Perris Union High School District
Course of Study

A. COURSE INFORMATION

Course Title:
Honors Anatomy & Physiology (A)
✓ New
☐ Revised

If revised previous course name if changed

Transcript Course Code/Number:
(To be assigned by Educational Services)

Subject Area:
☐ Social Science
☐ English
☐ Mathematics
✓ Laboratory Science
☐ World Languages
☐ Visual or Performing Arts
☐ College Prep Elective
☐ Other

Is this classified as a Career Technical Education course?
☐ Yes
✓ No

Grade Level
☐ MS
☐ HS
☐ 5
☐ 6
☐ 7
☐ 8
☐ 9
☐ 10
✓ 11
✓ 12

Required for Graduation:
☐ Yes
✓ No

Meets UC/CSU Requirements?
✓ Yes
☐ No

Was this course *previously approved by UC* for PUHSD?
✓ Yes
☐ No
(Will be verified by Ed Services)

Meets "AP" Requirements?
☐ Yes
✓ No

Submitted by: Jennifer West
Site: PVHS
Date: 3/22/2021

Credential Required to teach this course:
~~Biology~~ Science: Biological Sciences

To be completed by Human Resources only.

Nick Stelton 3-23-2021
Signature **Date**

Meets "Honors" Requirements?
✓ Yes
☐ No

Unit Value/Length of Course:
☐ 0.5 (half year or semester equivalent)
✓ 1.0 (one year equivalent)
☐ 2.0 (two year equivalent)
☐ Other:

Approvals	Name/Signature	Date
Director of Curriculum & Instruction		3/23/2021
Asst. Superintendent of Educational Services		
Governing Board		

Prerequisite(s) (REQUIRED):

Biology and Chemistry (C or better)

Corequisite(s) (REQUIRED):

None

Brief Course Description (REQUIRED):

Honors Anatomy & Physiology (B) 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 cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive 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

Course Purpose (REQUIRED):
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.

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:

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 (B) 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 & health sciences and introduces the student to career opportunities in 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 – THE BLOOD AND CARDIOVASCULAR SYSTEM

Unit 1 Topics & Objectives

1. Students will describe the physical characteristics and composition of blood.
2. Students will describe blood cell formation.
3. Students will demonstrate understanding of Mendelian genetics, human blood groups, blood typing, and inheritance of blood type.
4. Students will describe the anatomy of the heart and blood vessels.
5. Students will demonstrate understanding of the physiology of the heart including the intrinsic conduction system, the cardiac cycle, and cardiac output.
6. Students will demonstrate understanding of the physiology of circulation.
7. Students will demonstrate understanding of common blood and cardiovascular disorders.

UNIT 2 – THE LYMPHATIC SYSTEM AND IMMUNITY

Unit 2 Topics & Objectives

1. Students will describe the organization and anatomy of the lymphatic system.
2. Students will describe the functions of the lymphoid organs and the lymphatic system.
3. Students will explain the nature of pathogens and differentiate between bacteria and viruses.
4. Students will demonstrate understanding of the body's nonspecific defenses.
5. Students will demonstrate understanding of the body's specific defenses.
6. Students will demonstrate understanding of common immune system disorders.

UNIT 3 – THE RESPIRATORY SYSTEM

Unit 3 Topics & Objectives

1. Students will describe the functional anatomy of the respiratory system.
2. Students will demonstrate understanding of the physiology of the respiratory system including the mechanics of breathing, respiratory volumes, and external/internal respiration.
3. Students will demonstrate understanding about the close interdependence of the respiratory and circulatory systems.
4. Students will demonstrate understanding of the neural regulation of breathing.
5. Students will demonstrate understanding of common respiratory disorders.

UNIT 4 – THE DIGESTIVE SYSTEM

Unit 4 Topics & Objectives

1. Students will describe the functional anatomy of the digestive system including the alimentary canal and accessory organs.
2. Students will demonstrate understanding of the functions of the digestive system and its organs.
3. Students will differentiate between mechanical vs. chemical digestion.
4. Students will demonstrate understanding of hydrolytic reactions and the specific enzymes which break down the various types of food.
5. Students will demonstrate understanding about the close interdependence of the digestive and circulatory systems.
6. Students will be knowledgeable about nutrition and metabolism.
7. Students will demonstrate understanding of common digestive disorders.

UNIT 5 – THE URINARY SYSTEM

Unit 5 Topics & Objectives

1. Students will describe the functional anatomy of the urinary system, the kidneys, and the nephron.
2. Students will demonstrate understanding of nephron physiology and the three steps of urine formation
3. Students will demonstrate understanding of how the kidneys regulate water, pH, electrolytes, etc. and maintain homeostasis.
4. Students will demonstrate understanding of how various hormones – like ADH -- regulate water balance and blood pressure and contribute to homeostasis through feedback loops.
5. Students will be knowledgeable about the close interdependence of the urinary, circulatory, endocrine, and nervous systems.
6. Students will demonstrate understanding of common urinary disorders.

UNIT 6 – THE REPRODUCTIVE SYSTEM

Unit 6 Topics & Objectives

1. Students will describe the gross and microscopic anatomy of the male and female reproductive systems.
2. Students will demonstrate understanding of reproductive functions including spermatogenesis and oogenesis.
3. Students will demonstrate understanding of the specific roles of the male and female reproductive organs.
4. Students will demonstrate understanding of the hormonal regulation of reproductive system functions.
5. Students will demonstrate understanding of conception, pregnancy, and embryological and fetal development.
6. Students will demonstrate understanding of the mechanisms involved in labor and delivery and lactation.
7. Students will demonstrate understanding of common reproductive 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 4 Digestive System Free Response Test:

- *A patient comes into your Emergency Room complaining of right upper quadrant pain. The patient is overweight and claims to have a high cholesterol diet. Based on these symptoms, what do you think is causing her pain? Select which tests you would use to confirm your diagnosis and choose a treatment option. Explain and justify your decision using terms the patient can understand.*

Case Study Analysis

From the NCCSTS Case Study "Am I Goin to Die":

- *Based on the expected vital signs for a client of this age, how would you interpret Lily's most recent vital signs?*
- *What factors may have altered Lily's vital signs?*
- *What assessment data (cues) indicate a deterioration in Lily's status at this point?*
- *What information is a priority at this point?*
- *What assessment data would indicate an improvement in status?*

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 - heart, kidney, and fetal pig
- Modeling activities - blood flow through the heart, urine production in the nephron
- 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
2-6	Unit 1 - Blood and Cardiovascular System	"	Ch 17-19	p.635-751
7-9	Unit 2 - Lymphatic/Immune System	"	Ch 20-21	p.757-802
10-13	Unit 3 - Respiratory System	"	Ch 22	p.807-850
14-17	Unit 4 - Digestive System	"	Ch 23	p.856-908
18	Semester 1 Comprehensive Final Exam	"	N/A	N/A
19-23	Unit 5 - Urinary System	"	Ch 25-26	p.961-1021
24-27	Unit 6 - Reproductive System	"	Ch 27	p.1027-1068
28-31	Unit 6 - Pregnancy & Human Development	"	Ch 28	p.1074-1101
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)