

Perris Union High School District

Course of Study

A. COURSE INFORMATION

| | | |
|--|---|---|
| Course Title: <div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Honors Anatomy & Physiology (B)</div> <input checked="" type="checkbox"/> New <input type="checkbox"/> Revised | Subject Area: <input type="checkbox"/> Social Science <input type="checkbox"/> English <input type="checkbox"/> Mathematics <input checked="" type="checkbox"/> Laboratory Science <input type="checkbox"/> World Languages <input type="checkbox"/> Visual or Performing Arts <input type="checkbox"/> College Prep Elective <input type="checkbox"/> Other | Grade Level <input type="checkbox"/> MS <input type="checkbox"/> HS <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 <input type="checkbox"/> 9 <input type="checkbox"/> 10 <input checked="" type="checkbox"/> 11 <input checked="" type="checkbox"/> 12 |
| If revised previous course name if changed <div style="border: 1px solid black; height: 20px; width: 100%;"></div> | Is this classified as a Career Technical Education course? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | |
| Transcript Course Code/Number: <div style="border: 1px solid black; height: 20px; width: 100%;"></div> (To be assigned by Educational Services) | | |
| Required for Graduation: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Credential Required to teach this course: <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> Biology Single Subject! Science! Biological Sciences <u>To be completed by Human Resources only.</u> </div> | |
| Meets UC/CSU Requirements? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Was this course <u>previously approved by UC</u> for PUHSD? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No (Will be verified by Ed Services) | <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <div style="display: flex; justify-content: space-between;"> <div style="text-align: center;"> Signature </div> <div style="text-align: center;"> 3-23-2021 Date </div> </div> </div> | |
| Meets "AP" Requirements? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | Unit Value/Length of Course: <input type="checkbox"/> 0.5 (half year or semester equivalent) <input checked="" type="checkbox"/> 1.0 (one year equivalent) <input type="checkbox"/> 2.0 (two year equivalent) <input type="checkbox"/> Other: | |
| Submitted by: Jennifer West Site: PVHS Date: 3/22/2021 | | |
| Approvals | Name/Signature | Date |
| Director of Curriculum & Instruction | | 3/23/2021 |
| Asst. Superintendent of Educational Services | | |
| Governing Board | | |

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| Prerequisite(s) (REQUIRED): |
| Biology and Chemistry (C or better) |
| Corequisite(s) (REQUIRED): |
| None |
| Brief Course Description (REQUIRED): |
| Honors Anatomy & Physiology (A) explores the systems comprising the human body by emphasizing physiological mechanisms and a thorough understanding of human anatomy while emphasizing the relationship of structure to function. It covers the integumentary, skeletal, muscular, nervous, and endocrine systems while focusing on the interdependence of these systems and maintenance of homeostasis. This course will include hands-on laboratory investigations, inquiry-based modeling activities, case studies, and meaningful research. The laboratory activities will include both microscopic and gross evaluations of individual organs as well as whole specimens. |

B. COURSE CONTENT

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| Course Purpose (REQUIRED): |
| <i>What is the purpose of this course? Please provide a brief description of the goals and expected outcomes. Note: More specificity than a simple recitation of the State Standards is needed.</i> |
| <p>The purpose of this course is to prepare students for college-level coursework in anatomy/physiology and for careers in health science or medicine. Upon successful completion of this course, students will be able to do the following with respect to the integumentary, skeletal, muscular, nervous, and endocrine systems:</p> <ol style="list-style-type: none"> 1. Use appropriate terminology to discuss anatomy and physiology. 2. Use appropriate laboratory tools and techniques to examine anatomical structures or physiological functions. 3. Identify anatomical structures and describe the complex interrelationships between structure and function. 4. Explain how body systems work together to maintain homeostasis. 5. Explain how variability in the human population produces ranges of values considered "normal" for body parameters. 6. Propose evidence-based hypotheses to explain physiological responses or the functions of anatomical structures. 7. Apply knowledge of anatomy and physiology to real-world situations. 8. Recognize and apply patterns that unify, organize, and simplify the abundant detail of anatomy & physiology. |

Course Outline (REQUIRED):

Detailed description of topics covered. All historical knowledge is expected to be empirically based, give examples. Show examples of how the text is incorporated into the topics covered.

Honors Anatomy and Physiology (A) offers the student with a strong biology and/or chemistry background and an interest in the healthcare field the opportunity to learn about the anatomy and physiology of the human body at a higher level than the introductory class.

This course satisfies the University of California and California State University requirements for an honors level laboratory science course. It prepares the student for collegiate level coursework in the biological and health sciences and introduces the student to career opportunities in the health sciences.

The course content is aligned to the high school life science section of the Next Generation Science Standards, particularly topics 1) Structure and Function and 2) Inheritance and Variation of Traits, and 3) Matter and Energy in Organisms and Ecosystems. The ideas presented will build upon students' science understanding of disciplinary core ideas, science and engineering practices, and crosscutting concepts from earlier grades.

UNIT 1 -- ORGANIZATION OF THE HUMAN BODYUnit 1 Topics & Objectives

1. Students will define the body regions and cavities and demonstrate the necessary vocabulary to describe anatomical locations.
2. Students will define the levels of structural organization, necessary life functions, and survival needs.
3. Students will identify the major structures and functions of the 11 body systems while focusing on the interdependence of these systems.
4. Students will demonstrate understanding of feedback mechanisms used by the body to maintain homeostasis.

UNIT 2 – THE INTEGUMENTARY SYSTEMUnit 2 Topics & Objectives

1. Students will be able to classify body membranes.
2. Students will demonstrate an understanding of the gross and microscopic anatomy of skin.
3. Students will demonstrate understanding of the roles of specific layers of skin and the subcutaneous tissue.
4. Students will demonstrate understanding of the anatomy & functional roles of accessory structures of skin.
5. Students will demonstrate understanding of common skin disorders.

(continued...)

UNIT 3 – THE SKELETAL SYSTEM

Unit 3 Topics & Objectives

1. Students will demonstrate knowledge of bone classification and describe the functions of bones.
2. Students will differentiate between the axial and appendicular skeleton and be able to identify all the major bones of the human skeleton.
3. Students will demonstrate understanding of both the microscopic and gross structure of bone.
4. Students will describe types of bone fractures, bone growth and bone repair.
5. Students will describe the structure and function of joints.
6. Students will demonstrate understanding of common bone and joint disorders.

UNIT 4 – THE MUSCULAR SYSTEM

Unit 4 Topics & Objectives

1. Students will be able to compare and contrast the three different types of muscle tissue.
2. Students will describe the functions of muscle.
3. Students will demonstrate understanding of both microscopic and gross anatomy of muscle tissue.
4. Students will be able to describe the physiology of muscle contraction.
5. Students will be able to describe the different types of muscle contractions.
6. Students will be able to identify the major skeletal muscles of the human body.
7. Students will be able to identify and demonstrate the movements of the major muscles of the human body.
8. Students will be knowledgeable about common muscular disorders.

UNIT 5 – THE NERVOUS SYSTEM

Unit 5 Topics & Objectives

1. Students will be able to describe the organization of the central and peripheral nervous systems.
2. Students will demonstrate understanding of neuron structure and function.
3. Students will be able to explain the physiology of a nerve impulse.
4. Students will be able to describe the functional anatomy of the brain and spinal cord.
5. Students will be able to describe the structure of a peripheral nerve and name the 12 cranial nerves along with their respective functions.
6. Students will demonstrate understanding of common neurological disorders.

(continued...)

UNIT 6 – THE SPECIAL SENSES: SIGHT, HEARING, SMELL, TASTE, AND BALANCE

Unit 6 Topics & Objectives

1. Students will describe the anatomy of the eye.
2. Students will describe the pathway of light through the eye and refraction.
3. Students will demonstrate understanding of visual fields, visual pathways, and reflexes.
4. Students will describe the anatomy of the ear.
5. Students will demonstrate understanding of the mechanisms of hearing and equilibrium.
6. Students will describe the anatomy of the nasal cavity and tongue.
7. Students will describe the senses of smell and taste.
8. Students will demonstrate understanding of common sensory disorders.

UNIT 7 – THE ENDOCRINE SYSTEM

Unit 7 Topics & Objectives

1. Students will describe the chemistry of hormones.
2. Students will describe the mechanisms of hormone action.
3. Students will demonstrate understanding of the physiology of hormone release.
4. Students will be able to describe the anatomy of the major endocrine glands.
5. Students will demonstrate understanding of how hormones regulate feedback mechanisms to maintain homeostasis.
6. Students will demonstrate understanding of common endocrine disorders.

Writing Assignments (REQUIRED):

Give examples of the writing assignments and the use of critical analysis within the writing assignments.

Free Response Tests

From the Unit 5 Nervous System Free Response Test:

- *Describe normal neurotransmission in a cholinergic synapse. Explain how nicotine interferes with this synapse and what symptoms may result as a result of this interference.*

Case Study Analysis

From the NCCSTS Case Study “Auggie’s Story: A Child with Huntington’s Disease”:

- *If you were not told that Auggie has juvenile-onset Huntington disease, what neurological or genetic disorders might you suspect? Explain why.*
- *What therapeutic interventions (pharmaceutical and nonpharmaceutical) are recommended for Huntington disease patients?*
- *What would you anticipate is Auggie’s prognosis? Justify your response.*

INSTRUCTIONAL MATERIALS (REQUIRED)

Textbook #1

Title: Human Anatomy & Physiology

Edition: 10th

Author: Elaine N. Marieb and Katja N. Hoehn

ISBN: ISBN-13: 978-0133997040

Publisher: Pearson

Publication Date: 2016

Usage:

- Primary Text
- Read in entirety or near

Textbook #2

Title: N/A

Edition:

Author:

ISBN:

Publisher:

Publication Date:

Usage:

- Primary Text
- Read in entirety or near

Supplemental Instructional Materials *Please include online, and open source resources, if any.*

- BioDigital Human (3D anatomy): <https://human.biodigital.com/login?returnUrl=/explore>
- Anatomical Science Image Library: <https://www.anatomy.org/AAA/Resources/Anatomical-Science-Image-Library>
- PubMed Central (biomedical & life science journal articles): <https://www.ncbi.nlm.nih.gov/pmc/about/intro/>
- National Center for Case Study Teaching in Science: <https://sciencecases.lib.buffalo.edu/collection/>

Estimated costs for classroom materials and supplies (REQUIRED). *Please describe in detail.*
If more space is needed than what is provided, please attach backup as applicable.

Cost for class set of textbooks: \$4284

Description of Additional Costs: N/A

Additional costs: \$0

Total cost per class set of instructional materials:

\$4284

Note - Textbooks were purchased when the original one-year Honors Anatomy & Physiology Course was approved in 2016. No further expenditures are necessary for the current school site (PVHS).

Key Assignments (REQUIRED):

Please provide a detailed description of the Key Assignments including tests, and quizzes, which should incorporate not only short answers but essay questions also. How do assignments incorporate topics? Include all major assessments that students will be required to complete.

- Interactive notebook - includes anatomical diagrams, notes from the textbook and from lecture, graphic organizers, articles to annotate, lab handouts, and misc. reference materials.
- Dissection labs - cow eye, sheep brain, and fetal pig
- Modeling activities - bone and landmark identification, gross anatomy of skeletal muscle, microanatomy of muscle, sliding filament model of muscle contraction, anatomy of a neuron, synaptic transmission
- Small Group Oral Quizzes - formative, during labs and activities
- Case Studies - in-depth analysis of specific disease processes
- Study Sets - daily practice quizzes (single topic or mixed)
- Practice by Topic Sets - optional single topic practice quizzes
- Test Review Sets - mixed topic practice quizzes
- Unit Tests - randomized T/F, MC, fill-in, mixed topic, 1-2 per unit
- Free Response Tests - short answer/essay, 1-2 per unit
- Semester Finals - comprehensive exams, 1 per semester
- Culminating project - extensive research project and professional presentation

Instructional Methods and/or Strategies (REQUIRED):

- Direct instruction
- Interactive notebooking
- Note-taking
- Close reading
- Marking the text
- Graphic organizers
- Nonlinguistic representations
- One-pagers
- Sorting/Classifying
- Comparing/Contrasting
- Summarizing
- Inquiry learning
- Cooperative learning (small groups)
- Consensus building
- Whiteboarding
- Jigsaw activities
- Station rotation activities
- Modeling activities
- Philosophical chairs
- Daily reinforcement of factual knowledge through retrieval practice, spaced repetition, interleaving, and corrective feedback

Assessment Methods and/or Tools (REQUIRED):

- Creative assignments (Canva)
- Student presentations (Google Slides)
- Oral assessments (small group)
- Instructional video production (Canvas Studio, FlipGrid, etc.)
- Traditional online tests and quizzes (Canvas)
- Written free response tests

COURSE PACING GUIDE AND OBJECTIVES (REQUIRED)

| Weeks | Objective | Standard(s) | Chapter(s) | Reference |
|-------|---|-------------|------------|-----------|
| 1 | Course Orientation, Lab Safety | N/A | N/A | N/A |
| 2-5 | Unit 1 - Organization of the Human Body | “ | Ch 1 | p.1-17 |
| 6-9 | Unit 2 - Integumentary System | “ | Ch 5 | p.150-168 |
| 10-13 | Unit 3 - Skeletal System | “ | Ch 6-8 | p.173-274 |
| 14-17 | Unit 4 - Muscular System | “ | Ch 9-10 | p.278-382 |
| 18 | Semester 1 Comprehensive Final Exam | “ | N/A | N/A |
| 19-23 | Unit 5 - Nervous System | “ | Ch 11-14 | p.388-544 |
| 24-27 | Unit 6 - Special Senses | “ | Ch 15 | p.548-589 |
| 28-31 | Unit 7 - Endocrine System | “ | Ch 16 | p.596-630 |
| 32 | Semester 2 Comprehensive Final Exam | “ | N/A | N/A |
| 33-36 | Culminating Project | “ | N/A | N/A |

C. HONORS COURSES ONLY

Indicate how much this honors course is different from the standard course.

As compared to the introductory anatomy/physiology class, anatomical structure and physiology of body systems is covered in much more depth in the honors course. The honors course also moves at a faster pace and features regular written exams and an extensive final research project. The honors class also features increased use of lab and computer technology. Mathematics is also integrated into lab investigations where appropriate.

D. BACKGROUND INFORMATION

Context for course (optional)

The curriculum in this course covers the first half of the previously approved one-year course Honors Anatomy & Physiology. Extending the period of time over which the first five body systems are taught will allow for a more in-depth study of each body system and of the homeostatic imbalances that can occur within them.

History of Course Development (optional)