

Biology III Syllabus

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Prep./Conference Period: TBA

Course Description Per Course Catalogue: This course has been removed from the course catalogue.

Biology:

Anatomy and Physiology is an in-depth study of the specific functions and structures of the tissues, organs and systems of the human body. The course is for those interested in science-related fields. Anatomy and physiology is a laboratory based study of the human body. The study will range from molecules, cells, body systems, and processes. Dissection of a cat and other appropriate organs will compliment course work.

This course is provided as a pseudo-independent study meaning that it will be in your schedule and the teacher will be present for questions, but it will have little lecture time. Most work is done on your own. Readings and notes are assigned and requires that you keep up with the material on your own outside of class.

The course is built upon the following themes:

- Nature of Science (science as a process)
- Unity with Diversity
- Systems and interactions
- Science, technology, and society

Materials:

1. Textbook – must be signed and covered. This will be provided by the end of week two or upon completion of major schedule changes.)
2. Writing utensil – you must supply your own pen or pencil daily. Pencils must be used for microscope drawings.
3. 3-Ring Binder –this should be at least a 1 inch binder; bring daily for notes, handouts, and sketches. (This serves as your notebook for the course.)
4. Science fee – must be paid A.S.A.P. once they have been adopted. In the past this has been \$15.
5. Metric ruler
6. A thumb drive – for storing computer generated information.
7. Calculator – a simple one to add, subtract, multiply, and divide.
8. Paper- Loose leaf (Some printer paper will be used as well, but not enough to require purchasing a ream.)
9. You – you are required to attend class on a regular basis.

Grading:

1. Grading scale: A=93-100%
B= 84-92%
C= 74-83%
D= 65-73%
F= 0-64%
2. Grades will be given for tests, quizzes, homework, labs, student response system lecture questions, presentations, projects, etc.
 - a. Each week there is a set of multiple choice review questions, which are completed and graded on-line with immediate feedback.
3. There will be only a few extra credit opportunities a year. Generally once per grade period.
4. Point deductions will be made for lab violations / horseplay.

Extra Help:

I encourage you get extra help when you need it. I am usually available after school, but check with me to make sure I don't have a meeting or other appointment.

Topics

Semester 1:

Overview of Course

Review of

How scientists/biologists work

Graphing

Data Tables

Data Collection and Analysis

Microscopes

Microscope Drawings

Basic Biological Drawings

Sampling Methods

Dissections

Directional Terminology

Mammals

The Human Body: An Orientation

Overview of organ systems

Directional and regional terms

Cavities and planes

Homeostasis

Negative/positive feedback systems

Life processes

Autopsy Review

Cat external anatomy

Tissues

Cells and Tissues Structure

Function and locations of tissues

Epithelial

Connective

Muscle

Nervous

Microscopic identification of tissue types

Mechanisms for diseases

Medical Terminology

Human Systems

Integumentary

Structure and function of skin

Skin layers

Growth, repair and pigmentation

Integumentary accessory organs

Disorders

Skeletal

Functions of skeletal system

Anatomy of long bone

Bone histology

Bones of axial skeleton

Bones of appendicular skeleton

Naming the parts of bones

Properly articulating skeleton

Human skeletal remains

Formation, growth and repair

Joints

Types of movement

Disorders

Muscular

Functions of muscular system

Names and locations

of major muscles (human)

Origin, insertion and action

Neuromuscular junction

Structure (gross and microscopic)

Physiology of muscle contraction

Fiber types

Cat muscles

Disorders

Nervous

Functions of nervous system

Nerve cell anatomy

Neural physiology

action potential

synaptic transmission

Na/K pump

Brain anatomy and hemispheres

Spinal cord anatomy

Reflex arc

PNS (autonomic and somatic)

Sensory motor nerve functions

Hemisphere dominance

Sheep Brain

Cat Brain and spinal cord

Disorders

Semester 2:

Senses

Sensory organs

Colorblindness

Disorders

Circulatory

Functions of circulatory system

Blood

Blood components

Function

Typing

Heart

Heart structures (chambers,
valves, vessels)

Circulatory routes (systemic,
pulmonary, coronary and hepatic portal)

Blood vessels and pressure

Regulation and conduction

(EKG)

Sheep Heart dissection

Disorders

Endocrine

Functions of endocrine system

Naming organs/glands/cells and their

hormones

Hormone types and target cells

Homeostasis and feedback loops

Chemical messengers

Disorders

Lymphatic/Immune

Functions of lymphatic system

Structures (vessels, nodes, cells)

Lines of defense

Humoral immune response

Cell mediated immune response

Immune cell types

Disorders

Digestive

Functions of digestive organs

Modes of mechanical digestion

Chemical digestion

Absorption and elimination

Name parts of GI Tract

Accessory organs

Nutrition and metabolism

Cat digestive system

Disorders

Urinary/Excretory

Functions of urinary system
Kidney, ureter, bladder, urethra
Microanatomy and function of nephron
Sheep Kidney
Cat urinary system
Disorders

Respiratory

Functions of respiratory system
Anatomy of respiratory tract
Mechanics and regulation of breathing
Gas exchange
Cat respiratory system
Disorders

Reproductive

Functions reproductive systems
Male and female anatomy
Menstrual cycle
Meiosis/gamete production
Pregnancy
Cat reproductive system
Disorders

Special Project

Biology III Dissections include:

Cat
Sheep Brain
Sheep heart
Sheep Kidney