
Biology: Spring Semester Final Exam Study Guide

The spring final exam covers all of the information learned in the spring semester, it is not a comprehensive final of the entire school year. The study guide outlines the major topics and concepts that you should be familiar with. Use the unit review worksheets on the Biology homepage to better prepare you for the final.

Items needed to take the final exam:

- You will be allowed to use one full page (8.5" x 11", front and back) of **handwritten** notes on the final.
- A couple of sharpened number 2 pencils
- A good eraser
- Bring something to read or study upon completion of the final. You may **NOT** bring any electronic devices as per school policy (no cell phones, no Ipods, etc.)

Students are encouraged to study the following:

- The practice tests for each unit (found on the Biology website)
- The review sheets provided under the spring final icon on Biology website
- Vocabulary
- Unit worksheet packets and diagrams.

Spring Semester:

Heredity

1. Basic Mendelian genetics
2. Calculation and probabilities involved with monohybrid and dihybrid crosses.
3. Calculations and probabilities involved with sex linked traits (color blindness, hemophilia)
4. The concepts and structures involved with heredity (homologous chromosomes, alleles, dominant, recessive, homozygous, heterozygous, genotype, phenotype, etc.)
5. Blood types and their inheritance patterns.
6. Chromosome counts in body (autosomal) cells versus gametes.

Evolution

1. Darwin's theory of evolution
2. Modern day theory of evolution (mutations, DNA, vestigial and homologous structures)
3. Evolutionary concepts (reproductive isolation, natural selection, adaptation, artificial selection, gradual and punctuated equilibrium, mutations, genetic variation)
4. Interpreting a cladogram (phylogenetic tree)

Biotechnology (gene connection)

1. Know the importance of biotechnology
2. Proper use of micropipettes (distinguish between a p-20 and p-200, dial in amounts)
3. Metric conversions
4. Interpreting a DNA fingerprint

Ecology:

1. Abiotic and biotic factors that affect an ecosystem
2. Interpreting and identify producers and consumers on a food web/chain
3. Energy pyramids (primary producers, autotrophs, consumers, heterotrophs, decomposers, carnivores, herbivores, omnivores, trophic levels)
4. The symbiotic relationships among organisms in an ecosystem
5. Biogeochemical cycles (carbon cycle, nitrogen cycle)
6. Population dynamics (carrying capacity, emigration, immigration, natality, death rate)

Immune System

1. How a virus affects your immune system
2. White blood cells involved in the immune system and their functions (jobs)
3. Types of pathogens
4. Nonspecific vs. Specific immune responses
5. Immunity

Nervous System

1. The path of an impulse through a neuron
2. Structure of a neuron
3. Path of an impulse through a Reflex Arc
4. Three major parts of the brain and their responsibilities
5. Somatic and Autonomic nervous systems (compare and contrast)
6. Relationship between the nervous system and endocrine system
7. Endocrine system (feedback loops)

Circulatory and Respiratory Systems

1. Distinguish between capillaries, arteries, and veins
2. Identify the path that blood takes through the heart including the major vessels.
3. Explain the relationship between the circulatory system and respiratory system
4. Identify the path gases take that are involved in the circulatory system