

Honors Biology SAT II – What will we cover?

Out of a total of 80 questions, the two tests share a core of the same 60 questions. The test contains an additional 40 questions, split between the E and M specialty sections. So if you take the Biology E test, you will only have to answer the section of 20 ecology and evolution questions. If you take the Biology M, you need only answer the molecular biology and evolution section.

I recommend that students in my honors class take the M version. While this section is a little bit more challenging than the E version, in this class we have focused more on molecular biology than on ecology and biodiversity.

Topic	What you should know already	What you'll need to learn on your own
<i>The Cell (4-6%)</i>		
<ul style="list-style-type: none"> ▪ Discovery of Cells 	<ul style="list-style-type: none"> ▪ Cell Theory ▪ Cell size ▪ Microscopes 	<ul style="list-style-type: none"> ▪ Scientists
<ul style="list-style-type: none"> ▪ Types of Cells 	<ul style="list-style-type: none"> ▪ Eukaryotes vs. prokaryotes ▪ Animals vs. plants 	
<ul style="list-style-type: none"> ▪ Cytoplasm 	<ul style="list-style-type: none"> ▪ Organelle structure and function 	
<ul style="list-style-type: none"> ▪ Cell Membrane 	<ul style="list-style-type: none"> ▪ Membrane components ▪ Transport through a membrane 	
<i>Organic and Biochemistry (3-5%)</i>		
<ul style="list-style-type: none"> ▪ Building Blocks of Matter 	<ul style="list-style-type: none"> ▪ Atom structure ▪ Isotopes and Ions 	
<ul style="list-style-type: none"> ▪ Chemical Bonds 	<ul style="list-style-type: none"> ▪ Bond types 	
<ul style="list-style-type: none"> ▪ Acids and Bases 	<ul style="list-style-type: none"> ▪ Formation of them ▪ pH scale 	<ul style="list-style-type: none"> ▪ Buffers?
<ul style="list-style-type: none"> ▪ Chemistry of Life 	<ul style="list-style-type: none"> ▪ SPONCH ▪ Dehydration synthesis and hydrolysis 	
<ul style="list-style-type: none"> ▪ Molecules of Life 	<ul style="list-style-type: none"> ▪ Structure and function of carbohydrates, proteins, lipids, and nucleic acids 	
<ul style="list-style-type: none"> ▪ Enzymes 	<ul style="list-style-type: none"> ▪ Structure and function ▪ Factors affecting enzymes 	
<i>Cell Processes (1-3%)</i>		
<ul style="list-style-type: none"> ▪ Cell Respiration 	<ul style="list-style-type: none"> ▪ Aerobic and Anaerobic 	
<ul style="list-style-type: none"> ▪ From DNA to Protein 	<ul style="list-style-type: none"> ▪ Genetic Code ▪ Transcription ▪ Translation ▪ Mutations 	
<ul style="list-style-type: none"> ▪ Cell Replication 	<ul style="list-style-type: none"> ▪ Mitosis ▪ Interphase ▪ DNA Replication 	
<i>Mendelian and Molecular Genetics (8-10%)</i>		
<ul style="list-style-type: none"> ▪ Basis of Inheritance: Meiosis 	<ul style="list-style-type: none"> ▪ Asexual vs. sexual reproduction ▪ Process 	
<ul style="list-style-type: none"> ▪ Spermatogenesis and Oogenesis 	<ul style="list-style-type: none"> ▪ Differences 	
<ul style="list-style-type: none"> ▪ Mendel's Experiment's 	<ul style="list-style-type: none"> ▪ Vocabulary ▪ Law of Dominance ▪ Law of Segregation 	
<ul style="list-style-type: none"> ▪ Modern Explanation of Mendel's Results 	<ul style="list-style-type: none"> ▪ Law of Independent Assortment ▪ Punnett squares ▪ Probability ▪ Test crosses ▪ Alternative types of inheritance ▪ Pedigrees 	

<i>Evolution and Diversity (8-10%)</i>		
▪ Evidence of Evolution	<ul style="list-style-type: none"> ▪ Fossils ▪ Comparative Anatomy ▪ Comparative ▪ Molecular clocks 	
▪ Theories of Evolution	<ul style="list-style-type: none"> ▪ Lamarck ▪ Natural Selection ▪ Types of selection 	
▪ Genetic Basis of Evolution	<ul style="list-style-type: none"> ▪ Gene pools ▪ Speciation ▪ Convergent and divergent evolution 	▪ Hardy-Weinberg
▪ Classifying Life	<ul style="list-style-type: none"> ▪ Phylogenetic trees 	<ul style="list-style-type: none"> ▪ Characteristics of 5 kingdoms ▪ Phyla in each kingdom ▪ Classes of vertebrates
▪ Living or Not? Viruses	<ul style="list-style-type: none"> ▪ Virus structure 	<ul style="list-style-type: none"> ▪ Lytic cycle ▪ Lysogenic cycle
<i>Organismal Biology (20-26%)</i>		
▪ Structure and Function of Animals	<ul style="list-style-type: none"> ▪ Nervous system ▪ Respiratory System ▪ Digestive System ▪ Excretory System ▪ Reproductive System ▪ Circulatory System 	<ul style="list-style-type: none"> ▪ The senses ▪ Endocrine glands ▪ Immune System? ▪ Skeletal System ▪ Muscular System? ▪ Skin ▪ Detailed embryonic development ▪ Animal Behavior and Learning
▪ Structure and Function of Plants	<ul style="list-style-type: none"> ▪ Leaf structure ▪ Photosynthesis ▪ Flower reproduction 	<ul style="list-style-type: none"> ▪ Vascular Tissue (not enough detail) ▪ Roots ▪ Plant hormones ▪ Plant Reproduction
<i>Ecology (I'm not sure how much of this we'll get to by the June 6th exam) (7-9%)</i>		
▪ Populations		▪ Population Growth?
▪ Communities		<ul style="list-style-type: none"> ▪ Definitions ▪ Symbiosis
▪ Food Relationships		<ul style="list-style-type: none"> ▪ Definitions ▪ Food webs/Food chains ▪ Ecological pyramids
▪ Ecological Succession		▪ 1 st /2 nd degree
▪ Ecosystems and Biomes		<ul style="list-style-type: none"> ▪ Matter cycles ▪ Biomes