

VCE Biology

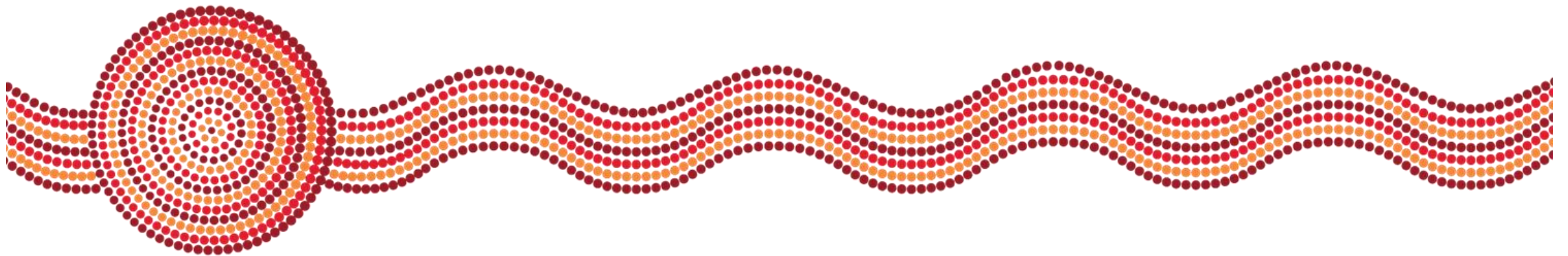
Implementation of VCE Study Design for
2022 – 2026

Introduction and overview of Unit 1 – 4

Acknowledgment of Country

I would like to acknowledge the traditional custodians of the many lands across Victoria on which each of you are living, learning and working. For myself, I acknowledge the Dja Dja Wurrung as the traditional custodians of the land from which I am presenting today.

I would like to pay my respects to Elders past, present and emerging, for they hold the memories, traditions, culture and hopes of all Aboriginal and Torres Strait Islander peoples across the nation.

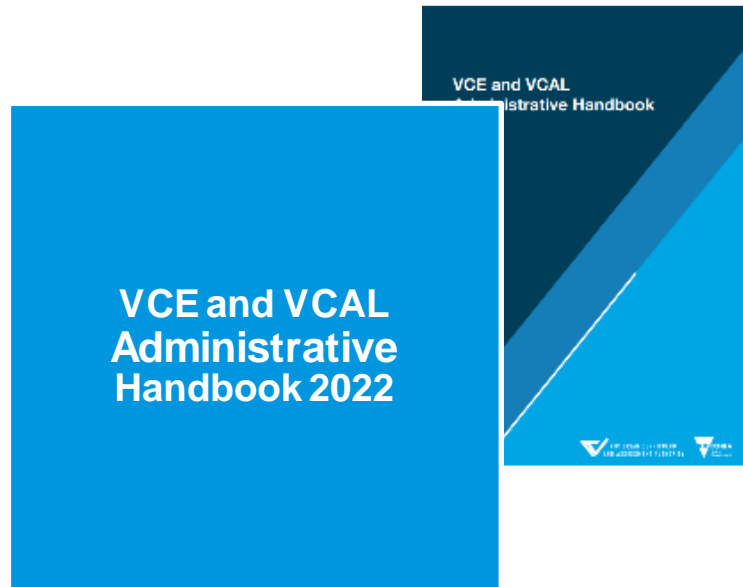




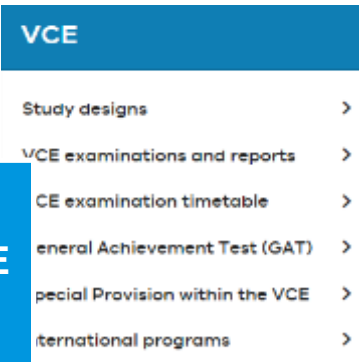
Purpose

- Introduce new features
- Familiarise with revised Units
- Assessment structure
- Set a foundation for the Unit specific webinars
- Resources

VCE Biology 2022 – 2026 resources



VCE Biology 2022 – 2026 resources



VCE

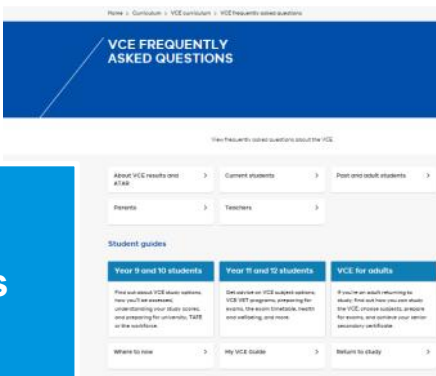
- Study designs >
- VCE examinations and reports >
- VCE examination timetable >
- General Achievement Test (GAT) >
- Special Provision within the VCE >
- International programs >

VCAA VCE webpage



On Line Resources

Support materials



VCE FREQUENTLY ASKED QUESTIONS

View frequently asked questions about the VCE


About VCE results and ATAR > Current students > Post and adult students >

Parents > Teachers >

Student guides

Your 9 and 10 students	Your 11 and 12 students	VCE for adults
Find out about VCE study options, how you'll be assessed, understanding your study scores, and preparing for university, TAFE or the workforce.	Discover our VCE subject options, VCE VET programs, preparing for exams, the exam timetable, health and wellbeing, and more.	If you're an adult returning to study, find out how you can study the VCE, choose subjects, prepare for exams, and obtain your senior certificate.
Where to now >	My VCE study >	Return to study >

FAQ's



VICTORIAN CURRICULUM AND ASSESSMENT AUTHORITY

Home > Assessment > VCE assessment > Examination specifications, past examinations and examination reports

BIOLOGY

Examination specifications and sample materials

- Examination specifications (Version 3, February 2020)
- Sample written examination (February 2017)

Examination specifications and Sample examination

VCE Biology 2022 – 2026 Structure

Scope of study, Rationale and Aims

Cross-study specifications

Units of study

Outcomes

Key Knowledge and
Key Science Skills

Satisfactory completion
Levels of achievement

Cross-study specifications (p. 7–14)

- **Key Science Skills**
- **Scientific Investigation**
 - Scientific investigation methodologies
 - Logbooks
 - Unit 4 Scientific poster
- **Critical and creative thinking**
- **Ethical understanding**
- **Individual and collaborative scientific endeavour**
- **Aboriginal and Torres Strait Islander knowledge, culture and history**

Key Science Skills (p.7–8)

- Contextualised for VCE Biology
- Make explicit
- Opportunities to practise
- Deploy in new contexts



Key Science Skills revised

VCE Biology Study Design 2016–2021	VCE Biology Study Design 2022–2026
Develop aim and questions, formulate hypotheses and make predictions	Develop aim and questions, formulate hypotheses and make predictions
Plan and undertake investigations	Plan and conduct investigations
Comply with safety and ethical guidelines	Comply with safety and ethical guidelines
Conduct investigations to collect and record data	Generate, collate and record data
Analyse and evaluate data, methods and scientific models	Analyse and evaluate data and investigation methods
Draw evidence-based conclusions	Construct evidence-based arguments and draw conclusions
Communicate and explain scientific ideas	Analyse, evaluate and communicate scientific ideas

Scientific Investigation (p. 9–10)

- Opportunities for teacher-facilitated, student-adapted and student-designed investigations across Units 1 – 4
- **Scientific investigation methodologies** for 2022-2026

Study Design:

- Case study
- Classification and identification
- Controlled experiment
- Correlational study
- Fieldwork
- Literature review
- Modelling
- Product, process or system development
- Simulation

Practical work

Central component of learning and assessment.

Includes activities such as laboratory experiments, fieldwork, simulations, modelling and other direct experiences described in the scientific investigation methodologies.

A minimum of 10 hours of class time to be devoted to student practical activities and scientific investigations across Areas of Study 1 and 2 for Units 1 to 4.

A minimum of 7 hours to be devoted to Area of Study 3 in Units 1 and 2.

A minimum of 10 hours to be devoted to the student-designed investigation in Unit 4, Area of Study 3.

Logbooks (p.10)

A logbook of practical activities is maintained for each of Units 1 to 4 for recording, authentication and assessment purposes.

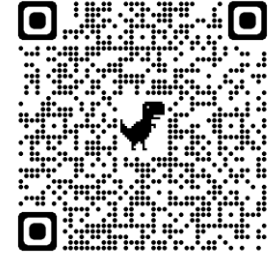
The presentation format of the log book is a school decision and no specific format is prescribed. It's purposes may include:

- **providing a basis for further learning, for example, contributing to class discussions about demonstrations, activities or practical work**
- **reporting on an investigation or activity**
- **responding to questions in a practical worksheet or problem-solving exercise**
- **writing up an investigation as a formal report or as the basis of a scientific poster.**

Terms used in this study (p.14–17)

- **New inclusion in study design, including contestable terms in the study design defined**
- **Aboriginal and Torres Strait Islander knowledge, cultures and history**
- **Data and Measurement**
- **Ethical approaches and concepts**
- **Errors, uncertainty and outliers**

F – 10 Bioethics Resources



Sample learning activities that incorporate ethical considerations and concepts into ‘bioethics’ learning activities based on biological sciences content from the Victorian Curriculum F – 10.

Levels 9 and 10 resources contain activities that focus on approaches to bioethics and ethical concepts that are also included in VCE Biology.

The screenshot shows a web page with a breadcrumb trail: Home > Curriculum > F-10 > Curriculum area resources > Science. Below this is a dark blue header with the text 'TEACHING RESOURCES' in white. A link 'Back to Science' is visible. The main content area features the title 'Teaching bioethics in the Victorian Curriculum F-10 activities, Foundation to Level 10' in blue. Below the title is a paragraph of text describing the resources, followed by two links to document files: 'Teaching bioethics in the Victorian Curriculum F-10 – Sample learning activities, Foundation to Level 6 (docx - 5.02mb)' and 'Teaching bioethics in the Victorian Curriculum F-10 – Sample learning activities, Levels 7-10 (docx - 288.8kb)'.

Making visible Aboriginal Perspectives

In 2020, partnering with key stakeholders, the VCAA ran a series of webinars titled '**Making Visible: Aboriginal perspectives in the Victorian Curriculum F – 10**'

7-10 webinars provided an overview of Aboriginal perspectives across the Victorian Curriculum F – 10 as well as making visible Aboriginal perspectives in the **Aboriginal Languages curriculum, The Arts, Humanities and STEM.**

Recordings of webinars are available **on the VCAA website.**



Unit 1 and 2 Structure

Unit titles	Area of Study titles
Unit 1: How do organisms regulate their functions?	Area of Study 1: How do cells function? Area of Study 2: How do plant and animal systems function? Area of Study 3: How do scientific investigations develop understanding of how organisms regulate their functions?
Unit 2: How does inheritance impact on diversity?	Area of Study 1: How is inheritance explained? Area of Study 2: How do inherited adaptations impact on diversity? Area of Study 3: How do humans use science to explore and communicate contemporary bioethical issues?

Unit 3 and 4 Structure

Unit titles	Area of Study titles
Unit 3: How do cells maintain life?	Area of Study 1: What is the role of nucleic acids and proteins in maintaining life? Area of Study 2: How are biochemical processes regulated?
Unit 4: How does life change and respond to challenges?	Area of Study 1: How do organisms respond to pathogens? Area of Study 2: How are species related over time? Area of Study 3: How is scientific inquiry used to investigate cellular processes and/or biological change?

Curriculum and assessment programs

- **Each school is different and there are different contexts that students operate in.**
- **There are different circumstances.**
- **Students will have different strengths, different talents and different resources available to them.**
- **The design of curriculum and assessment programs should reflect this and support of effective assessment for students.**

VCE assessment principles

Assessment is an integral part of teaching and learning at the senior secondary level that:



The **VCE Assessment Principles** state that assessment will be *valid and reasonable, equitable, balanced* and *efficient*.

VCE Assessment principles

Valid

- fair and reasonable
- designated task type
- conducted under fair conditions for all students
- clear instructions included



Equitable

- accessible to all students
- doesn't privilege or disadvantage certain groups of students
- tasks are comparable in scope and demand

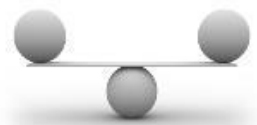


VCE Assessment principles



Balanced

- variety of task types used
- variety of conditions used
- allow students to demonstrate different levels of achievement
- suitable criteria, descriptors, rubrics or marking schemes used
- outcomes, key knowledge and key skills are assessed



Efficient

- minimum number of assessments set
- precision vs efficiency
- minimise undue workload/stress on students
- part of the regular teaching and learning program
- avoid under or over assessment of the outcome
- completed mainly in class and within a limited timeframe

Integrity and Authentication

The integrity of VCE Assessments is of a paramount concern to maintain the integrity of the VCE qualification, as such teachers and schools need to develop and implement robust authentication strategies to ensure that the student's submitted work is clearly their own.

Effective schools will build a culture of integrity and trust underpinned by teaching and learning practices of ongoing formative assessment to gather knowledge and evidence of student abilities.

School-based Assessment

School-based assessment is an opportunity to design learning and teaching activities for a specific cohort of students, with assessment that is personalised for them.

Central to School-based Assessment is understanding that teachers know their students; and know the best ways to collect evidence in terms of their achievement.

Two forms of assessment for each outcome:

- Satisfactory completion of an outcome – Units 1 to 4
- Levels of achievement
 - school-based tasks in Units 1 and 2
 - School-assessed Coursework (SAC) tasks in Units 3 and 4

Planning template



Provide details of the outcome, time period (Term/Week–Term/Week), key knowledge and key science skills (from the study design)

List and describe the learning activities that will be used to provide appropriate opportunity for students to demonstrate satisfactory achievement of the outcome (this includes practical activities, demonstrations and excursions/field work).

List and describe the assessment tasks that will be used to assess students level of achievement. Include an estimate of when each task will occur

Unit 1, Outcome 1: <insert outcome statement – see page 13 of VCE study design>

Anticipated teaching time allocation: <insert as appropriate; e.g. Term 1 Week 1 – Term 1 Week 6>

Key knowledge:

- <Select as appropriate. See pages 13–14 of VCE study design>

Biology Units 1–4 Key science skills:

- <Select as appropriate. See pages 10–11 of VCE study design>

<Consider a range of resources when developing appropriate learning activities; e.g. VCE Advice for Teachers located on the VCAA website: www.vcaa.vic.edu.au/curriculum/vce/vce-study-designs/biology/advice-for-teachers/Pages/Index.aspx – ensure that any activities directly sourced from a public resource are contextualised to your school/provider’s approach>

<Select and describe as appropriate. See page 16 of the VCE study design. Include an estimate of when the task will occur>

Whilst designed specifically for schools seeking to deliver a VCE study for the first time, the [VCE Curriculum and Assessment Plans](#) are a useful tool for all teachers in planning assessment.

Formative vs summative assessment

- How will you know where your students are 'at' in terms of satisfactory completion of an outcome?
- How will you identify student strengths/weaknesses in content/skills?
- How will you determine what do your students know and what can they do?
- How will you determine what your students don't know and what they can't they do?
- How will you teach and assess to address any issues?
- How can feedback be provided to students about their progress in VCE studies?
- How can SAC tasks be formative as well as summative assessments?

Unit 1 and 2 Assessment

Underpinned by VCE Assessment Principles

All assessments at Unit 1 and 2 are school-based. Procedures for assessment of levels of achievement in Units 1 and 2 are a matter for school decision

List of selected tasks to choose from for Outcomes 1 and 2 in Units 1 and 2

If multiple tasks are selected for Outcome 1 and/or 2, they must be different. The same task cannot be selected more than once across Outcomes 1 and 2

Unit 1 Outcome 3: A report of a student-adapted or student-designed scientific investigation

Unit 2 Outcome 3: A response to an investigation into a bioethical issue.

Revised Units 3 and 4 Assessment

- **Unit 3 School-assessed Coursework: 20 per cent**
- **Unit 4 School-assessed Coursework: 30 per cent**
- **End-of-year examination: 50 per cent**

For Outcomes 1 and 2: Four designated **School-assessed Coursework** tasks in Units 3 and 4. Each task can only be selected once across Units 3 and 4.

For each task the time allocated should be **approximately 50-70 minutes for a written and 10 minutes for a multimodal or oral presentation**

For Outcome 3: communication of the design, analysis and findings of a student-designed and student-conducted scientific investigation through a structured scientific poster and logbook entries

Revised Units 3 & 4 School-based Assessment

SAC task type	Relevant Key Science Skills
Analysis and evaluation of a selected biological case study	<ul style="list-style-type: none">• Analyse and evaluate data and investigation methodologies• Construct evidence-based arguments and draw conclusions• Analyse, evaluate and communicate scientific ideas
Analysis and evaluation of generated primary and/or collated secondary data	<ul style="list-style-type: none">• Generate, collate and record data• Analyse and evaluate data and investigation methods• Construct evidence-based arguments and draw conclusions

Revised Units 3 & 4 School-based Assessment

SAC task type	Relevant Key Science Skills
<p>Comparison and evaluation of biological concepts, methodologies and methods, and findings from three student practical investigations</p>	<ul style="list-style-type: none">• Develop aims and questions, formulate hypotheses and make predictions• Plan and conduct investigations• Generate, collate and record data• Analyse and evaluate data and investigation methods• Construct evidence-based arguments and draw conclusions• Analyse and evaluate and communicate scientific ideas

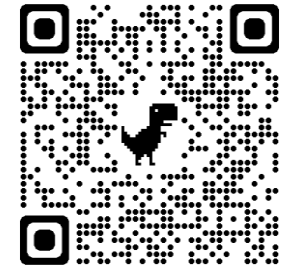
Revised Units 3 & 4 School-based Assessment

SAC task type	Relevant Key Science Skills
Analysis and evaluation of a contemporary bioethical issue	<ul style="list-style-type: none">• Construct evidence-based arguments and draw conclusions• Analyse, evaluate and communicate scientific ideas

New Unit 4 Outcome 3 Scientific poster format

Maximum: 600 words

20 – 25% of space allocated to communicating main finding



Title as an investigation question

Student name

Introduction

Methodology and methods

Results

Communication statement reporting the key finding of the investigation in response to the investigation question as a one-sentence summary

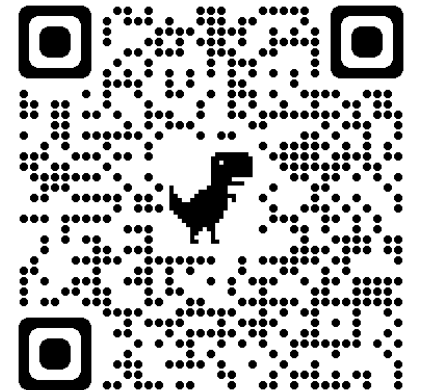
Discussion

Conclusion

References and acknowledgments

VCE resources

- **Administrative information for School-based Assessment**
- **VCAA Bulletin and Notices to schools**
- **School calendar and assessment policy**
- **Statistical moderation reports**
- **School-based assessment audit reports**
- **School-based assessment coursework reports**
- **Examination reports**
- **The school teaching and learning program**



Contact

Erin Wilson

Curriculum Manager, STEM



03 9059 5157



erin.wilson@education.vic.gov.au



www.vcaa.vic.edu.au



vcaa.vce.curriculum@education.vic.gov.au