

The first semester will be divided into the following units:

### Unit 1: Anatomical Terms and Body Systems

- **Ch. 1-Directional Terms:**

*Time Frame-3 Days*

Ch.1 will introduce the student to the terms that are used in anatomy to discuss direction and body position. Once the students have comprehended and demonstrated their knowledge of the 9 key directional terms used in this class to describe body position and location for organs, bones, tissue types, etc.; students will learn the fundamental organization of the human body.

- **Ch. 2-Organization of the human body:**

*Time Frame- 5 Days*

Ch. 2 will include discussing and diagramming the human body from the cellular level to the system level. The 10 body systems: skeletal, urinary, reproductive, nervous, lymphatic, endocrine, muscular, cardiovascular, respiratory, integumentary and digestive, will be taught with the use of CCD's (Cognitive-Content-Dictionaries), visual aides, hands-on activities and PowerPoint lecture notes.

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### Unit 2: Cellular Organization

- **Ch. 3 Tissue Types:**

*Time Frame- 17 Days*

Ch. 3- Tissue Types, will introduce the student to the *Histology* (the study of tissue types; *tissues* are collections of specialized cells and cell products that perform a limited number of functions). Ch. 3 Pre-reading guide, Ch. 3 Objective checklist and CCD Tissue Types will be completed prior to delivering chapter notes and Ch. 3 homework packet. Ch. 3 Tissue notes will introduce the 4 basic types of tissues- *epithelial (cells that line or cover)*, *connective tissue (cells that connect or reinforce)*, *muscular tissue (cells that contract)* and *neural tissue (cells that depolarize)*. The students will be taught and tested on the proper use of a compound microscope. Once the students have been granted a microscope license they will start the Tissue Project. The Tissue Project will showcase 9 major tissues found in the human body. This project will account for a major portion of the first 6 week grading period.

*\*\*Refer to Technical Notebook- Tissue Types*

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### Unit 3: Integumentary System:

*Time Frame-13 Days*

- **Ch. 4 Integumentary System:**

Ch. 4- The Integumentary System, will introduce the students to the largest organ system in the human body- the cutaneous membrane (the skin) and the accessory structures (hair, nails, and a variety of exocrine glands-apocrine and eccrine sweat gland, sebaceous glands). Ch. 4 Pre-reading guide, Ch. 4 Objective checklist and CCD Integumentary system will be completed prior to Ch. 4 PowerPoint lecture notes. Students will perform the Skin Lab (4 days) to better understand the components and structure of the integumentary system. Students will then spend 2 days in the computer lab completing the skin disease research project to correlate learned knowledge with real life experiences. Lecture Notes and Practice exam from VHS will end this unit. Ch. 4 Exam.

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## Unit 4: The Skeletal System

*Time Frame-13 Days*

- **Ch. 5: The Skeletal System:**

Ch. 5- The Skeletal System will introduce the students to the 206 bones that compose the two skeletal divisions: the appendicular skeleton (appendages and the pelvic and pectoral girdles- 126 bones total- 32/upper limb and 31/lower limb) and the axial skeleton (the longitudinal axis of the body- 80 bones total- the skull (22), auditory ossicles and hyoid bone (7), thoracic cage (24) and vertebral column (26). The students will begin this unit with Ch. 5 Pre-reading guide, Ch. 5 Objective checklist and Ch. 5 CCD the Skeletal System. Appendicular Skeleton- Day 1 will be an overview of the skeletal system from PowerPoint lecture notes. Day 2 students will complete notes and start Long Bone Lab Pre-lab ( 2 color plates- bone tissue and long bone). Day 3 and 4 students will begin a 2-day bone identification lab. Day 5 students will meet in the library for a webquest- The Mystery of the Bones. Day 6 Lecture notes for articulations (joints) will lead into a 3 day chicken wing disarticulation lab. Day 7, 8 and 9- Chicken Wing disarticulation lab. Visual Aides to accompany lectures notes. Appendicular skeleton- students will examine a longitudinally sectioned femur. Axial Skeleton- students will examine an adult skull (disarticulated and complete) in conjunction with lecture notes. Bone ossification notes will lead to X-Ray demonstration of fractures. Fracture CCD will be completed *in notebook*. Surgery of my wrist will follow and examination of minimal compression plate from my distal radius. Joint disorders from lecture notes will be presented. Optional extra credit- Disease research project for skeletal system. Jeopardy review game will be used for skeletal system exam (winning team will receive an extra 5 points on the exam).

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## Unit 5: The Nervous System

*Time Frame- 10 Days*

- **Ch. 7- The Nervous System:**

Ch. 7- The Nervous System will introduce the students to the 2 major subdivisions: the CNS (Central Nervous System) and the PNS (Peripheral Nervous System). Students will complete Ch. 7 Pre-reading guide, Ch. 7 Objective checklist and Ch. 7 CCD prior to lecture notes. Lecture notes, day 1, anatomy of a representative neuron- students will complete and label multi-polar neuron handout. Reaction- Time lab will be conducted Day 2 to illustrate the differences between neural response time between individuals based on 3 stimuli: tactile, auditory and visual. Day 3 lecture notes will lead into Neuroglia CCD *in notebook*. Divisions of the nervous system will be discussed (day 4-5):

**Divisions of the Nervous System:**

**CNS:** The brain and spinal cord- central processing center, higher thinking, reflexes.

**PNS:** Afferent Division- Receptors to CNS.

Efferent Division- CNS to Effectors (muscles, glands and adipose tissue).

1. *Somatic Nervous System* (SNS) -controls skeletal muscular contractions.
2. *Autonomic Nervous System* (ANS) -visceral motor system provides automatic involuntary regulation of smooth muscle, cardiac muscle, glandular secretions, and adipose tissue.

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- A. *Sympathetic Division- fight or flight* reactions, elevation of metabolic rate and increased alertness.
- B. *Parasympathetic Division-* activities that conserve energy or lower the metabolic rate, aka craniosacral div.

Students will then learn the 4 major regions of the brain: the cerebrum (cerebral cortex and cerebral hemispheres), diencephalon (thalamus, hypothalamus, pineal gland and mamillary bodies), brain stem (midbrain, pons, and medulla oblongata), and the cerebellum. CCD *in notes* will be completed for each of the 4 major regions. Sheep Brain lab will follow- 2 days. Spinal cord and gray and white matter will PowerPoint lecture notes will follow. Reflex arc will be diagramed by students into notebook as Reflex lab Pre-lab. Reflex lab will follow- 1 Day lab. Action Potential and Depolarization PowerPoint lecture notes and depolarization video. Steps required to depolarize a neuron will be written by each student along with a visual representation for each step *in notebook*. Jeopardy review for test. Ch. 7 Test.

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## Unit 6: Special Senses

- **Ch. 8- The Special Senses:**

Ch. 8- The Special Senses will discuss the 3 special senses (4 senses total but touch is considered a general sense since it is distributed in multiple layers over the body by multiple neuron types): Sight, Sound and Taste. Ch. 8 Pre-reading Guide, Ch. 8 Objective Checklist and Ch. 8 CCD will be completed prior to unit. Sight will be covered with an introduction to the anatomy of the eye with a demonstration or visual aide of a diagram of near and far point accommodation that students will copy into their notebooks. 6 muscles of the eye; inferior rectus, medial rectus, superior rectus, lateral rectus, inferior oblique, and superior oblique, will be discussed and identified from chapter 8 (project eye- identify muscles and function)- 1 day. Anatomy of eye will be discussed and students will identify the 3 major tunics of the eye ( sclera, choroid membrane and the retina). Ch. 8 PowerPoint lecture notes will follow- 1 day. Sheep brain pre-lab will be completed before dissection of sheep eye lab- 2 days. Convergence due to muscular contractions lecture notes. Myopia (near-sighted: eye is too long-image converges *before* retina: correction diverging lens-concave), Hyperopia (far-sighted: eye is too short-images converges *past* retina: correction converging lens-convex), Presbyopia (degeneration of the ciliary bodies resulting in far-sightedness: correction reading glasses), and Emmetropia (normal 20/20 vision). Focal Distance: the distance from the point in which the lens focuses incoming parallel light waves into a single point and the center of the lens. The closer the image the greater the focal distance- refer to Martini Essentials p. 309. Image resolution is dependent on the focal distance equaling the distance between the center of lens and the retina. Accommodation: lens compensates for variations in the distance between the eye and the object in view by changing its shape. Close objects, the ciliary muscle contracts, and the suspensory ligaments allow the lens to round up. Distant viewing, the ciliary muscle relaxes, and the suspensory ligaments pull against the margins of the lens and flatten it. Close- Round Lens, Far- Flat lens. Visual acuity, accommodation and color blindness will be taught through the use of a hands-on 2 day lab, Visual Test Acuity Lab.

## Semester 1 Final Exam

*Time Frame- 3 days*

### **Semester 1 Final Exam Review Sheet:**

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Students will review their Pre-reading guides, Chapter objective checklists and CCD's for chapters 1,2,3,4,5,7,8. Students will complete group components of objective checklists for each chapter in groups of 3- 1 day. Review sheet will be completed next day in class and for homework- 1 day. Semester 1 Final.

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