Wilson Area School District
Planned Course Guide

Title of planned course: Anatomy and Physiology: Senses and The Internal Viscera

Subject Area: Science

Grade Level: 12

Course Description: This rigorous senior-level course includes a detailed study of the structures and functions of the following human body systems: the senses, the digestive system, the urinary system, the respiratory system, the cardiovascular system, and the reproductive system. Introductory anatomical terminology will also be taught. Students may have an opportunity to attend a field trip to a local university to take a tour of a cadaver lab. Also, students may have an opportunity to complete dissections of the eyeball, heart, and possibly the fetal pig. This course is recommended for students who plan to major in the medical field, but is not meant to serve as a substitute for AP level Biology, Chemistry, and Physics classes.

Time/Credit for this Course: Half Year / 0.5 Credit

Curriculum Writing Committee: Jennifer Burd
Curriculum Map

August:
Overview of body systems
The language of anatomy and human body orientations

September:
Human body orientations continued
The Special Senses
Medical Mondays: Careers in A&P / Medical Scans (MRI’s, X-Rays, CT scans) and Technologies

October:
The Digestive System
The Urinary System
Medical Mondays: Nutrition / Stress

November:
The Respiratory System
The Cardiovascular System
Medical Mondays: Vital Signs / Cancer

December:
The Reproductive System
Medical Mondays: The Apgar Score / Aging

January:
Final dissections, practical, and review for the final exam
Course Title: Anatomy and Physiology: Senses and The Internal Viscera

Textbook: Essentials of Human Anatomy and Physiology, Elaine N. Marieb; Pearson

Supplemental Books:
  Essentials of Human Anatomy and Physiology Laboratory Manual (6th Ed.)
  Elaine N. Marieb; Pearson; 2015

  Anatomy and Physiology Coloring Workbook: A Complete Study Guide (11th Ed.)
  Elaine N. Marieb; Pearson; 2015

  Biology; Miller and Levine; Pearson 2010

Teacher Resources:
  ● Biodigital Human App
  ● Ted Ed
  ● Crash Course Anatomy
  ● Biozone A&P Workbook
**Curriculum Scope & Sequence**

**Planned Course:** Anatomy and Physiology: Senses and The Internal Viscera

**Unit:** The Language and Organ Systems of Anatomy

**Time frame:** 2 weeks

**State Standards:** 3:1.10.A, 3.1.12.A

**Anchor(s) or adopted anchor:** 3.1.10.A8, 3.1.12.A1, 3.1.12.A5, 3.1.12.A6

**Essential content/objectives:** At the end of the unit, students will be able to:
- Identify body systems based on structures and functions
- Use proper anatomical terminology to describe body directions, surfaces, body planes, and relationships between structures
- Locate the major body cavities and list the chief organs in each cavity
- Define homeostasis and explain its importance

**Core Activities:** Students will complete/participate in the following:
- Warm-Up Review
- Notes shells and diagrams packet
- Body regions practice
- Body landmarks practice
- Directional Terms practice

**Extensions:**
- “The Human Body: An Orientation” packet
- Play-Doh terminology activity

**Remediation:**
- Manipulation of Biodigital Human App for Review

**Instructional Methods:**
- Direct instruction
- Cooperative learning labs / Activities
- Teacher and student led class discussions

**Materials & Resources:**
- Textbooks
- Slideshows
- Labs / Lab supplies

**Assessments:**
- Tests
- Homework
- Class notes
- Labs
- Student participation
Curriculum Scope & Sequence

Planned Course: Anatomy and Physiology: Senses and The Internal Viscera

Unit: The Special Senses

Time frame: 2 weeks

State Standards: 3.1.10.A, 3.1.12.A


Essential content/objectives: At the end of the unit, students will be able to:
- To identify and describe the structures and functions of each of the organs involved with the special senses, including sight, hearing, equilibrium, smell, and taste
- To differentiate between the fibrous, vascular, and sensory layers of the eyeball
- To follow the pathway of light through the eye
- To differentiate between the outer, middle, and inner ear
- To follow the pathway of sound through the ear
- To describe how chemoreceptors function in taste and olfaction

Core Activities: Students will complete/participate in the following:
- Warm-Up Review
- Application Project (The Special Senses)
- Notes Shells and diagrams packet
- Developmental Concerns of the Special Senses (strabismus, otosclerosis, etc.)
- Systems in Sync Discussion

Extensions:
- “The Special Senses” packet
- Sheep Eye dissection
- Sign Language lesson (alphabet and common words)
- Blind Walk
- “This is How We Roll” Wheelchair experience
- Olfaction Lab
- Medical Mondays: Careers in A&P / Medical Scans (MRI’s, X-Rays, CT scans) and Technologies

Remediation:
- Manipulation of Biodigital Human App for Review

Instructional Methods:
- Direct instruction
- Cooperative learning labs / Activities
- Teacher and student led class discussions

Materials & Resources:
- Textbooks
- Slideshows
- Labs / Lab supplies
Assessments:
- Tests
- Homework
- Class notes
- Labs
- Student participation
Curriculum Scope & Sequence

Planned Course: Anatomy and Physiology: Senses and the Internal Viscera

Unit: The Digestive System

Time frame: 3 weeks

State Standards: 3:1.10.A, 3.1.12.A


Essential content/objectives: At the end of the unit, students will be able to:
- Name the organs of the alimentary canal and the accessory digestive organs and identify each on a diagram/model
- Identify the overall function of the digestive system as digestion and absorption of foodstuffs, and describe the general activities of each digestive system organ
- Name the deciduous and permanent teeth and describe the basic anatomy of a tooth
- Describe the function of local hormones in the digestive process
- List the major enzymes or enzyme groups produced by the digestive organs or accessory glands and name the foodstuffs on which they act
- List several factors that influence metabolic rate, and indicate the effect of each
- Describe how body temperature is regulated

Core Activities: Students will complete/participate in the following:
- Warm-Up Review
- Application Project (The Digestive System)
- Notes Shells and diagrams packet
- Developmental Concerns of the Digestive System (celiac, Crohn’s, etc.)
- Systems in Sync Discussion

Extensions:
- “The Digestive System” packet
- Digestive foldable
- Medical Mondays: Nutrition / Stress

Remediation:
- Manipulation of Biodigital Human App for Review

Instructional Methods:
- Direct instruction
- Cooperative learning labs / Activities
- Teacher and student led class discussions

Materials & Resources:
- Textbooks
- Slideshows
- Labs / Lab supplies
Assessments:
- Tests
- Homework
- Class notes
- Labs
- Student participation
Curriculum Scope & Sequence

Planned Course: Anatomy and Physiology: Senses and The Internal Viscera

Unit: The Urinary System

Time frame: 3 weeks

State Standards: 3:1.10.A, 3.1.12.A

Anchor(s) or adopted anchor: 3.1.10.A5, 3.1.12.A5, 3.1.12.A6, 3.1.12.A8

Essential content/objectives: At the end of the unit, students will be able to:
  - Identify the 3 types of waste that the urinary system eliminates
  - Describe the main regions of the kidney and the 3 other organs/structures that make up the urinary system
  - To explain the structure and function of a nephron and how urine is produced as it travels through the nephron

Core Activities: Students will complete/participate in the following:
  - Warm-Up Review
  - Application Project (The Urinary System)
  - Notes Shells and diagrams packet
  - Developmental Concerns of the Urinary System (bladder cancer, kidney stones, etc.)
  - Systems in Sync Discussion

Extensions:
  - “The Urinary System” packet
  - Urinary flowchart
  - Kidney dissection
  - Medical Mondays: Nutrition / Stress

Remediation:
  - Manipulation of Biodigital Human App for Review

Instructional Methods:
  - Direct instruction
  - Cooperative learning labs / Activities
  - Teacher and student led class discussions

Materials & Resources:
  - Textbooks
  - Slideshows
  - Labs / Lab supplies

Assessments:
  - Tests
  - Homework
  - Class notes
  - Labs
  - Student participation
Curriculum Scope & Sequence

**Planned Course:** Anatomy and Physiology: Senses and The Internal Viscera

**Unit:** The Respiratory System

**Time frame:** 3 weeks

**State Standards:** 3:1.10.A, 3.1.12.A

**Anchor(s) or adopted anchor:** 3.1.10.A5, 3.1.12.A5, 3.1.12.A6, 3.1.12.A8

**Essential content/objectives:** At the end of the unit, students will be able to:
- Name the organs forming the respiratory passageway from the nasal cavity to the lungs and describe the function of each
- Explain how the respiratory muscles cause volume changes that lead to airflow into and out of the lungs (breathing)
- Define the following respiratory volumes: tidal volume, vital capacity, expiratory reserve volume, inspiratory reserve volume, and residual air
- Describe the process of gas exchange in the lungs and tissues
- Describe how oxygen and carbon dioxide are transported in the blood

**Core Activities:** Students will complete/participate in the following:
- Warm-Up Review
- Application Project (The Respiratory System)
- Notes Shells and diagrams packet
- Developmental Concerns of the Respiratory System (COPD, apnea, etc.)
- Systems in Sync Discussion

**Extensions:**
- “The Respiratory System” packet
- Spirometry Lab (respiratory volumes and capacity)
- Medical Mondays: Vital Signs / Cancer

**Remediation:**
- Manipulation of Biodigital Human App for Review

**Instructional Methods:**
- Direct instruction
- Cooperative learning labs / Activities
- Teacher and student led class discussions

**Materials & Resources:**
- Textbooks
- Slideshows
- Labs / Lab supplies
Assessments:
- Tests
- Homework
- Class notes
- Labs
- Student participation
**Curriculum Scope & Sequence**

**Planned Course:** Anatomy and Physiology: Senses and The Internal Viscera

**Unit:** The Cardiovascular System

**Time frame:** 3 weeks

**State Standards:** 3:1.10.A, 3.1.12.A

**Anchor(s) or adopted anchor:** 3.1.10.A5, 3.1.12.A5, 3.1.12.A6, 3.1.12.A8

**Essential content/objectives:** At the end of the unit, students will be able to:
- To identify and describe the structures and functions of blood
- To identify and locate the main structures of the heart including the 4 chambers, 4 valves, and major arteries and veins
- To differentiate between systemic and pulmonary circulation
- To trace the flow of blood through the heart, lungs, and body
- To identify the body’s major arteries and veins and name the body region supplied by each
- Describe the blood-clotting process

**Core Activities:** Students will complete/participate in the following:
- Warm-Up Review
- Application Project (The Cardiovascular System)
- Notes Shells and diagrams packet
- Developmental Concerns of the Cardiovascular System (heart attack, congenital heart defects, etc.)
- Systems in Sync Discussion

**Extensions:**
- “The Cardiovascular System” packet
- Cardiovascular foldable
- Heart dissection
- Medical Mondays: Vital Signs / Cancer

**Remediation:**
- Manipulation of Biodigital Human App for Review

**Instructional Methods:**
- Direct instruction
- Cooperative learning labs / Activities
- Teacher and student led class discussions

**Materials & Resources:**
- Textbooks
- Slideshows
- Labs / Lab supplies
Assessments:
• Tests
• Homework
• Class notes
• Labs
• Student participation
Curriculum Scope & Sequence

Planned Course: Anatomy and Physiology: Senses and The Internal Viscera

Unit: The Reproductive System

Time frame: 3 weeks

State Standards: 3:1.10.A, 3.1.12.A

Anchor(s) or adopted anchor: 3.1.10.A5, 3.1.12.A5, 3.1.12.A6, 3.1.12.A8

Essential content/objectives: At the end of the unit, students will be able to:
- To identify and describe the structures and functions of the male and female reproductive systems
- To differentiate between spermatogenesis and oogenesis
- To trace the pathway of fetal development from zygote to birth
- Review how sexual reproduction and the process of meiosis produces genetic diversity

Core Activities: Students will complete/participate in the following:
- Warm-Up Review
- Application Project (The Reproductive System)
- Notes Shells and diagrams packet
- Developmental Concerns of the Reproductive System (uterine cancer, miscarriage, etc.)
- Systems in Sync Discussion

Extensions:
- “The Reproductive System” packet
- Medical Mondays: The Apgar Score / Aging

Remediation:
- Manipulation of Biodigital Human App for Review

Instructional Methods:
- Direct instruction
- Cooperative learning labs / Activities
- Teacher and student led class discussions

Materials & Resources:
- Textbooks
- Slideshows
- Labs / Lab supplies

Assessments:
- Tests
- Homework
- Class notes
- Labs
- Student participation