

# Biology 2017 Unit 3 and 4, Timeline

Resource - Martin and Kinnear, Nature of Biology 4<sup>th</sup> Edition

TERM 1		Written activities	Concepts covered	Assessment Tasks
<b>Orientation week</b> 28/11 – 2/12	<b>UNIT 3: Area of Study 1: Molecules of life</b>	<b>Chapter 1: Biology keystone-Foundations skills</b> <b>Key Questions</b> All <b>TSSM Booklet:</b> Topic 1 – Experimental Design and Data Interpretation <b>Website Questions:</b> Experimental Design Worksheet	<ul style="list-style-type: none"> <li>Scientific method</li> <li>Safety</li> <li>Experimental Design and Data Analysis</li> </ul>	
<b>Week 1</b> 31/1 – /2		<b>Chapter 2: Cells and composition of cells</b> <b>Key Questions</b> All <b>Chapter Review</b> 12,13,14,15,16,18,19,22,24,25 <b>Website Questions:</b> Biological Molecules Worksheet Cells and Cell Structures Worksheet Material Transport Worksheet <b>TSSM Booklet:</b> Topic 2 - Cells Topic 3 – Chemical Nature of the Cell Topic 4 – Plasma Membranes and Material Transport	<ul style="list-style-type: none"> <li>Carbohydrates</li> <li>Protein</li> <li>Lipids</li> <li>Plasma membrane</li> <li>Transport of biomolecules throughout eukaryote cell</li> <li>Transport of biomolecules in and out of the cell</li> <li>Structure and functions of cell organelles</li> <li>Connections between cells</li> </ul>	1. Topic Test
<b>Week 2</b> 6/2 – 12/2		<b>Chapter 3: Nucleic acids, gene structure and regulation</b> <b>Key Questions</b> All	<ul style="list-style-type: none"> <li>Nucleic acids</li> <li>Genetic code</li> <li>Transcription and translation</li> </ul>	1. Topic test
<b>Week 3</b> 13/2 – 19/2		<b>Chapter Review</b> 9, 10,11,13,15,17,18 <b>Website Questions:</b> <b>TSSM Booklet:</b> Topic 10 – DNA Replication and Protein Synthesis		
<b>Week 4</b> 20/2 – 26/2 Swimming sport 16/2		<b>Chapter 4: Enzyme regulation in biochemical pathways</b> <b>Key Questions</b> All <b>Chapter Review</b> 5,6,7,8,9,12,14,15 <b>Website Questions:</b> Enzymes Worksheet Photosynthesis Worksheet Respiration Worksheet <b>TSSM Booklet:</b> Topic 5 – Biochemical Reactions	<ul style="list-style-type: none"> <li>Enzymes</li> <li>Regulation of enzymes</li> <li>Energy requiring and energy yielding reactions</li> <li>Anabolic and catabolic</li> </ul>	Topic test <b>Enzyme Action SAC WK 5</b>
<b>Week 5</b> 27/2 – 5/3				
<b>Week 6</b> 6/3 – 12/3				
<b>Week 7</b> 13/3 – 19/3 Labour Day 13/3	<b>UNIT 3: Area of Study 2: Detecting and Responding</b>	<b>Chapter 5: Energy transformation in cells</b> <b>Key Questions</b> All <b>Chapter Review</b> 2,3,4,6,8,9,13,15 <b>Website Questions:</b> Photosynthesis Worksheet Respiration Worksheet <b>TSSM Booklet:</b>	<ul style="list-style-type: none"> <li>Photosynthesis</li> <li>Cellular respiration</li> </ul>	Topic Test <b>Cellular respiration and Photosynthesis SAC WK 8</b>
<b>Week 8</b> 20/3 – 26/3 20/3 Athletics sport				

<b>Week 9</b> 27/3 – 31/3				
		<b>Written activities</b>	<b>Concepts Covered</b>	<b>Assessment Tasks</b>
<b>Term 2</b> <b>Week 1</b> 18/4 – 23/4 Easter Monday 17/4		<b>Chapter 6: Cellular signals</b> <b>Key Questions</b> All <b>Chapter Review</b> 4,5,6,7,10,14,17 <b>Website Questions:</b> Homeostasis Worksheet Hormonal System Worksheet Plant Hormonal System Worksheet Nervous and Endocrine System Worksheet Nervous System Worksheet <b>TSSM Booklet:</b> Topic 6 – Animals Responding to Change Topic 7 – Plants Responding to Change	<ul style="list-style-type: none"> <li>• Homeostasis</li> <li>• Stimulus response model</li> <li>• Negative feedback mechanisms</li> <li>• Hormones, neurotransmitters, cytokines and pheromones</li> <li>• Signal transduction</li> <li>• Apoptosis, including malfunctions</li> </ul>	Topic Test <b>Homeostasis SAC WK 2</b>
<b>Week 2</b> 24/4 – 30/4 Anzac Day 25/4				
<b>Week 3</b> 1/5 – 7/5		<b>Chapter 7: Responding to antigens</b> <b>Key Questions</b> All <b>Chapter Review</b> 5,6,7,8 <b>Website Questions:</b> Defence Systems Worksheet Disease Causing Agents Worksheet <b>TSSM Booklet:</b> Topic 9 - Immunity	<ul style="list-style-type: none"> <li>• Cellular</li> <li>• Non-cellular pathogens</li> <li>• Lymphatic system</li> <li>• Adaptive immune response</li> <li>• Physical and chemical barriers to reduce infection</li> <li>• Non-specific defence mechanisms</li> <li>• Specific defence mechanisms</li> </ul>	Topic Test
<b>Week 4</b> 8/5 – 14/5		<b>Chapter 8: Immunity, immune malfunctions and immunotherapy</b> <b>Key Questions</b> All <b>Chapter Review</b> 3,4,6,7,12,15,18 <b>Website Questions:</b> <b>TSSM Booklet:</b>	<ul style="list-style-type: none"> <li>• Natural immunity</li> <li>• Artificial immunity</li> <li>• Vaccination programs</li> <li>• Herd immunity</li> <li>• Allergic responses</li> <li>• Deficiencies of the immune response</li> <li>• Autoimmune disease</li> <li>• Cancer treatment</li> </ul>	Topic Test
<b>Week 5</b> 15/5 – 21/5				
<b>Week 6</b> 22/5 – 28/5				

UNIT 4			
<p><b>Week 7</b> 29/5 - 4/6</p> <p><b>Week 8</b> 5/6- 11/6</p> <p>Practice Unit 3 Exam</p>	<p><b>Chapter 9: Genes, Chromosomes and Patterns of Inheritance</b></p> <p><b>Key Questions</b> All</p> <p><b>Chapter Review</b> 1,2,4,5,6,7,8,9,10,11,12,13,14, 15</p> <p><b>Website Questions:</b> Monohybrid Crosses Worksheet Codominance and Intermediate Inheritance Worksheet X-linked Genetics Worksheet Dihybrid Crosses Worksheet Pedigree Charts Worksheet</p> <p><b>TSSM Booklet:</b> Topic 13 - Heredity</p>	<ul style="list-style-type: none"> <li>• meiosis</li> <li>• alleles and phenotype</li> <li>• monohybrid crosses <ul style="list-style-type: none"> <li>- complete (full) dominance</li> <li>- codominance</li> <li>- X-linked inheritance</li> <li>- Test crosses</li> </ul> </li> <li>• Dihybrid crosses</li> <li>• Linked genes</li> <li>• Pedigree Charts</li> </ul>	<p>Topic Test <b>Immunity SAC Wk 7</b></p>
<p><b>Week 9</b> 12/6 – 18/6 Queen's b'day 12/6 Report Writing Day 16/6 GAT 14/6</p> <p><b>Week 10</b> 19/6 – 25/6 Semester 2 starts</p>			
<p><b>Week 11</b> 26/6 – 30/6</p>	<p><b>Chapter 10: Nature, Structure and Organisation of the Genetic Material</b></p> <p><b>Key Questions</b> All</p> <p><b>Chapter Review</b> 2,3,6,9,11,12,13,14</p> <p><b>Website Questions:</b> Question notes mutations: causes and detection</p> <p><b>TSSM Booklet:</b> Topic 11 - Mutations</p>	<ul style="list-style-type: none"> <li>• Structure of DNA</li> <li>• Mitochondrial DNA</li> <li>• Gene sequencing</li> <li>• Comparative genomics</li> <li>• Mutations</li> </ul>	<p>1. Topic Test</p>
<p><b>Term 3</b> <b>Week 1</b> 11/7 – 17/7 Curriculum Day 11/7</p>	<p><b>Chapter 11: Genes Function: Genes in Action</b></p> <p><b>Key Questions</b> All</p> <p><b>Chapter Review</b> 2,3,4,5,6,7,8,9,10,11,14</p> <p><b>Website Questions:</b> DNA Replication and Protein Synthesis Worksheet</p> <p><b>TSSM Booklet:</b> Topic 10 – DNA Replication and Protein Synthesis</p>	<ul style="list-style-type: none"> <li>• Protein Synthesis <ul style="list-style-type: none"> <li>- Transcription</li> <li>- Translation</li> </ul> </li> <li>• DNA Replication</li> <li>• RNA<sub>i</sub> (Switching genes on and off)</li> </ul>	<p>1. Topic Test 2.</p>
<p><b>Week 2</b> 18/7 – 24/7</p> <p><b>Week 3</b> 25/7 – 31/7</p>	<p><b>Chapter 12: Manipulating DNA: Tools and Techniques</b></p> <p><b>Key Questions</b> All</p> <p><b>Chapter Review</b> 3,4,5,6,7,8,9,10,11,14</p> <p><b>Website Questions:</b> DNA Technology Worksheet</p> <p><b>TSSM Booklet:</b> Topic 12 – Molecular Biology</p>	<ul style="list-style-type: none"> <li>• Restriction enzymes</li> <li>• Electrophoresis</li> <li>• Gene cloning <ul style="list-style-type: none"> <li>- Plasmids</li> <li>- PCR (Polymerase Chain Reaction)</li> </ul> </li> <li>• Transgenic Organisms (TGO's)</li> <li>• Genetically Modified Organisms (GMO's)</li> <li>• DNA Profiling/fingerprinting</li> </ul>	<p>1. Topic Test 2. <b>Meiosis and Genetic Cross SAC (WK 2)</b></p>

<b>Week 4 and 5</b> 1/8 – 14/8		<b>Chapter 13: Population Genetics</b> <b>Key Questions</b> All <b>Chapter Review</b> All, except 15 <b>Website Questions:</b> Genetics (Other) Worksheet Variation and Selection Worksheet Population Genetics Worksheet <b>TSSM Booklet:</b> Topic 14 – Population Genetics	<ul style="list-style-type: none"> <li>• Types of variation</li> <li>• Monogenic vs polygenic traits</li> <li>• Gene pool</li> <li>• Allele frequencies</li> <li>• Natural Selection</li> <li>• Artificial Selection</li> <li>• Speciation</li> <li>• mtDNA haplogroups</li> </ul>	1. Topic Test
<b>Week 6 and 7</b> 15/8 – 28/8  Year 11 Ski Camp 1/9 – 4/9  GTAC		<b>Chapter 14: Evolution: Changes Over Time</b> <b>Key Questions</b> All <b>Chapter Review</b> 2,3,4,5,6,7,8,9,10,11,12,13 <b>Website Questions:</b> Evolution Worksheet Evidence for Evolution Worksheet <b>TSSM Booklet:</b> Topic 15 – Evolution and the Evidence for Evolution	<ul style="list-style-type: none"> <li>• Relative Dating</li> <li>• Absolute Dating</li> <li>• Evidence of Evolution</li> <li>• Fossilisation</li> <li>• Cladograms (Phylogenetic trees)</li> <li>• Divergent, Convergent, Parallel evolution, Co-evolution</li> <li>• Homologous and analogous structures</li> </ul>	1. Topic Test
<b>Week 8</b> 29/8 – 4/9		<b>Chapter 16: Human Intervention in Evolution</b> <b>Key Questions</b> All <b>Chapter Review</b> 2,3,4,5,6,7,8,9,10 <b>TSSM Booklet:</b> Topic 16 – Human Evolution (pages 21 – 24)	<ul style="list-style-type: none"> <li>• Selective Breeding</li> <li>• Cloning <ul style="list-style-type: none"> <li>- Embryo splitting</li> <li>- Somatic nuclear transfer</li> </ul> </li> <li>• Gene transfer between species</li> <li>• Stem cells</li> </ul>	1. Topic Test 2. <b>DNA Manipulation WK 8</b>
<b>Week 9 and 10</b> 5/9 – 20/9 Parent-Teacher Interviews 14/9 Year 12 Practice English Exam 16/9		<b>Chapter 15: Hominin Evolution</b> <b>Key Questions</b> All <b>Chapter Review</b> All except 1,10,11 <b>Website Questions:</b> Human Evolution Worksheet <b>TSSM Booklet:</b> Topic 16 – Human Evolution	<ul style="list-style-type: none"> <li>• Primate features</li> <li>• Bipedalism features</li> <li>• Hominin evolution</li> <li>• Cultural Evolution</li> <li>• Technological Evolution</li> <li>• Out of Africa Theory</li> </ul>	1. Topic Test 2. <b>Evolutionary Relationships and Human Intervention in Evolution SAC WK 9</b>
<b>Term 4 Week 1</b> 3/10 – 9/10		<b>Year 12 Practice Exams</b> 6/10 – 8/10		
<b>Week 2</b> 10/10 – 16/10		<b>Revision Past VCAA Exams Practice Exams on P Drive</b>		
<b>Week 3</b> 17/10 – 23/10		<b>Revision Last Day Year 12 21/10</b>		