

WRHS Science Curriculum Syllabus

Course Name: Human Biology

Grade Level: 11 & 12

Course Description:

The course will meet as a combined AF-AE class. It is designed to give students an understanding of the basic structure and functions of the human systems. Students preparing for health-related careers and those interested in studying the principles of biology using the human species as an example will find this course valuable. Demonstrations and experiments will be used to illustrate the principles and concepts of the course including the problems of disease, nutrition, heredity, pollution and overpopulation. Independent literature and electronic research will be required each term.

Links to Student Expectations: A, B, C, D, E, F, K

- All students will develop skills to utilize technology to gather, to evaluate, to assimilate, and to present information.
- All students will utilize critical thinking skills to identify and to provide resources to solve a problem.
- All students will be able to make decisions and solve problems using logical processes (e.g., scientific method, induction, deduction, syllogism, etc.).
- All students will develop skills to promote a sense of confidence in tackling the rigors of standardized tests such as the required MCAS and optional AP, SAT.

Interdisciplinary Connections:

Human Biology is a course of study directly related to the other natural sciences and derives its concepts from them. Students must use clear written and oral expression so it has a direct relationship to language skills. Data must be evaluated quantitatively, directly related to mathematics. The human condition in social interactions is a direct result of human biology.

I. Essential Questions for Course

- What is the basic organization of the human body?
- What is the structural integrity of the human body?
- How is movement accomplished in the human body?
- What coordinates and controls the human body?
- How are the functions of the human body integrated?

- How do humans reproduce?

II. Student Objectives

- The Basic Organization of the Human Body
 - To define the various levels of structural organization in the human body.
 - To identify the various fields of study related to the human body.
 - To identify the aspects of the human body.
- Structural Integrity of the Human Body
 - To understand the cellular nature of the human body.
 - To identify the structure and functions of the various human tissues.
 - To identify the various components of the human skeletal system.
- Movement in the Human Body
 - To understand the structure and function of muscle tissue.
 - To identify the major superficial muscles of the body.
 - To comprehend the complexity of muscle kinesiology and kinematics.
- Coordination and Control in the Human Body
 - To identify the structures of the human nervous system.
 - To demonstrate understanding of how neurons and nerves function.
 - To understand the structural and functional integrity of neurology.
- Functional Integration in the Human Body
 - To understand the structure and functions of the endocrine system.
 - To comprehend chemical integration in the human body.
 - To explore numerous endocrine abnormalities.
- Reproduction in the Human Body
 - To identify the organs of human reproduction and explain their function.
 - To describe human development.
 - To explore human social interactions as a function of their biology.

III. Suggestions for Instruction

- Lectures
- Class discussion
- Textbook reading (Modern Human Physiology)
- Diagrams
- Laboratory experiments
- Small group projects
- Internet sites
- Computer programs
- Video presentations
- Classroom speakers
- Case studies
- Term research reports

IV. Suggestion for Assessment

- Written tests
- Written quizzes
- Oral quizzes
- Laboratory activities
- Classroom presentations
- Research reports
- Case studies

V. Curriculum

- The Basic Body Plan
 - Biological Chemistry
 - Cellular Organization
 - Tissues
- The Basic Structural Organization
 - The Structure and Development of Bone
 - Bones, Arthrodes, Tendons, Ligaments
 - Bone Markings
- Movement in the Human Body
 - The Structure and Function of Muscle
 - Muscle Energetics
 - Superficial Muscles
- Coordination and Control in the Human Body
 - The Structure and Function of Neurons
 - The Structure and Function of the Central, Autonomic, and Peripheral Nervous Systems
 - Neurotransmitter Physiology
- Integration in the Human Body
 - The Structure and Function of Endocrine Glands
 - Hormone Physiology
 - Chemical Integration
- Reproduction in the Human Body
 - The Structure and Function of Reproductive Systems
 - Human Development
 - Human Genetics

VI. Lesson Extensions

- The methods of evaluation are different between Human Biology AF and AE.