SWINBURNE
SENIOR SECONDARY COLLEGE

BIOLOGY
Holiday Homework
Year 12, 2023

Teacher:	Emily Barnes: emily.barnes@sssc.vic.edu.au You can find me in the Year 11 Office (opposite the student lounge on the ground floor)
Work required in preparation for start of 2023:	Complete questions **1-16** of Edrolo: **Chapter 1A - Key Science Skills** ● This is part of your **Coursework** requirement for Semester 1 ● You **MUST** complete this work to pass Unit 3 Biology
Textbooks and other resources:	Prescribed textbook: Edrolo Biology Unit 3&4 (digital or print copy) Coursework mind-maps: to be printed for students for each AOS.
Key Links:	**VCAA Biology page** The Biology Study Design, past exam papers and assessment information are all located here. Useful websites: ● GTAC - Gene Technology Access Centre ● VCE Biology - ATAR notes ● StudyClix - past exam questions
Due Date:	**Lesson 1, Week 2 of 2023 (Tuesday February 6th)**

Course Overview

Unit 3: How do cells maintain life?	
AOS 1 – Nucleic Acids & Proteins to maintain life **SAC – 50% (40 marks)**	**AOS 2 – Regulation of biochemical pathways** **SAC – 50% (40 marks)**
• The relationship between nucleic acids and proteins • DNA, RNA, gene expression • Gene regulation - *trp* operon • DNA manipulation techniques and applications • CRISPR-Cas9 gene editing • GMOs and transgenic organisms	• Regulation of biochemical pathways in photosynthesis and cellular respiration • Function of enzymes in biochemical pathways • Photosynthesis as an example of a pathway • Cellular respiration as an example of a pathway • Biotechnological applications of biochemical pathways

**School-assessed Coursework for Unit 3 will contribute 20% to the study score (total 80 marks)*

Unit 4: How does life change and respond to challenges?		
AOS 1 – Organism responses to pathogens **SAC – 33% (40 marks)**	**AOS 2 – Species relatedness over time** **SAC – 33% (40 marks)**	**AOS 3 - Student-directed scientific investigation** **SAC – 33% (40 marks)**
• Responding to antigens • Innate (non-specific) immune response • Acquiring immunity • Adaptive (specific) immune response • Disease challenges and strategies • Vaccine programs	• Genetic changes in a population over time • Selection pressures and mutations • Changes in species over time • Determining the relatedness of species • Evidence for evolution • Human change over time	• Investigation design • Variables and methodologies • Scientific evidence • Organising and evaluating data • Identifying sources of error • Science communication • Using scientific terminology • Conventions for scientific poster presentation

**School-assessed Coursework for Unit 4 will contribute 30% to the study score (total 120 marks)*

What are Units 3 & 4 Biology all about?

As part of Biology in Units 3&4 you will explore the diversity of life as it has evolved and changed over time, and consider how living organisms function and interact.

In Unit 3, you will investigate the workings of the cell from several perspectives - from biochemistry and DNA manipulation to the functioning and regulation of biochemical pathways within cells.

In Unit 4, you will consider the continual change and challenges to which life on Earth has been, and continues to be, subjected to - including responses to pathogens and how species have evolved to change over time.

To be judged Satisfactory for this subject you will need to:

- Attend classes regularly (and redeem any missed classes)
- Achieve a 'Satisfactory' on all SACs
- Complete required coursework for **all outcomes**
- Engage and participate in class
- Participate in regular group practical activities
- Keep an up-to-date and accurate logbook of practical activities