NEWPORT-MESA UNIFIED SCHOOL DISTRICT
Course Description

PHYSIOLOGY 1AB

Content covered in this course is described in the Course of Study and Health Continuum Goals and Objectives. Based upon student needs, teachers select appropriate materials from the Instructional Materials List. Classroom presentations of course content are determined by the instructor and described under Teacher Activities. A more detailed outline of this course can be obtained from the instructor. Many teachers have a course outline of student notes to enhance the curriculum.

Overview:

Physiology is a rigorous year-long laboratory course for 11th and 12th grade students who have successfully completed Biology. Other courses which are helpful but not required are Chemistry and Physics. This course is designed for students planning a career in a health-related area and those who have a basic interest in the general structure and function of the human body.

The curriculum of Physiology integrates writing skills, critical-thinking skills, laboratory skills, and dissection skills as they apply to the basic framework of human anatomy and physiology. There is an emphasis on microscopic work and on long-term dissection of preserved mammalian specimens.

Course of Study Objectives:

1. **The student will describe the biochemical processes involved in cellular biology such as cellular respiration, mitosis, glycolysis, nerve impulse conduction, and hormones-enzyme target tissue reactions.**
   - 1.1 SUGGESTED STUDENT ACTIVITY:
     - The student will read appropriate textbook material, take lecture notes, and participate in lab activities. (enzyme control lab using different substrates and catalytic enzymes)
   - 1.2 INSTRUCTIONAL MATERIALS USED:
     - Adopted Physiology textbook
     - Charts, diagrams, physiology laser disc
     - Audio-visual materials from the attached list
     - Appropriate laboratory equipment and supplies
   - 1.3 TEACHER ACTIVITIES:
     - Prepare lectures, demonstrations, and laboratory supplies
     - Supervise student activities and laboratory exercises

2. **The student will describe physiological and anatomical levels of organism organization.**
   - 2.1 SUGGESTED STUDENT ACTIVITY:
     - The student will read appropriate textbook material, take lecture notes, and participate in lab activities. (muscle physiology lab - using frog and human experiments in muscle tone, tetanns, summation, oxygen debts, relaxation periods, and recovery time intervals in both invertebrates and vertebrates)
   - 2.2 INSTRUCTIONAL MATERIALS USED:
     - Adopted Physiology textbook
     - Charts, diagrams, physiology laserdisc
     - Audiovisual materials from the attached list
     - Appropriate laboratory equipment and supplies
   - 2.3 TEACHER ACTIVITIES:
     - Prepare lectures, demonstrations, and laboratory supplies
     - Supervise student activities

3. **The student will identify histological material.**
   - 3.1 SUGGESTED STUDENT ACTIVITY:
     - The student will read appropriate textbook materials, take lecture notes, and participate in lab activities. (e.g., appropriate use of the compound microscope, drawing various tissue types)
   - 3.2 INSTRUCTIONAL MATERIALS USED:
     - Adopted Physiology textbook
     - Charts, diagrams, histology microscope slides
     - Audiovisual materials from the attached list
     - 35 mm slides of prepared tissue types
     - Compound microscopes
   - 3.3 TEACHER ACTIVITIES:
     - Prepare lectures, demonstrations, and laboratory supplies
     - Supervise student activities

4. **The student will identify structures/organs from dissected material.**
   - 4.1 SUGGESTED STUDENT ACTIVITY:
     - The student will read appropriate related materials, take notes on pre-dissection lab lecture, and participate in dissection labs of preserved mammalian specimens. (fetal pig labs on systems—circulation, respiration, excretion, reproduction and digestion)
   - 4.2 INSTRUCTIONAL MATERIALS USED:
     - Appropriate dissection manual
     - Charts, diagrams, fetal pigs
     - Audiovisual materials from the attached list
   - 4.3 TEACHER ACTIVITIES:
     - Prepare pre-dissection lab lecture, laboratory, supplies and equipment
     - Demonstrate proper dissection techniques
     - Supervise student activities

5. **The student will describe diseases and malfunctions of each of the organ systems.**
   - 5.1 SUGGESTED STUDENT ACTIVITY:
     - The student will read appropriate textbook material, give oral reports, take lecture notes, and participate in discussion about various diseases.
     - Students will identify pathogens from mocroscopic slides; the use of staining techniques to identify pathogenic bacteria.

5.2 INSTRUCTIONAL MATERIALS USED:
- Adopted Physiology textbook
- Charts, diagrams, pathogenic slides
- Audiovisual materials from the attached list

5.3 TEACHER ACTIVITIES:
- Prepare lectures, demonstrations, and laboratory supplies
- Provide appropriate materials for student oral reports

6. **The student will describe the historical developments of human physiology studies and/or medical practice.**

6.1 SUGGESTED STUDENT ACTIVITY:
- The student will read appropriate textbook material, and take lecture notes.

6.2 INSTRUCTIONAL MATERIALS USED:
- Adopted Physiology textbook
- 35 mm slide series on history and myth, tracing the study of human anatomy-physiology from the Egyptians to the modern physician.
- Audiovisual materials from the attached list

6.3 TEACHER ACTIVITIES:
- Prepare lectures
- Provide appropriate materials needed for reports

INSTRUCTORS SHALL TEACH HONOR AND RESPECT FOR MONOGAMOUS HETEROSEXUAL MARRIAGE. ABSTINENCE SHALL BE EMPHASIZED AND WILL BE PRESENTED AS THE BEST CHOICE UNTIL MARRIAGE. ABSTINENCE SHALL BE TAUGHT AS THE ONLY 100% EFFECTIVE PROTECTION AGAINST UNWANTED TEENAGE PREGNANCY AND SEXUALLY TRANSMITTED DISEASES.

Health Continuum Goals and Objectives:

7. **(Objective 2.7.4) The student will describe ways of protecting himself/herself and others from disease other than sexually transmitted diseases.**

7.1 SUGGESTED STUDENT ACTIVITY:
- The student will read appropriate textbook material, take lecture notes, and participate in lab activities. (Lab: *Bacteria and You* —A lab to determine pathogens, ecological relationships and specific intermediate hosts.

7.2 INSTRUCTIONAL MATERIALS USED:
- Adopted Physiology textbook
- Charts, diagrams, laserdisc
- Audiovisual materials from the attached list
- Appropriate laboratory equipment and supplies

7.3 TEACHER ACTIVITIES:
- Prepare lectures, demonstrations, and laboratory supplies
- Supervise student activities

8. **(Goal 2.7) The student will develop an understanding of the factors that bring about diseases and disorders (other than sexually transmitted diseases) and the extent to which they can be prevented, treated, or controlled.**

8.1 SUGGESTED STUDENT ACTIVITY:
- The student will take lecture notes and read appropriate textbook material.

8.2 INSTRUCTIONAL MATERIALS USED:
- Adopted Physiology textbook and other related material
- Audiovisual materials from attached list

8.3 TEACHER ACTIVITIES:
- Prepare lectures, provide related materials
- Prepare for guest speakers from various health organizations. (e.g., American Diabetes Association)

9. (Objective 3.2.2) The student will identify biological/sexual differences between male and female.

9.1 SUGGESTED STUDENT ACTIVITY:
- The student will read appropriate textbook material, take lecture notes, and participate in lab activities. (Lab: Sea urchin lab—securing gametes from sea urchins—study of zygotes, and embryological stages)

9.2 INSTRUCTIONAL MATERIALS USED:
- Adopted Physiology textbook and other related material
- Charts, diagrams, laserdisc
- Models, microscopes, and prepared slides

9.3 TEACHER ACTIVITIES:
- Prepare lectures, demonstrations, and laboratory supplies
- Supervise student activities and laboratory exercises

10. (Goal 3.3) The student will demonstrate understanding that unique human traits are a result of the interaction of heredity and environment.

10.1 SUGGESTED STUDENT ACTIVITY:
- The student will read appropriate textbook material, take lecture notes, and participate in lab activities. (Lab: Biofeedback—understanding the workings of biofeedback mechanisms in the control of heart rate and blood pressure)

10.2 INSTRUCTIONAL MATERIALS USED:
- Adopted Physiology textbook and related materials
- Appropriate laboratory equipment and supplies

10.3 TEACHER ACTIVITIES:
- Prepare lectures, demonstrations, and laboratory supplies
- Supervise student activities and laboratory exercises

11. The student will identify the individual bones of the human skeleton describing the biochemical processes in their formation, namely ossification.

1.1 SUGGESTED STUDENT ACTIVITY:
- The student will read appropriate textbook material, take lecture notes, and participate in lab activities.

11.2 INSTRUCTIONAL MATERIALS USED:
- Adopted Physiology textbook
- Handout charts, laserdisc
- Bones and ossification diagrams
- Audiovisual materials from the attached list

11.3 TEACHER ACTIVITIES:
- Prepare lectures, demonstrations and lab materials
- Supervise student lab exercises

INSTRUCTIONAL MATERIALS

Textbooks

Essentials of Human Anatomy and Physiology
(1989 edition added Aug. 21, 1990)
Human body in Health & Disease
Structure and Function in Man

Audio-Visual Materials

AIDS: facts and fears, crisis and controversy (Video VCA127)
Presented in four parts, video gives medical facts about the disease. (Released in l986)

AIDS in your school (Video VCA145)
A clear, straightforward presentation of what AIDS is and how it affects the body's immune system.

A.I.D.S. - Learn and Live (Video VCA329) (added May 14, 1991)
Aimed specifically at teens, this video gives a very simple explanation of how the AIDS virus attacks the body. Stresses abstinence.

AIDS - On The Front Line (Video) (added June 9, 1992)
Presents the subject of AIDS to educators in a very basic way - explains virus transmission and techniques for effectively dealing with concerned students. Global concerns and how the educator can impact his students through education and support.

AIDS - Protect Yourself (Video) (added June 9, 1992)
Presents practical data on AIDS and AIDS prevention, especially for young teens. Good balance of scientific data and life situations having to do with AIDS prevention. Good presentation of resources at the end of video.

AIDS: You've Got To Do Something (Video VCA697) (added June 23, 1993)
Disney program that explains the difference between HIV and AIDS. Shows young people "roll playing" learning ways to say NO. Stresses abstinence.

Blood: the microscopic miracle (2nd ed.) (Film MA1721)
Scanning electron micrograms and animation provide an accurate look at blood and the role it plays in medicine and modern biology.

Dissection: cats, fetal pigs

Ear model (Exhibit EX001)
Model of the human ear with external audtitory canal open to the junction with the ear drum. Ear drum and the ossicles are removable. Model has key which identifies all coded structures.

Ear model (Exhibit EX215)
Enlarged model shows the auditory canal, middle and inner ear, and other important features. Ear drum, semi-circular canals and cochlea are removable. Model is keyed for identification.

Ears: their structure and their care (Film MA0192)
Shows the structure of the outer, middle and inner ear, and the circular canals--describes role of each in hearing and balance. Discusses care of the ear and some common ailments of the ear.

Eye model (Exhibit EX003)
Model of the human eye, with removable parts. Key furnished for coded structures.

Eye model (Exhibit EX214)
Model of the eye includes a removable lens to demonstrate vision, plus a special feature demonstrating the vitreous humor. Functional components are enlarged and keyed.

Gateways to the mind (Film MA2111 and VCA372)
Story of what science has learned about the human senses and how they function. Includes documentary sequences.

Head plaque (Exhibit EX055)
Mid-saggital section of the head. Shows over 40 coded structures -- in color. [8 1/2" x 13"]

Health: AIDS (laserdisc) (added July 23, 1991)

Heart model (Exhibit EX054)
Natural size, dissectable into two parts. All changers, valves and great vessels are clearly shown

Hemo the magnificent (Film MA2104 and VCA3770)
Tells the story of the blood, the heart and circulation. Shows scenes of the human heart and capillaries in action.

The Hidden universe: the brain (Film MA2467)
Discusses the functions and malfunctions of the human brain, examining techniques, drugs and equipment used to diagnose and treat malfunctions. Explores the concept of memory.

The Human body series (Films)
Uses microphotography, endoscopic fiber optics photography and x-rays to show the nine systems of the body, and how the body systems work together.
- *Circulatory system (2nd ed.) MA1978*
- *Digestive system (2nd ed.) MA1975*
- *Endocrine system MA1979*
- *Excretory system (2nd ed.) MA1997*
- *Muscular system (2nd ed.) MA0561*
- *Nervous system (2nd ed.) MA1980*
- *Respiratory system (2nd ed.) MA1976*
- *Reproductive system MA1998*
- *Skeletal system (2nd ed.) MA1977*
- *Systems working together (2nd ed.) MA1981*

Human Reproduction: Ovulation to Birth (Video VCA593) (added June 23, 1993)
Superb microphotography shows release and fertilization of human egg. Shows embryo development until birth.

The Incredible human machine (Video VCA027)
Explores the fascinating microscopic universe that exists within the internal world of the human body, using sophisticated photographic techniques.

Kidney model (Exhibit EX002)
A small plastic model of the kidney showing the interior and exterior parts. The guide gives information about the urninary system.

The Living Body Series (Video series) (added July 23, 1991)
- *Accident VCA693*
- *Aging VCA695*
- *Breakdown VCA678*
- *Breath of life VCA685*
- *Coming together VCA690*
- *Decision VCA682*
- *Design for living VCA696*
- *Dream voyage VCA674*
- *Eating to live VCA677*
- *Eyes and ears VCA673*
- *Growth and challenge VCA675*
- *Hot and Cold VCA687*
- *Internal defenses VCA694*
- *Into the world VCA69*
- *Landscapes and interiors VCA671*
- *Life under pressure VCA686*
- *Messengers VCA688*
- *Moving parts VCA680*
- *Muscle power VCA679*
- *Nerves at work VCA681*
- *A New life VCA691*
- *Our talented brain VCA683*
- *Shares in the future VCA689*

The Living Body Series (continued)

Skin deep VCA672

Two hearts that beat as one VCA684

Water! VCA67

Muscle (Film MA2468)

Discusses the three different kinds of muscles in the human body, with detailed description and demonstration of the unique properties of each kind of muscular tissue.

Reproduction (National Geographic Society)

Sense perception (2nd ed.) (Film MA2359)

Examines the senses of sight, hearing, touch, taste and smell in terms of structure and function. Shows that perception actually takes place in the brain. Demonstrates inverted vision, etc.

Simplified torso (Exhibit EX181)

Anatomically correct human torso model includes 9 removable organs and 106 identified muscles, blood vessels and other structures. Discusses location and function of organs. Torso is sexless.

Skin: its structure and function (Film MA1121)

Examines the functions and structures of skin using scanning electron micrographs and impressive animation. Some skin problems and skin care also discussed.

Slides on birth defects, ovaries, testes, mitosis

Story of the bloodstream (Film MA2237)

Describes the functions of the heart and circulatory system, showing the aortic and mitral valves of the human heart. Studies in detail the red cell, white cell and capillaries.

Teacher demonstration: human placenta specimen perserved in alcohol

Wall charts of human anatomy (CH068)

14 color charts with facts about the human body, with detailed identification and text. Virtually a complete course in basic anatomy. Includes glossary of names and locations in the body.