processes, students develop insights into how knowledge in biology 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 biological challenges.

## ACCREDITATION PERIOD

- Units 1-4: 1 January 2021 – 31 December 2025

COURSE CONTENT OVERVIEW	
UNIT 1	UNIT 2
<p>In this unit 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.</p> <p>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.</p>	<p>In this unit 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.</p> <p>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.</p>

	<p>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.</p>
<p><b>UNIT 3</b></p>	<p><b>UNIT 4</b></p>
<p>In this unit 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.</p> <p>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.</p> <p>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.</p> <p>The application of ethical understanding in VCE Biology involves the consideration of approaches to bioethics and ethical concepts.</p> <p>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.</p>	<p>In this unit 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.</p> <p>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.</p> <p>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.</p> <p>The application of ethical understanding in VCE Biology involves the consideration of approaches to bioethics and ethical concepts.</p> <p>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.</p>

CHOOSE THIS SUBJECT IF YOU ENJOY:	LEARNING ACTIVITIES WILL INCLUDE:
<ul style="list-style-type: none"> <li>● Learning about how life developed</li> <li>● Exploring the living world on the microscopic and whole organism level</li> <li>● Using theory to explain things we see in everyday life.</li> </ul>	<ul style="list-style-type: none"> <li>● Dissections</li> <li>● Practical investigations</li> <li>● Fieldwork</li> <li>● Posters, models, projects</li> <li>● Group work</li> </ul>
<b>CAREERS CAN INCLUDE:</b>	
<ul style="list-style-type: none"> <li>● Botany / genetics / immunology / microbiology / pharmacology / zoology</li> <li>● Biotechnology / dentistry / ecology / education / food science / health care / veterinary science</li> </ul>	

## INTRODUCTION

Chemistry explores and explains the composition and behaviour of matter and the chemical processes that occur on Earth and beyond. Chemical models and theories are used to describe and explain known chemical reactions and processes. Chemistry underpins the production and development of energy, the maintenance of clean air and water, the production of food, medicines and new materials, and the treatment of wastes.

VCE Chemistry enables students to explore key processes related to matter and its behaviour. Students consider the relationship between materials and energy through four themes: the design and composition of useful materials, the reactions and analysis of chemicals in water, the efficient production and use of energy and materials, and the investigation of carbon-based compounds as important components of body tissues and materials used in society. Students examine classical and contemporary research, models and theories to understand how knowledge in chemistry has evolved and continues to evolve in response to new evidence and discoveries. An understanding of the complexities and diversity of chemistry leads students to appreciate the interconnectedness of the content areas both within chemistry, and across chemistry and the other sciences.

An important feature of undertaking a VCE science study is the opportunity for students to engage in a range of inquiry tasks that may be self-designed, develop key science skills and interrogate the links between theory, knowledge and practice. In VCE Chemistry inquiry methodologies can include laboratory experimentation, modelling, site tours, fieldwork, local and remote data-logging, simulations, animations, literature reviews and the use of global databases. Students work collaboratively as well as independently on a range of tasks. They pose questions, formulate hypotheses and collect, analyse and critically interpret qualitative and quantitative data. Students analyse the limitations of data, evaluate methodologies and results, justify conclusions, make recommendations and communicate their findings. They investigate and evaluate issues, changes and alternative proposals by considering both shorter and longer term consequences for the individual, environment and society. Knowledge of the safety considerations, including use of safety data sheets, and ethical standards associated with chemical investigations is integral to the study of VCE Chemistry.

As well as an increased understanding of scientific processes, students 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, social and political contexts of scientific endeavours.

## ACCREDITATION PERIOD

- Units 1 and 2: 1 January 2016 – 31 December 2021
- Units 3 and 4: 1 January 2017 – 31 December 2021

COURSE CONTENT OVERVIEW	
UNIT 1	UNIT 2
The development and use of materials for specific purposes is an important human endeavour. In this unit students investigate the chemical properties of a range of materials from metals and salts to polymers and nanomaterials. Using their knowledge of elements and atomic structure students explore and explain the relationships between properties, structure and bonding forces within and between particles that vary in size from the visible, through nanoparticles, to molecules and atoms. Students examine the modification of metals, assess the factors that affect the formation of ionic crystals and investigate a range of non-metallic substances from molecules to polymers and giant lattices and relate their structures to specific applications.	Water is the most widely used solvent on Earth. In this unit students explore the physical and chemical properties of water, the reactions that occur in water and various methods of water analysis. Students examine the polar nature of a water molecule and the intermolecular forces between water molecules. They explore the relationship between these bonding forces and the physical and chemical properties of water. In this context students investigate solubility, concentration, pH and reactions in water including precipitation, acid-base and redox. Students are introduced to stoichiometry and to analytical techniques and instrumental procedures, and apply these to determine concentrations of different species in water samples, including chemical

Students are introduced to quantitative concepts in chemistry including the mole concept. They apply their knowledge to determine the relative masses of elements and the composition of substances. Throughout the unit students use chemistry terminology including symbols, formulas, chemical nomenclature and equations to represent and explain observations and data from experiments, and to discuss chemical phenomena. A research investigation is undertaken in Area of Study 3 related to one of ten options that draw upon and extend the content from Area of Study 1 and/or Area of Study 2.	contaminants. They use chemistry terminology including symbols, units, formulas and equations to represent and explain observations and data from experiments, and to discuss chemical phenomena. Students explore the solvent properties of water in a variety of contexts and analyse selected issues associated with substances dissolved in water. A practical investigation into an aspect of water quality is undertaken in Area of Study 3. The investigation draws on content from Area of Study 1 and/or Area of Study 2.
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<b>UNIT 3</b>	<b>UNIT 4</b>
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<p>The global demand for energy and materials is increasing with world population growth. In this unit students explore energy options and the chemical production of materials with reference to efficiencies, renewability and the minimisation of their impact on the environment. Students compare and evaluate different chemical energy resources, including fossil fuels, biofuels, galvanic cells and fuel cells. They investigate the combustion of fuels, including the energy transformations involved, the use of stoichiometry to calculate the amounts of reactants and products involved in the reactions, and calculations of the amounts of energy released and their representations. Students consider the purpose, design and operating principles of galvanic cells, fuel cells and electrolytic cells. In this context they use the electrochemical series to predict and write half and overall redox equations, and apply Faraday's laws to calculate quantities in electrolytic reactions. Students analyse manufacturing processes with reference to factors that influence their reaction rates and extent. They investigate and apply the equilibrium law and Le Chatelier's principle to different reaction systems, including to predict and explain the conditions that will improve the efficiency and percentage yield of chemical processes. They use the language and conventions of chemistry including symbols, units, chemical formulas and equations to represent and explain observations and data collected from experiments, and to discuss chemical phenomena. A student practical investigation related to energy and/or food is undertaken either in Unit 3 or Unit 4, or across both Units 3 and 4, and is assessed in Unit 4, Outcome 3. The findings of the investigation are presented in a scientific poster format.</p>	<p>The carbon atom has unique characteristics that explain the diversity and number of organic compounds that not only constitute living tissues but are also found in the fuels, foods, medicines and many of the materials we use in everyday life. In this unit students investigate the structural features, bonding, typical reactions and uses of the major families of organic compounds including those found in food. Students study the ways in which organic structures are represented and named. They process data from instrumental analyses of organic compounds to confirm or deduce organic structures, and perform volumetric analyses to determine the concentrations of organic chemicals in mixtures. Students consider the nature of the reactions involved to predict the products of reaction pathways and to design pathways to produce particular compounds from given starting materials. Students investigate key food molecules through an exploration of their chemical structures, the hydrolytic reactions in which they are broken down and the condensation reactions in which they are rebuilt to form new molecules. In this context the role of enzymes and coenzymes in facilitating chemical reactions is explored. Students use calorimetry as an investigative tool to determine the energy released in the combustion of foods. A student practical investigation related to energy and/or food is undertaken in either Unit 3 or in Unit 4, or across both Units 3 and 4, and is assessed in Unit 4, Outcome 3. The findings of the investigation are presented in a scientific poster format.</p>
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<b>CHOOSE THIS SUBJECT IF YOU ENJOY:</b>	<b>LEARNING ACTIVITIES WILL INCLUDE:</b>
<ul style="list-style-type: none"> <li>● Learning about how matter behaves</li> <li>● Explaining the properties of materials you see</li> <li>● Doing practical work and explaining the theory behind the results</li> </ul>	<ul style="list-style-type: none"> <li>● Practical investigations</li> <li>● Analysis of data</li> <li>● Model making</li> <li>● Posters and other projects</li> <li>● Group work</li> </ul>
<b>CAREERS CAN INCLUDE:</b>	
<ul style="list-style-type: none"> <li>● Agriculture / Biochemistry / Engineering / Environmental Studies / Food Studies / Forensic Science</li> <li>● Pharmacy / Sports science / Medicine</li> </ul>	

# PHYSICS

## INTRODUCTION

Physics seeks to understand and explain the physical world. It examines models and ideas used to make sense of the world and which are sometimes challenged as new knowledge develops. By looking at the way matter and energy interact through observations, measurements and experiments, physicists gain a better understanding of the underlying laws of nature.

VCE Physics provides students with opportunities to explore questions related to the natural and constructed world. The study provides a contextual approach to exploring selected areas within the discipline including atomic physics, electricity, fields, mechanics, thermodynamics, quantum physics and waves. Students also have options for study related to astrophysics, bioelectricity, biomechanics, electronics, flight, medical physics, nuclear energy, nuclear physics, optics, sound and sports science. Students examine classical and contemporary research, models and theories to understand how knowledge in physics has evolved and continues to evolve in response to new evidence and discoveries. An understanding of the complexities and diversity of physics leads students to appreciate the interconnectedness of the content areas both within physics, and across physics and the other sciences.

An important feature of undertaking a VCE science study is the opportunity for students to engage in a range of inquiry tasks that may be self-designed, develop key science skills and interrogate the links between theory and practice. In VCE Physics inquiry methodologies can include laboratory experimentation, local and remote data logging, simulations, animations and literature reviews. Investigation in physics is diverse and may take many forms including the design, building, testing and evaluation of a device; the investigation of the operation of a device; creating a solution to a scientific or technological problem; and the investigation of a physical phenomenon. Students work collaboratively as well as independently on a range of tasks. They pose questions, formulate hypotheses and collect, analyse and critically interpret qualitative and quantitative data. They analyse the limitations of data, evaluate methodologies and results, justify conclusions, make recommendations and communicate their findings. Students investigate and evaluate issues, changes or alternative proposals by considering both shorter and longer term consequences for the individual, environment and society. Knowledge of the safety considerations associated with physics investigations is integral to the study of VCE Physics.

As well as an increased understanding of scientific processes, students 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, social and political contexts of scientific endeavours.

## ACCREDITATION PERIOD

- Units 1 and 2: 1 January 2016 – 31 December 2021
- Units 3 and 4: 1 January 2017 – 31 December 2021

COURSE CONTENT OVERVIEW	
UNIT 1	UNIT 2
Ideas in physics are dynamic. As physicists explore concepts, theories evolve. Often this requires the detection, description and explanation of things that cannot be seen. In this unit students explore how physics explains phenomena, at various scales, which are not always visible to the unaided human eye. They examine some of the fundamental ideas and models used by physicists in an attempt to understand and explain the world. Students consider thermal concepts by investigating heat, probe common analogies used to explain electricity and consider the origins and formation	In this unit 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 make direct observations of physics phenomena and examine the ways in which phenomena that may not be directly observable can be explored through indirect observations. In the core component of this unit students investigate the ways in which forces are involved both in moving objects and in keeping objects stationary. Students choose one of

<p>of matter. Students use thermodynamic principles to explain phenomena related to changes in thermal energy. They apply thermal laws when investigating energy transfers within and between systems, and assess the impact of human use of energy on the environment. Students examine the motion of electrons and explain how it can be manipulated and utilised. They explore current scientifically accepted theories that explain how matter and energy have changed since the origins of the Universe. Students undertake quantitative investigations involving at least one independent, continuous variable.</p>	<p>twelve options related to astrobiology, astrophysics, bioelectricity, biomechanics, electronics, flight, medical physics, nuclear energy, nuclear physics, optics, sound and sports science. The option enables students to pursue an area of interest by investigating a selected question. Students design and undertake investigations involving at least one independent, continuous variable. A student designed practical investigation relates to content drawn from Area of Study 1 and/or Area of Study 2 and is undertaken in Area of Study 3.</p>
<p><b>UNIT 3</b></p>	<p><b>UNIT 4</b></p>
<p>In this unit students explore the importance of energy in explaining and describing the physical world. They examine the production of electricity and its delivery to homes. Students consider the field model as a construct that has enabled an understanding of why objects move when they are not apparently in contact with other objects. Applications of concepts related to fields include the transmission of electricity over large distances and the design and operation of particle accelerators. They explore the interactions, effects and applications of gravitational, electric and magnetic fields. Students use Newton's laws to investigate motion in one and two dimensions, and are introduced to Einstein's theories to explain the motion of very fast objects. They consider how developing technologies can challenge existing explanations of the physical world, requiring a review of conceptual models and theories. Students design and undertake investigations involving at least two continuous independent variables. A student-designed practical investigation related to waves, fields or motion is undertaken either in Unit 3 or Unit 4, or across both Units 3 and 4, and is assessed in Unit 4, Outcome 3. The findings of the investigation are presented in a scientific poster format.</p>	<p>A complex interplay exists between theory and experiment in generating models to explain natural phenomena including light. Wave theory has classically been used to explain phenomena related to light; however, continued exploration of light and matter has revealed the particle-like properties of light. On very small scales, light and matter – which initially seem to be quite different – have been observed as having similar properties. In this unit, students explore the use of wave and particle theories to model the properties of light and matter. They examine how the concept of the wave is used to explain the nature of light and explore its limitations in describing light behaviour. Students further investigate light by using a particle model to explain its behaviour. A wave model is also used to explain the behaviour of matter which enables students to consider the relationship between light and matter. Students learn to think beyond the concepts experienced in everyday life to study the physical world from a new perspective. Students design and undertake investigations involving at least two continuous independent variables. A student-designed practical investigation related to waves, fields or motion is undertaken either in Unit 3 or Unit 4, or across both Unit 3 and Unit 4, and is assessed in Unit 4, Outcome 3. The findings of the investigation are presented in a scientific poster format.</p>

<p><b>CHOOSE THIS SUBJECT IF YOU ENJOY:</b></p>	<p><b>LEARNING ACTIVITIES WILL INCLUDE:</b></p>
<ul style="list-style-type: none"> <li>● Learning about the universe</li> <li>● Doing practical experiments</li> <li>● Finding out how things work</li> </ul>	<ul style="list-style-type: none"> <li>● Practical investigations</li> <li>● Independent and group research</li> </ul>
<p><b>CAREERS CAN INCLUDE:</b></p>	
<ul style="list-style-type: none"> <li>● Physicist / Medical Radiographer / Civil Engineer / Astronomer / Electronics specialist</li> <li>● Technician / Space scientist / Avionics Engineer / Architect</li> </ul>	



# PSYCHOLOGY

## INTRODUCTION

Psychology is a broad discipline that incorporates both the scientific study of human behaviour through biological, psychological and social perspectives and the systematic application of this knowledge to personal and social circumstances in everyday life.

VCE Psychology enables students to explore how people think, feel and behave through the use of a biopsychosocial approach. As a scientific model, this approach considers biological, psychological and social factors and their complex interactions in the understanding of psychological phenomena. The study explores the connection between the brain and behaviour by focusing on several key interrelated aspects of the discipline: the interplay between genetics and environment, individual differences and group dynamics, sensory perception and awareness, memory and learning, and mental health. Students examine classical and contemporary research and the use of imaging technologies, models and theories to understand how knowledge in psychology has evolved and continues to evolve in response to new evidence and discoveries. An understanding of the complexities and diversity of psychology leads students to appreciate the interconnectedness between different content areas both within psychology, and across psychology and the other sciences.

An important feature of undertaking a VCE science study is the opportunity for students to engage in a range of inquiry tasks that may be self-designed, develop key science skills and interrogate the links between theory, knowledge and practice. In VCE Psychology inquiry can include laboratory experimentation, observational studies, self-reports, questionnaires, interviews, rating scales, simulations, animations, examination of case studies and literature reviews. Students work collaboratively as well as independently on a range of tasks. They pose questions, formulate research hypotheses, operationalise variables, and collect, analyse and critically interpret qualitative and quantitative data. They analyse the limitations of data, evaluate methodologies and results, justify conclusions, make recommendations and communicate their findings. Students investigate and evaluate issues, changes and alternative proposals by considering both shorter and longer term consequences for the individual, environment and society. A working knowledge of the safety considerations and the ethical standards and guidelines that regulate psychological research is integral to the study of VCE Psychology.

As well as an increased understanding of scientific processes, students 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, social and political contexts of scientific endeavours.

## ACCREDITATION PERIOD

- Units 1 and 2: 1 January 2016 – 31 December 2021
- Units 3 and 4: 1 January 2017 – 31 December 2021

COURSE CONTENT OVERVIEW	
UNIT 1	UNIT 2
Human development involves changes in thoughts, feelings and behaviours. In this unit students investigate the structure and functioning of the human brain and the role it plays in the overall functioning of the human nervous system. Students explore brain plasticity and the influence that brain damage may have on a person's psychological functioning. They consider the complex nature of psychological development, including situations where psychological development may not occur as expected. Students examine the contribution that classical and contemporary studies have made to an	A person's thoughts, feelings and behaviours are influenced by a variety of biological, psychological and social factors. In this unit 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. They 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 an individual and groups. They examine the contribution that classical and



<p>understanding of the human brain and its functions, and to the development of different psychological models and theories used to predict and explain the development of thoughts, feelings and behaviours. A student-directed research investigation related to brain function and/or development is undertaken in this unit. The research investigation draws on content from Area of Study 1 and/or Area of Study 2.</p>	<p>contemporary research has made to the understanding of human perception and why individuals and groups behave in specific ways. A student practical investigation related to internal and external influences on behaviour is undertaken in this unit. The investigation draws on content from Area of Study 1 and/or Area of Study 2.</p>
<p><b>UNIT 3</b></p>	<p><b>UNIT 4</b></p>
<p>The nervous system influences behaviour and the way people experience the world. In this unit students examine both macro-level and micro-level functioning of the nervous system to explain 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 the causes and management of stress. Students investigate how mechanisms of memory and learning lead to the acquisition of knowledge, the development of new capacities and changed behaviours. They consider the limitations and fallibility of memory and how memory can be improved. Students examine the contribution that classical and contemporary research has made to the understanding of the structure and function of the nervous system, and to the understanding of biological, psychological and social factors that influence learning and memory. A student practical investigation 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. The findings of the investigation are presented in a scientific poster format.</p>	<p>Consciousness and mental health are two of many psychological constructs that can be explored by studying the relationship between the mind, brain and behaviour. In this unit students examine the nature of consciousness and how changes in levels of consciousness can affect mental processes and behaviour. They consider the role of sleep and the impact that sleep disturbances may have on a person's functioning. Students explore the concept of a mental health continuum and apply a biopsychosocial approach, as a scientific model, to analyse mental health and disorder. They use specific phobia to illustrate how the development and management of a mental disorder can be considered as an interaction between biological, psychological and social factors. Students examine the contribution that classical and contemporary research has made to the understanding of consciousness, including sleep, and the development of an individual's mental functioning and wellbeing. A student practical investigation 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. The findings of the investigation are presented in a scientific poster format.</p>

<p><b>CHOOSE THIS SUBJECT IF YOU ENJOY:</b></p>	<p><b>LEARNING ACTIVITIES WILL INCLUDE:</b></p>
<ul style="list-style-type: none"> <li>● Understanding why people behave in different ways.</li> <li>● Learning how your brain works and how it can be tricked or trained.</li> </ul>	<ul style="list-style-type: none"> <li>● Textbook activities and worksheets</li> <li>● Quizzes</li> <li>● Experiments</li> <li>● Excursions</li> </ul>

<p><b>CAREERS CAN INCLUDE:</b></p>
<ul style="list-style-type: none"> <li>● Academic and research institutions</li> <li>● Management and human resources</li> <li>● Government / corporate / private enterprises</li> <li>● Applied psychology in educational, environmental, forensic, health and sport</li> <li>● Specialist fields of psychology including counselling and clinical contexts, neuropsychology, social psychology and developmental psychology</li> </ul>

# MEDIA

## INTRODUCTION

The media is ubiquitous in today's world. Working on a personal, local, national and global level, media is deeply embedded within life and culture. It entertains, teaches, informs, and shapes audiences' perception of their lives and the worlds in which they live. Stories in all their forms are at the heart of the media and its relationship with audiences. Through stories narratives are constructed that engage, and are read, by audiences. Representations of ideas, realities and imagination are constructed and deconstructed, remixed and reimagined with ever increasing technological sophistication, ease and speed to engage audiences.

Developments in technologies have transformed media at a rapid pace. The interplay between print and broadcast media and multinational-networked database platforms has enabled creative communication opportunities and reworked notions of key media concepts including audiences, forms and products, storytelling, influence, institutions and industries. Media audiences are no longer constrained by physical, social and political boundaries. Audiences are consumers, users, creative and participatory producers and product. This has created a dramatic increase in communicative, cultural and creative possibilities. The greater involvement of audiences has generated enormous changes in the media economy and issues of content control. Students examine how and why the media constructs and reflects reality and how audiences engage with, consume, read, create and produce media products.

## ACCREDITATION PERIOD

- Units 1–4: 1 January 2018 – 31 December 2022

COURSE CONTENT OVERVIEW	
UNIT 1	UNIT 2
<p>The relationship between audiences and the media is dynamic and changing. Audiences engage with media products in many ways. They share a common language with media producers and construct meanings from the representations within a media product. In this unit students develop an understanding of audiences and the core concepts underpinning the construction of representations and meaning in different media forms. They explore media codes and conventions and the construction of meaning in media products. Students analyse how representations, narrative and media codes and conventions contribute to the construction of the media realities audiences engage with and read. Students gain an understanding of audiences as producers and consumers of media products. Through analysing the structure of narratives, students consider the impact of media creators and institutions on production. They develop research skills to investigate and analyse selected narratives focusing on the influence of media professionals on production genre and style. Students develop an understanding of the features of Australian fictional and non-fictional narratives in different media forms. Students work in a range of media forms and develop and produce representations to demonstrate an understanding of the characteristics of each media form, and how they contribute to the communication of meaning.</p>	<p>Fictional and non-fictional narratives are fundamental to the media and are found in all media forms. Media industries such as journalism and filmmaking are built upon the creation and distribution of narratives constructed in the form of a series of interconnected images and/or sounds and/or words, and using media codes and conventions. New media forms and technologies enable participants to design, create and distribute narratives in hybrid forms such as collaborative and user-generated content, which challenges the traditional understanding of narrative form and content. Narratives in new media forms have generated new modes of audience engagement, consumption and reception. In this unit students further develop an understanding of the concept of narrative in media products and forms in different contexts. Narratives in both traditional and newer forms include film, television, sound, news, print, photography, games, and interactive digital forms. Students analyse the influence of developments in media technologies on individuals and society, examining in a range of media forms the effects of media convergence and hybridisation on the design, production and distribution of narratives in the media and audience engagement, consumption and reception. Students undertake production activities to design and create narratives that demonstrate an awareness of the structures and media codes and conventions appropriate</p>

	to corresponding media forms.
<b>UNIT 3</b>	<b>UNIT 4</b>
<p>In this unit students explore stories that circulate in society through media narratives. They consider the use of media codes and conventions to structure meaning, and how this construction is influenced by the social, cultural, ideological and institutional contexts of production, distribution, consumption and reception. Students assess how audiences from different periods of time and contexts are engaged by, consume and read narratives using appropriate media language. Narratives are defined as the depiction of a chain of events in a cause and effect relationship occurring in physical and/or virtual space and time in non-fictional and fictional media products. Students use the pre-production stage of the media production process to design the production of a media product for a specified audience. They investigate a media form that aligns with their interests and intent, developing an understanding of the media codes and conventions appropriate to audience engagement, consumption and reception within the selected media form. They explore and experiment with media technologies to develop skills in their selected media form, reflecting on and documenting their progress. Students undertake pre-production processes appropriate to their selected media form and develop written and visual documentation to support the production and post-production of a media product in Unit 4.</p>	<p>In this unit students focus on the production and post-production stages of the media production process, bringing the media production design created in Unit 3 to its realisation. They refine their media production in response to feedback and through personal reflection, documenting the iterations of their production as they work towards completion. Students explore the relationship between the media and audiences, focusing on the opportunities and challenges afforded by current developments in the media industry. They consider the nature of communication between the media and audiences, explore the capacity of the media to be used by governments, institutions and audiences, and analyse the role of the Australian government in regulating the media.</p>

<b>CHOOSE THIS SUBJECT IF YOU ENJOY:</b>	<b>LEARNING ACTIVITIES WILL INCLUDE:</b>
<ul style="list-style-type: none"> <li>● Film study</li> <li>● Photography</li> <li>● Advertising</li> <li>● Creativity</li> <li>● ICT</li> <li>● Art</li> </ul>	<ul style="list-style-type: none"> <li>● Analysis Tasks: film, television and print media</li> <li>● Research Tasks</li> <li>● Practical applications</li> <li>● Product design, creation and evaluation</li> </ul>
<b>CAREERS CAN INCLUDE:</b>	
<ul style="list-style-type: none"> <li>● Advertising / Film Production / Photography / Journalism / Critic / Digital Design / Marketing</li> </ul>	

# STUDIO ARTS

## INTRODUCTION

VCE Studio Arts introduces students to the role and practices of artists in society. Students develop an understanding of the way artists work in a range of cultures and periods of time, the artists' perceptions, beliefs and actions and their relationship with the viewer.

Student research focuses on critical, reflective and creative thinking, the visual analysis of artworks and the investigation of how artists have interpreted sources of inspiration and influences in their art making. Students examine how artists develop their practice and have used materials, techniques and processes to create aesthetic qualities in artworks. They study how artists have developed style and explored their cultural identity in their artwork. Students use this knowledge to inform their own studio practice and to support art making. Visiting a variety of art exhibition spaces is integral to the student's artistic and creative development. Students also consider the ways in which artists work to develop and resolve artworks, including their use of inspiration and their creative process. The role of artists in society includes their relationships with others in the art industry and the presentation and exhibition of artworks in art galleries and exhibition spaces. Students research aspects of the art industry including the presentation, conservation and marketing of artworks.

The creative nature of the visual arts provides individuals with the opportunity for personal growth, the expression of ideas and a process for examining identity. Exhibitions of artworks offer an insight into the diverse interpretations of life and experiences of artists. Engagement with artworks facilitates creative thinking and the development of new ideas; it also supports connection and exchange within local, national and global communities. VCE Studio Arts encourages and supports students to recognise their individual potential as artists and develop their understanding and development of art making. VCE Studio Arts broadens students' understanding of, and ability to engage with, artworks. It equips students with the knowledge and skills to pursue an art studio practice and follow tertiary and industry pathways in fine art, research and education. The study also offers students opportunities for personal development and encourages them to make an ongoing contribution to society and the culture of their community through lifelong participation in the making and viewing of artworks.

## ACCREDITATION PERIOD

- Units 1–4: 1 January 2017 – 31 December 2021

COURSE CONTENT OVERVIEW	
UNIT 1	UNIT 2
In this unit students focus on developing an individual understanding of the stages of studio practice and learn how to explore, develop, refine, resolve and present artworks. Students explore sources of inspiration, research artistic influences, develop individual ideas and explore a range of materials and techniques related to specific art forms. Using documented evidence in a visual diary, students progressively refine and resolve their skills to communicate ideas in artworks. Students also research and analyse the ways in which artists from different times and cultures have developed their studio practice to interpret and express ideas, source inspiration and apply materials and techniques in artworks. The exhibition of artworks is integral to Unit 1 and students are encouraged to visit a variety of exhibition spaces	In this unit students focus on establishing and using a studio practice to produce artworks. The studio practice includes the formulation and use of an individual approach to documenting sources of inspiration, and experimentation with selected materials and techniques relevant to specific art forms. Students explore and develop ideas and subject matter, create aesthetic qualities and record the development of the work in a visual diary as part of the studio process. Through the study of art movements and styles, students begin to understand the use of other artists' work in the making of new artworks. Students also develop skills in the visual analysis of artworks. Artworks made by artists from different times and cultures are analysed to understand developments in studio practice. Using a range of art

<p>throughout the unit, reflect on the different environments and examine how artworks are presented to an audience.</p>	<p>periods, movements or styles, students develop a broader knowledge about the history of art. Analysis is used to understand the artists' ideas and how they have created aesthetic qualities and subject matter. Comparisons of contemporary art with historical art styles and movements should be encouraged. The exhibition of artworks is integral to Unit 2 and students are encouraged to visit a variety of exhibition spaces throughout the unit, reflect on the different environments and examine how artworks are presented to an audience.</p>
<p><b>UNIT 3</b></p>	<p><b>UNIT 4</b></p>
<p>In this unit students focus on the implementation of an individual studio 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 studio 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 studio process to support the making of finished artworks in Unit 4. For this study, the exploration proposal supports the student to identify a direction for their studio process. The student determines the studio process. This process records trialling, experimenting, analysing and evaluating the extent to which art practices successfully communicate ideas presented in the exploration proposal. From this process students progressively develop and identify a range of potential directions. Students will select some of these potential directions from which to develop at least two artworks in Unit 4. The study of artists and their work practices and processes may provide inspiration for students' own approaches to art making. Students investigate and analyse the response of artists to a wide range of source material and examine their use of materials and techniques. They explore professional art practices of artists from different historical and cultural contexts in relation to particular artworks and art forms. The exhibition of artworks is integral to Unit 3 and students are expected to visit a variety of exhibitions throughout the unit, reflect on the different environments where artworks are exhibited and examine how artworks are presented to an audience. Students are expected to visit at least two different exhibitions and study specific artworks displayed in these exhibitions during their current year of study.</p>	<p>In this unit students focus on the planning, production and evaluation required to develop, refine and present artworks that link cohesively according to the ideas resolved in Unit 3. To support the creation of artworks, students present visual and written evaluation that explains why they selected a range of potential directions from Unit 3 to produce at least two finished artworks in Unit 4. The development of these artworks should reflect refinement and skillful application of materials and techniques, and the resolution of ideas and aesthetic qualities discussed in the exploration proposal in Unit 3. Once the artworks have been made, students provide an evaluation about the cohesive relationship between the artworks. This unit also investigates aspects of artists' involvement in the art industry, focusing on a least two different exhibitions, that the student has visited in the current year of study with reference to specific artworks in those exhibitions. Students investigate the methods and considerations of the artist and/or curator involved in the preparation, presentation and conservation of artworks displayed in exhibitions in at least two different galleries or exhibitions. Students examine a range of environments for the presentation of artworks including public galleries and museums, commercial and private galleries, university art galleries, artist-run spaces, alternative art spaces and online gallery spaces.</p>

<p><b>CHOOSE THIS SUBJECT IF YOU ENJOY:</b></p>	<p><b>LEARNING ACTIVITIES WILL INCLUDE:</b></p>
<ul style="list-style-type: none"> <li>● Being creative and working in a tactile / hands-on manner</li> <li>● Expressing your ideas and communicating to others in a visual form</li> <li>● Discovering, experimenting with and exploring new materials and techniques</li> <li>● Art history</li> </ul>	<ul style="list-style-type: none"> <li>● Development of a studio process</li> <li>● Folio development</li> <li>● Research and analysis of individual artists and art styles</li> <li>● Investigation into the art industry</li> <li>● Excursions to exhibitions</li> </ul>
<p><b>CAREERS CAN INCLUDE:</b></p>	
<ul style="list-style-type: none"> <li>● Animator / Artist / Art Critic / Art Restorer / Art Historian / Architect / Costume Designer or Maker / Curator at a Gallery or Museum</li> <li>● Fashion / Graphic / Interior / Industrial Designer / Jeweler / Photographer / Printmaker / Set Designer</li> <li>● Teacher / Visual Merchandising</li> </ul>	

# PRODUCT DESIGN AND TECHNOLOGY

## INTRODUCTION

Product design is a response to changing needs and to improve quality of life by designing creative, innovative and sustainable products. Product design is enhanced through knowledge of social, technological, economic, historical, ethical, legal, environmental and cultural factors. These factors influence the aesthetics, form and function of products.

Central to VCE Product Design and Technology is design thinking, which is applied through the product design process providing a structure for creative problem solving. The design process involves identification of a real need, problem or opportunity that is then articulated in a design brief. The need, problem or opportunity is investigated and informed by research to aid the development of solutions that take the form of physical, three-dimensional products. Development of these solutions requires the application of technology and a variety of cognitive and physical skills, including design thinking, drawing and computer-aided design, testing processes and materials, planning, construction, fabrication and evaluation.

For VCE Product Design and Technology students assume the role of a designer-maker. In adopting this role, they develop and apply knowledge of factors that influence design and address the design factors relevant to their design situation. The knowledge and use of resources is integral to product design. These resources include a range of materials, and the tools, equipment and machines needed to safely transform these materials into products. Increasingly, the importance of sustainability is affecting product design and development, and so is at the forefront throughout the product life cycle.

## ACCREDITATION PERIOD

- Units 1–4: 1 January 2018 – 31 December 2022

COURSE CONTENT OVERVIEW	
UNIT 1	UNIT 2
<p>This unit focuses on the analysis, modification and improvement of a product design with consideration of sustainability. It is common for designers in Australia to use products from overseas as inspiration when redeveloping products for the domestic market. Sustainable re-development refers to designers and makers ensuring products serve social, economic and environmental needs. Generating economic growth for design and manufacturing in Australia can begin with redeveloping existing products so they have positive social and minimal environmental impact. In this unit students examine claims of sustainable practices by designers. Students consider the sustainability of an existing product, such as the impact of sourcing materials, manufacture, distribution, use and likely disposal. They consider how a redeveloped product should attempt to solve a problem related to the original product. Where possible, materials and manufacturing processes used should be carefully selected to improve the overall sustainability of the redeveloped product. In Area of Study 1 students consider the sustainability of an existing product and acknowledge the intellectual property (IP) rights of the original designer. Working drawings (also known as flats, trade sketches, assembly</p>	<p>In this unit students work in teams to design and develop an item in a product range or contribute to the design, planning and production of a group product. They focus on factors including end-user/s' needs and wants; function, purpose and context for product design; aesthetics; materials and sustainability; and the impact of these factors on a design solution. Teamwork encourages communication between students and mirrors professional design practice where designers often work within a multi-disciplinary team to develop solutions to design problems. Students also use digital technologies to facilitate teams to work collaboratively online. In this unit students gain inspiration from an historical or a contemporary design movement or style and its defining factors such as ideological or technological change, philosophy or aesthetics. In Area of Study 1, students work both individually and as members of a small design team to address a problem, need or opportunity and consider user-centred design factors. They design a product within a range, based on a theme, or a component of a group product. They research and refer to a chosen design style or movement. In Area of Study 2 the finished product is evaluated.</p>

<p>or technical drawings) are used to present the preferred design option. In Area of Study 2, students produce a redeveloped product using tools, equipment, machines and materials, taking into account safety considerations. They compare their product with the original design and evaluate it against the needs and requirements outlined in their design brief.</p>	
<p><b>UNIT 3</b></p>	<p><b>UNIT 4</b></p>
<p>In this unit students are engaged in the design and development of a product that addresses a personal, local, or global problem (such as humanitarian issues), or that meets the needs and wants of a potential end-user/s. The product is developed through a design process and is influenced by a range of factors including the purpose, function and context of the product; user-centred design; innovation and creativity; design elements and principles; 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 vary 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 an end-user/s. Students identify methods which could be used in a low-volume or mass/high-volume production setting to manufacture a similar product to their design. In the initial stage of the product design process a design brief is prepared, outlining the context or situation around the design problem and describing the needs and requirements in the form of constraints or considerations. In Area of Study 1, students examine how a design brief addresses particular product design factors and how evaluation criteria are developed from the constraints and considerations in the brief. They develop an understanding of techniques in using the design brief as a springboard to direct research and design activities. In Area of Study 2, students examine how a range of factors, including new and emerging digital technologies, influence the design and development of products within industrial manufacturing settings. They consider issues associated with obsolescence and sustainability models. In Area of Study 3, students commence the application of the product design process for a product design for an end-user/s, including writing an individual design brief and criteria that will be used to evaluate the product in Unit 4.</p>	<p>In this unit students engage with an end-user/s to gain feedback throughout the process of production. Students make comparisons between similar products to help evaluate 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. In Area of Study 1, students use comparative analysis and evaluation methods to make judgments about commercial product design and development. In Area of Study 2, students continue to develop and safely manufacture the product designed in Unit 3, Outcome 3, using materials, tools, equipment and machines, and record and monitor the production processes and modifications to the production plan and product. In Area of Study 3, students evaluate the quality of their product with reference to criteria and end-user/s' feedback. Students make judgments about possible improvements. They produce relevant user instructions or care labels that highlight the product's features for an end-user/s.</p>

<p><b>CHOOSE THIS SUBJECT IF YOU ENJOY:</b></p>	<p><b>LEARNING ACTIVITIES WILL INCLUDE:</b></p>
<ul style="list-style-type: none"> <li>● Being creative and working in a tactile / hands-on manner</li> <li>● Discovering, experimenting with and exploring new materials and techniques</li> </ul>	<ul style="list-style-type: none"> <li>● Development of a Design Process</li> <li>● Folio development</li> <li>● Construction of a product for use</li> </ul>
<p><b>CAREERS CAN INCLUDE:</b></p>	
<ul style="list-style-type: none"> <li>● Furniture Design / Cabinet Making / Graphic Designer / Materials Engineer</li> <li>● Product Manager / Set designer / Purchasing managers</li> </ul>	



# PHYSICAL EDUCATION

## INTRODUCTION

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. The assimilation of theoretical understanding and practice is central to the study of VCE Physical Education. Students participate in practical activities to examine the core concepts that underpin movement and that influence performance and participation in physical activity, sport and exercise. Through integrated physical, written, oral and digital learning experiences, students apply theoretical concepts and reflect critically on factors that affect all levels of performance and participation in sport, exercise and physical activity.

The study of VCE Physical Education enables students to integrate a contemporary understanding of the theoretical underpinnings of performance and participation in physical activity with practical application. Through engagement in physical activities, VCE Physical Education enables students to develop the knowledge and skills required 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 associated with being active. The study also prepares students for employment and/or further study at the tertiary level or in vocational education and training settings in fields such as exercise and sport science, health science, education, recreation, sport development and coaching, health promotion and related careers.

## ACCREDITATION PERIOD

- Units 1 and 2: 1 January 2017 – 31 December 2022
- Units 3 and 4: 1 January 2018 – 31 December 2022

COURSE CONTENT OVERVIEW	
UNIT 1	UNIT 2
<p>In this unit 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.</p>	<p>This unit develops 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</p>



	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.
<b>UNIT 3</b>	<b>UNIT 4</b>
This unit introduces 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.	In this unit 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.

<b>CHOOSE THIS SUBJECT IF YOU ENJOY:</b>	<b>LEARNING ACTIVITIES WILL INCLUDE:</b>
<ul style="list-style-type: none"> <li>• Exploring the body's response to exercise</li> <li>• Applying movement understanding to improve performance outcomes</li> </ul>	<ul style="list-style-type: none"> <li>• Biomechanical practical application through labs</li> <li>• Varied range of innovative theoretical tasks and activities</li> </ul>
<b>CAREERS CAN INCLUDE:</b>	
<ul style="list-style-type: none"> <li>• Health Sciences</li> <li>• Exercise Science and education</li> <li>• Personal Training</li> <li>• Coaching</li> <li>• Physical Therapy and rehabilitation</li> </ul>	

# 2021 VCAL PROGRAMS

## WHAT IS THE VCAL?

The Victorian Certificate of Applied Learning (VCAL) is a senior secondary certificate of education recognised within the Australian Qualifications Framework (AQF). The qualification aims to provide the skills, knowledge and attributes to enable students to make informed choices about pathways to work and further education.

## THE THREE LEVELS OF THE VCAL

FOUNDATION	Focuses on knowledge and employability skill development that is supported by an emphasis on literacy and numeracy skills.
INTERMEDIATE	Focuses on knowledge and employability skill development which leads to independent learning, confidence and a high level of transferable skills.
SENIOR	Focuses on knowledge and employability skill development which leads to a high level of interpersonal skills, independent action and achievement that require decision-making and leadership.

## ELIGIBILITY FOR THE AWARD OF THE VCAL

*Students must successfully complete a learning program that contains a minimum of 10 credits.*

These credits will be a combination of COMPULSORY STRANDS from the VCAL curriculum and a variety of General Units.

### LITERACY

The curriculum for Literacy skills reading and writing units is designed to develop student knowledge, skills and attributes relevant to reading and writing, and their practical application in the contexts of everyday life, family, employment, further learning and community.

Literacy skills corresponding with these social contexts include reading and writing for:

- self-expression
- practical purposes
- knowledge
- public debate

### NUMERACY

The curriculum for Numeracy skills unit 1 is designed to develop student knowledge, skills and attributes relevant to identifying, applying and communicating mathematical information in the contexts of everyday life, family, employment, further learning and community.

Numeracy skills corresponding with these social contexts include:

- mathematical knowledge and techniques
- financial literacy
- planning and organising
- measurement
- data

- representation
- design
- problem-solving
- using software tools and devices, and
- further study in mathematics or related fields

## WORK RELATED SKILLS

The curriculum for the Work Related Skills units is designed to develop employability skills, knowledge and attributes valued within the community and work environments as a preparation for employment. The development of employability skills provides learners with a capacity to consider and choose from the range of pathways. The development of occupational health and safety knowledge prepares learners for the workplace.

- Work Related Skills unit 1 at each VCAL level is designed to achieve learning outcomes important for occupational health and safety, and the development of career goals.
- Work Related Skills unit 2 at each VCAL level is designed to achieve learning outcomes important for Work Related Skills, employability skills and career goals.

## PERSONAL DEVELOPMENT SKILLS

The purpose of the VCAL Personal Development Skills Strand is to develop student knowledge, skills and attributes that lead to self-development and community engagement through:

- family, social, community and environmental responsibilities
- resilience, self-esteem and efficacy
- health and wellbeing
- valuing participation in a democratic society

Unit 1 focuses on the development of appropriate knowledge, skills and attributes in relation to:

- resilience, self-esteem and efficacy
- health and wellbeing
- family and social connectedness
- environmental awareness
- critical and creative thinking
- planning and organisational skills
- problem-solving and interpersonal skills.

Unit 2 focuses on the development of appropriate knowledge, skills and attributes in relation to:

- community engagement
- social and environmental awareness
- participation in a democratic society
- social connectedness
- critical and creative thinking
- planning and organisational skills
- problem-solving and interpersonal skills.

## INDUSTRY SPECIFIC SKILLS

The Industry Specific Skills strand enables the development of skills, knowledge and attributes related to one or more vocational contexts in preparation for progression to further learning or employment. The learning program should focus on vocational contexts so learners can make informed choices on the pathway options available through the VCE, VET, FE and employment.

- At Intermediate and Senior level of the VCAL, curriculum selected for this strand must be drawn from nationally-recognised VET qualifications such as state accredited curriculum or training packages.

- At Foundation level, curriculum can be drawn from nationally recognised certificates or training package qualifications or a selected VCE unit that has a vocational focus.

## GENERAL CREDITS

In order to meet the 10 credit requirement students will also complete Units from the following list:

- Oral Communication (Foundation, Intermediate and Senior)
- Structured Workplace Learning Accreditation (Foundation, Intermediate and Senior)
- Unit 2 Numeracy (Intermediate or Senior)
- Unit 1 and 2 Industry and Enterprise
- Certificate II in Creative Industries

## CONTRIBUTION OF VET TO VCAL

In order to receive 2 credits towards your VCAL you must:

- Complete 180 hours of nationally recognised training (1 year of study)
- Complete all necessary coursework in the allocated modules (decided upon by the provider)
- Be deemed competent in all areas of the course
- Meet the attendance policy of the course

## RECOGNITION OF STRUCTURED WORKPLACE LEARNING

In order to receive 2 credits towards your VCAL you must:

- Complete a minimum of 200 hours of Structured Workplace Learning in the same industry as the VET program you are enrolled in (over a year)
- Be enrolled in at least 180 hours in a VET program (1 year)
- Complete a Workplace Learning Record (Logbook of times and reflections)

It is imperative that students organise a work placement as soon as they have been accepted into the VCAL program, otherwise it may be difficult to work the required hours for accreditation. This will mean that students won't be able to use your Structured Workplace Learning as a General Credit.

## MORE INFORMATION

An information booklet is available for students and parents to access at:

<https://www.vcaa.vic.edu.au/Documents/handbook/2020/VCEVCALAdminHandbook2020.pdf>

# 2021 VET PROGRAMS

VCE VET programs are VET qualifications approved by the VCAA following consultation with schools, industry and training providers. VCE VET programs lead to nationally recognised qualifications, thereby offering students the opportunity to gain both the VCE and a VET qualification.

Successful completion of VET in a senior secondary program can provide students with:

- a VCE and/or VCAL certificate issued by the VCAA, and a VET certificate issued by a registered training organisation (RTO)
- two statements of results issued by the VCAA giving details of units completed in the VCE and units of competency/modules completed in the VET qualification
- an enhanced ATAR which can improve access to further education
- pathways into employment and/or further VET qualifications or training
- workplace experience gained through structured workplace learning.

Students value VET because it:

- allows them to combine general and vocational studies which for many, provides a practical focus in a range of industry areas
- provides direct experience of business and industry
- enables them to explore training in areas that will enhance their pathway choices.

Employers value VET because it:

- contributes to the development of entry level skills for their industry
- provides students with a practical and focused introduction to workplace requirements
- enhances the employability of students
- enables industry to contribute to educational programs in schools
- enables industry to participate in local community networks.

VCE VET programs are constantly being developed or revised. Students and parents are advised to refer to the VCAA website and [VCAA Bulletin](#) for the most up-to-date information.

Below is a list of all of the VET programs that are available to students to study as part of either VCE or VCAL. Included here are the links to each of the course outlines as available on the VCAA website. Students will be provided with information around which VET programs will be on offer in both the Brimbank and Melton clusters.

Further information about the surrounding VET clusters and the courses they offer can be accessed here:

BrimbankVETCluster:

<http://www.bvc.vic.edu.au/Files/51/Website-BRIMBANK-Student-Handbook-COLOUR.pdf>

Certificate III in Acting (Screen)  
Certificate III in Allied Health Assistance  
Certificate II in Applied Fashion & Design  
Certificate II in Automotive Vocational Preparation  
Certificate III in Baking  
Certificate III in Beauty  
Certificate II in Building & Construction  
Certificate II & III in Business  
Certificate III in Community Services  
Certificate II in Dance  
Certificate II in Electrotechnology Studies  
Certificate II in Engineering  
Certificate II in Furniture Making  
Certificate III in Health Services Assistance  
Certificate II in Horticulture  
Certificate III in Information Digital Media & Technology  
Certificate II in Kitchen Operations  
Certificate II Hospitality & II in Kitchen Operations  
Certificate III in Laboratory Skills  
Certificate III in Music Industry Music Performance Specialisation  
Certificate III in Music Sound Production Specialisation  
Certificate II in Picture Framing  
Certificate II in Plumbing  
Certificate II in Salon Assistant  
Certificate III in Screen Media  
Certificate III in Screen Media  
Certificate II in Signage and Graphics  
Certificate III in Sport & Recreation  
Certificate III in Sport & Recreation (Soccer)  
Certificate II in Small Business Management

MeltonVETCluster: <http://www.wec.vic.edu.au/Files/61/WEC-website-Student-Handbook-COLOUR-PDF.pdf>

Certificate III in Allied Health Assistance  
Certificate II in Applied Fashion Design Technology  
Certificate II in Automotive Vocational Preparation  
Certificate III in Beauty  
Certificate II in Building & Construction  
Certificate III in Community Services  
Certificate III in Early Childhood Education & Care  
Certificate II in Electrotechnology (Career Start)  
Certificate II in Engineering Studies  
Certificate II in Horticulture  
Certificate III in Information Digital Media & Technology  
Certificate II in Plumbing

## STRUCTURED WORKPLACE LEARNING

The VCAA has determined that structured workplace learning (SWL) is an appropriate and valuable component of all VET qualifications undertaken by VCE or VCAL students. SWL compliments the training undertaken at the school/provider and should be spread across the duration of the training program. It provides context for:

- enhancement of skills development
- practical application of industry knowledge
- assessment of units of competency/modules, as determined by the registered training organisation (RTO)
- increased employment opportunities.

VCE VET program publications contain information relating to the SWL requirements. In all cases, SWL is strongly recommended. Several VCE VET programs have a mandated SWL component. The SWL requirements are expressed in hours and weeks and are expected to be carried out over the two-year minimum of VCE VET programs. It should be noted that industrial agreements may stipulate the length of a working week in a particular industry and that this may differ from the VCAA recommendation. The industry requirements are to be adhered to.

The following document outlines the VCAA's recommendations for SWL in VCE VET programs:

- [SWL summary for VCE VET programs in 2018 \(pdf - 195kb\)](#) (January 2018)

The appropriate occupational or workplace health and safety unit of competency/modules in each program must be undertaken prior to SWL, as outlined in Ministerial Order 55.

# HEAD START APPRENTICESHIPS AND TRAINEESHIPS

Springside West Secondary College is part of the Brimbank & Melton cluster delivering a new initiative called the Head Start Program. Head Start is a new model for apprenticeships and traineeships for school students. Head Start students spend more time doing important, paid, on-the-job training while completing their VCE or VCAL at school. The program helps students to develop skills and experience that employers value. Head Start helps students to get the best start in their career.

## How it works

Students can choose to take an extra year to complete their VCE or VCAL. This means more time spent training on-the-job. In the first year, students will spend one or two days per week in paid employment. This will increase to three or four days per week in paid employment in the final year.

This new and flexible approach provides:

- strong supports for both students and employers throughout the apprenticeship or traineeship
- quality assured training through TAFEs and Skills First contracted providers
- a tailored pathway for students into careers in priority industries
- an opportunity for employers to train and mentor students who are ready for work and have literacy, numeracy and employability skills
- payment of a fair training wage
- VCE or VCAL completion
- significant progress towards, or completion of, a trade qualification.

## Application for the Head Start Program

Application for the Head Start Program here at Springside West Secondary College is completed on an individual basis, involving a meeting with the Principal and Head of Senior School. If students are interested in participating in the program, they should first visit the DET website outlining the course in greater detail, as well as making an appointment with the school course counsellors.

- <https://www.education.vic.gov.au/about/programs/Pages/headstart.aspx>