Spring Semester Final Exam Review
Integrated Science 1-2

The final exam will consist of a 80-100 multiple-choice exam and 1 essay. The exam will test you on your understanding of following concepts from the spring semester: scientific method, climate and atmosphere, cell biology, human disease, pathogens, and anatomy and physiology.

The schedule for final exam week is as follows: Monday 6/4- No final exams scheduled. Tuesday 6/5-7th period final. Wednesday 6/6-1st and 2nd period final. Thursday 6/7-3rd and 4th period final. Friday 6/8-5th and 6th period final.

Scientific Method:

1. Explain the difference between a hypothesis and a theory.
2. Explain how to design a scientific experiment. *Hypothesis, question, DV, IV, control, proper title and graphing rules.*

Climate and Atmosphere:

1. Explain the difference between climate and weather.
2. Describe the structure of the Earth's atmosphere. *Troposphere, stratosphere, mesosphere, thermosphere, ozone layer, oxygen, nitrogen carbon dioxide, water vapor, greenhouse gasses.*
3. Identify and describe the 6 main factors that control climate. *LETWAV.*
4. Describe the fate of incoming solar radiation in the Earth's atmosphere. *Absorption, reflection, transmission, radiation, conduction, convection.*
5. Explain the evidence for global warming. *Climate change, sea-level rise, arctic ice, etc.*
6. Explain the difference between ozone depletion and global warming. *Greenhouse gasses, cfc's*
7. Identify the key indicators of climate change.
8. Explain the difference between latitude and longitude. *Equator, prime meridian, N/S pole.*
9. Describe how the Earth's tilt affects seasonal changes.

Cell Biology, Human Disease, and Pathogens:

1. List and describe the levels of organization of living organisms. *Atoms, molecules, organelles, cell, tissue, organ, organ system organism.*
2. Identify the function of cell organelles. *Cell membrane, nucleus, ribosomes, ER (smooth and rough), mitochondria, chloroplasts*
3. Describe the role of pathogens in causing disease. *Viruses, bacteria, protists, fungi*
4. Describe the germ theory of disease.
5. Explain the non-specific and specific defenses of the human immune system.
6. Describe the function of the immune system and explain how it works. *Pathogen, antigen, inflammatory response, fever, immune response, humoral (acquired) immunity, antibody, cell mediated immunity, active vs. passive immunity, white blood cells.*
7. Describe the role antibiotics play in our health and evolution.
8. Describe how genetics plays a role in human disease. *Huntington's disease, hemophilia,*
9. Predict the genotypic and phenotypic ratios of monohybrid crosses. *Allele (recessive vs. dominant), chromosomes, genotype, phenotype, homozygous dominant, heterozygous, hybrid, homozygous recessive,*
10. Describe the 5 stages of Mitosis. *Interphase, prophase, metaphase, anaphase, telophase, position of chromosomes in metaphase and anaphase.*

Anatomy and Physiology:

1. Identify the functions of the cardiovascular, respiratory, digestive, excretory, integumentary, nervous, skeletal, muscular, circulatory, endocrine, reproductive, and immune system.
2. Identify the 4 basic types of tissue in the human body. *Muscle, nervous, connective, and epithelial.*
3. Describe the function of specific tissue or organs in the human body. *Neurons, sense organs, red marrow, epidermis, blood vessels (arteries, veins, and capillaries), alveoli, bronchioles, lungs, diaphragm, pancreas, liver, stomach, intestines, thyroid, seminiferous tubules, vas deferens, epididymis,*
4. Describe the difference between systemic and pulmonary circulation.
5. Identify the pathway of of a red blood cell in the human circulatory system. *Superior and inferior vena cava, right atrium, tri-cuspid valve, right ventricle, pulmonary artery, lungs, alveoli, gas exchange, pulmonary vein, left atrium, bicuspid valve, left ventricle, aorta.*

Potential essay prompts:

1. Explain how you would design an experiment to answer the following question: "How do carbon dioxide and water vapor effect air temperature?"
2. Describe how and why the Earth's Climate is changing?
3. Describe how the cardiovascular system interacts with the respiratory system and digestive system to maintain homeostasis.
4. Describe how the body responds to pathogens.