

South Australia

A course guide for candidates taking the SA Stage 2 Biology Course is provided below. Material (including preparatory material) for this course is covered in both this and the Year 12 Workbook. Candidates must complete all themes and the practical component. Please consult the SSABSA syllabus statement for

details on strand structure within each theme. Course material is covered in the workbook in the topics indicated. The CD-ROM symbol indicates that additional material is available on the Teacher Resource CD-ROM. Weblinks supporting each topic are present throughout, but are not specifically indicated.

Stage 2 Biology		Topic in Workbook (Year 12 unless indicated otherwise)	Topic in Workbook (Year 12 unless indicated otherwise)	
Theme M: Macromolecules			Theme O: Organisms	
M1	DNA: The molecular structure of DNA and its role as the chemical unit of information.	The Chemistry of Life The Genetic Code	O1	
M2-3	Structure and role of chromosomes. The gene as the functional unit of information.	The Genetic Code	O2	
M4	DNA transcription, translation, and protein synthesis, includes mRNA and tRNA.	The Genetic Code	O3	
M5-6	Protein structure and function. The structure and roles of polysaccharides and lipids.	The Chemistry of Life	O4	
M7	The mechanism of DNA replication.	The Genetic Code	O5	
M8	Enzyme function: the induced-fit model and factors affecting enzyme activity.	The Chemistry of Life	O6-7	
M9	Plasma membrane receptors and molecular recognition.	The Chemistry of Life Principles of Homeostasis	O8-9	
M10	Enzyme reaction rates and the role of enzymes as catalysts.	The Chemistry of Life	O10	
M11	Macromolecules as energy reserves.	The Chemistry of Life	O11	
M12	How DNA carries genetic information. Perpetuation of DNA through replication.	The Genetic Code	O12	
M13	Universal presence of DNA as evidence for the common ancestry of living things.	The Evidence for Evolution	O13	
M14	Uses of DNA and protein sequences for determining relatedness.	The Evidence for Evolution	Theme E: Ecosystems	
M15	Changes within genes: mutagens, mutations and their consequences.	Mutations	E1	
M16	Techniques of DNA manipulation (gene transfer, ethics of DNA manipulation).	Gene Technology	E2	
M17	Techniques and applications of DNA technology (PCR, DNA sequencing, DNA fingerprinting).	Gene Technology	E3-5	
Theme C: Cells			E6-7	
C1	The cell as the unit of life. The significance of cell surface area to volume ratio.	Yr 11 workbook	E8	
C2	Structure and size of prokaryotic and eukaryotic cells. Eukaryotic cell organelles. Size, structure, and role of genomes.	Yr 11 workbook The Genetic Code	E9	
C3	Structure and function of the plasma membrane and the cytoskeleton. Endocytosis and exocytosis.	Chemistry of Life Yr 11 workbook	E10-11	
C4	Regulation of the intracellular environment. Selective exchanges at the cell membrane.	Principles of Homeostasis Yr 11 workbook	Skills	
C5-6	Passive and active transport mechanisms. Energy requirements of cells. Role of ATP.	The Chemistry of Life Yr 11 workbook	Skills covered: hypothesis formation and experimental design. Observation, replication, repetition, precision and accuracy of experiments. Analysis and interpretation of data. Communication and presentation of results.	
C7	Photosynthesis and its regulation. Enzyme control of metabolic pathways.	The Chemistry of Life	Yr 11 workbook: Skills in Biology Practical Ecology	
C8	Cell division. Comparison of binary fission in prokaryotes and mitosis in eukaryotes	The Genetic Code Yr 11 workbook		
C9	Hormones and genes in regulating cell division. Carcinogens: their disruption of cell division.	Mutations		
C10	Evolution of cells: early existence of prokaryotic cells.	Yr 11 workbook		
C11	The techniques involved in cell culture and applications of cultured cells.	Cell Division & Cloning		
C12	The effects of chemicals on the metabolism of cells.	Not yet covered		