



VCE INDUCTION PACKAGE 2022

UNITS 1 AND 2

BIOLOGY



Email and locations of Staff teaching subject

TEACHER	EMAIL ADDRESS
Mrs Dwyer	dwycrc@vermontsc.vic.edu.au Senior school Office

Ms Moraitis	moraitisf@vermontsc.vic.edu.au E11
Ms Lyon	lyonm@vermontsc.vic.edu.au E11

Dear students,

We hope you are excited about learning Biology. Unit 1 & 2 is focused on preparing you for Unit 3/4 Biology and as such, we encourage you to adopt a positive and open-minded approach to your study. If you are well organised, motivated and have a good work ethic, you will have an enjoyable and successful year in Biology.

In order to get the most out of this course, there are a number of things that we strongly suggest that you do over the summer and continue throughout 2022:

1. Familiarise yourself with the detailed course outline provided in this package. Create a bookmark in your computer desktop for the Biology Study Design.
2. Develop a good working relationship with your class teacher and maintain regular communication with them throughout the year. MS Teams will enable you to freely communicate with your teacher and your class mates. The focus is Biology, pose questions, share new findings.
3. Develop a study timetable that will assist you in meeting the required work and to ensure that you allow yourself time for ongoing revision.
4. Ensure that you become familiar with the resources (The Heinemann Biology, Year 11 Biology Microsoft Team page and Edrolo).
5. Become familiar with the school's VCE compliance policy.
6. Communicate with students who have studied the subject in previous years to get their perspective and suggestions for success.
7. Ensure that you have a balanced life that consists of schoolwork, exercise, sport, leisure, rest and a healthy diet. Most importantly, be open minded to learning. Keep positive, this is the beginning of your journey as a Biologist.
8. Complete the holiday homework task by the due date.

If you have any queries about the course, please contact me at school or by email. On behalf of the Biology Study staff, we wish you all the best for your studies next year,

Regards,

Mrs Dwyer, Ms Lyon and Ms Moraitis

OUTLINE OF BIOLOGY STUDY DESIGN

Unit 1: How do organisms regulate their function?

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.

Area of Study 1 How do cells function?

- Cellular structure and function
- The cell cycle and cell growth, death and differentiation

Area of Study 2 How do plants and animal systems function?

- Functioning systems
- Regulation of systems

Area of Study 3: How do scientific investigations develop understanding of how organisms regulate their functions.

- *The student should be able to design an investigation, use scientific evidence to draw conclusions and effectively communicate the science.*

Unit 2: How does inheritance impact on diversity?

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.

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.

Area of Study 1: How is inheritance explained?

- Chromosomes to genomes
- Genotypes and phenotypes
- Patterns of inheritance

Area of Study 2: How do inherited adaptations impact on diversity?

- Reproductive strategies
- Adaptations and diversity

Area of Study 3: How do humans use science to explain and communicate contemporary bioethical issues.

- Scientific evidence and communication
- Analysis and evaluation of bioethical issues

Key Dates/Timelines of Topics, Outcomes and Activities
Assessment dates 2022

Semester 2

Task	Date
Unit 1 Outcome 1 – On completion of this unit the student should be able to explain and compare cellular structure and function and analyse the cell cycle and cell growth, death and differentiation. SAC 1: Cell and Cell Membranes SAC 2: Cell Cycle and Apoptosis	Term 1 Week 6 Week 10
Unit 1 Outcome 2 – On completion of this unit the student should be able to explain and compare how cells are specialised and organised in plants and animals and analyse how specific systems in plants and animals are regulated. SAC 3: Glucoregulation	Term 2 Week 8
Unit 1 Outcome 3 – On completion of this unit the student should be able to adapt or design and then conduct a scientific investigation related to function and/or regulation of cells or systems, and draw a conclusion based on evidence from generated primary data.	
Task	Date
Unit 2 Outcome 1 On completion of this unit the student should be able to explain and compare chromosomes, genomes, genotypes and phenotypes, and analyse and predict patterns of inheritance. SAC 1: Inheritance	Term 3 Week 7
Unit 2 Outcome 2 On completion of this unit the student should be able to analyse advantages and disadvantages of reproductive strategies, and evaluate how adaptations and interdependencies enhance survival of species within an ecosystem SAC 3: Adaptations	Term 3 Week 10
Unit 2 Outcome 3 On completion of this unit the student should be able to identify, analyse and evaluate a bioethical issue in genetics, reproductive science or adaptations beneficial for survival.	Term 4 Week 1-2 (in class)

Timelines of Topics

Term 1: Monday 31st January – Friday 8th April (10 weeks)

Week	Date	Area of Study	Content	Outcome
1	31 Jan – 4 Feb	1	- Cell structure - Prokaryotes vs Eukaryotes	
2	7 Feb – 11 Feb	1	- SA:V - Compartments within cell	
3	14 Feb – 18 Feb	1	Plant and animal organelles	
4	21 Feb – 25 Feb	1	- Plasma membranes - Movement of substance	
5	28 Feb – 4 Mar	1	Binary fission	
6	7 Mar – 11 Mar	1	- Cell Cycle - Mitosis	<i>SAC: U1AoS1</i>
7	14 Mar – 18 Mar (Monday 14 th Labour Day Friday 18 th Athletics Day)	1	- Apoptosis - Disruptions to apoptosis leading to cancer	
8	21 Mar – 25 Mar	1	- Stem cells and differentiation - Potency as a concept	
9	28 Mar – 1 Apr	1	Catch up/Review	
10	4 Apr – 8 Apr (Student progress conferences)			<i>SAC: U1AoS1</i>

Term 1 Holiday: Monday 11th April – Friday 22nd April

Term 2: Tuesday 26th April – Friday 24th June (9 weeks)

Week	Date	Area of Study	Content	Outcome
1	26 Apr –	2	Specialisation of cell	

	29 Apr (Monday 25 th ANZAC day)		Vascular tissue in plants	
2	2 May – 6 May	2	- Animal systems - Organisation of cells into tissues, organs, systems with specific functions (digestive, endocrine and excretory)	
3	9 May – 13 May	2	Cont'd Organisation of cells into tissues, organs, systems with specific functions (digestive, endocrine and excretory)	
4	16 May – 20 May	2	Regulation of water in plants	
5	23 May – 27 May	2	- Homeostasis through negative feedback - Thermoregulation	
6	30 May – 3 Jun	2	- Glucoregulation - Osmoregulation	
7	6 Jun – 10 Jun	2	Malfunctions in homeostatic mechanisms (diabetes, hypoglycaemia and hyperthyroidism)	
8	14 Jun – 17 Jun (Queen's Birthday 13 th June)	3	Design and Undertake Scientific Investigation	<i>SAC: U1AoS2</i>
9	20 Jun – 24 Jun	2	Cont'd: Design and Undertake Scientific Investigation	<i>SAC: U1AoS3 (In class)</i>

Term 2 Holiday: Monday 27th June – Friday 8th July

Term 3: Monday 11th July – Friday 16th September (10 weeks)

Week	Date	Area of Study	Content	Outcome
1	11 Jul – 15 Jul	1	- Genes, alleles and genome - Homologous pairs - Sex chromosomes vs autosomes	

2	18 Jul – 22 Jul	1	• Karyotype • Meiosis (crossing over, independent assortment)	
3	25 Jul – 29 Jul	1	• Allelic symbols • Monohybrid crosses • Dominant and recessive inheritance • Codominance and Incomplete dominance	
4	1 Aug – 5 Aug	1	• Dihybrid crosses (non-linked and linked)	
5	8 Aug – 12 Aug	2	• Pedigrees • Epigenetics	
6	15 Aug – 19 Aug	2	• Asexual reproduction • Sexual reproduction • Compare and contrast	
7	22 Aug – 26 Aug	2	• Cloning	<i>SAC U2AoS1</i>
8	29 Aug – 2 Sep	2	• Importance of diversity • Adaptation	
9	5 Sep – 9 Sep		• Interdependence of species • Keystone species • Predator prey • Distribution of species	
10	12 Sep – 16 Sep		• Contribution of Aboriginal and Torres Strait Islander people's knowledge in understanding adaptations among Australian species.	<i>SAC U2AoS2</i>

Term 3 Holiday: Monday 19th September – Friday 30th September
(Practice Examination to be held in this holiday break)

Term 4: Monday 3rd October

Week	Date	Area of Study	Content	Outcome
------	------	---------------	---------	---------

1	3 Oct – 7 Oct	3	• Bioethical issues • Research	<i>SAC U2AoS3</i>
2	10 Oct – 14 Oct	3	• Cont'd Bioethical issues	<i>SAC U2AoS3</i>
3	17 Oct – 21 Oct	3	• Cont'd Bioethical issues	
4	24 Oct – 28 Oct		• Catch up	
5	31Oct – 4 Nov		• Exam Revision	
6	7Oct – 11Oct		• Exam Revision	

UNIT 1 and 2

COURSEWORK AND SAC REQUIREMENTS:

In order to successfully pass a Unit, all students are required to;

- complete all set coursework.
- obtain a pass in all scheduled School Assessed Coursework (SACS).

Where a student does not pass a SAC they will be given the opportunity to redeem the task in order to reach a satisfactory standard, however where this occurs the students will retain their original mark for VCAA purposes. All SACs need to be submitted by the due date.

All students are required to be up to date with their coursework prior to sitting a SAC.

Assessment task contributions to the overall S/N Unit Result

- Practical Reports
- SAC Tests
- Investigation (student focused) - one per semester
- End of Unit Examination

Assessment of levels of achievement

The student's level of achievement in Unit 1 and 2 will be determined by their performance in the SACs related to each specific Outcome.

Sources of support for the Study – inc. key staff, websites, documentation

Links

VCAA Study Advice: <http://www.vcaa.vic.edu.au/vce/studies/biology/biologyindex.html>

VCAA Biology Past Exams:

<http://www.vcaa.vic.edu.au/vce/studies/biology/exams.html>

Edrolo: <https://edrolo.com.au/account/courses/>

Virtually all the support and links to resources that you are likely to need are on the 11 Biology Microsoft Team. You should visit site regularly to access material and most importantly to read teacher updates.

- (a) suggested answers to chapter Questions,
- (b) review class notes and PowerPoints
- (c) visit suggested interactive websites to view interesting animations.

Materials Required – Texts, Stationery, and other Resources

Required Materials to be brought to each class

- Writing materials
- A3 Sketch Pad
- Texts: Heinemann Biology VCE Units 1 and 2 and... a positive approach to learning!

Holiday Tasks to be completed in preparation for the beginning of the 2022 school year

1. Complete Edrolo lesson: 2A Cells as the basis of life <https://edrolo.com.au/s/1152878/>
2. Read Heinemann Chapter 2.1 and complete Review pg 78 Knowledge and Understanding and Analysis.

Feel free to peruse ahead. Have a look at the whole book, chapter by chapter.. always nice to see what is ahead.