

11 Hormonal Control, Reproduction, & Development

Content Area: **Science**
Course(s):
Time Period: **Full Year**
Length: **10 Blocks**
Status: **Published**

General Overview, Course Description or Course Philosophy

Anatomy and Physiology is the study of the structure and function of the human body. This course follows a sequential development of the major body systems in an organized and structured curriculum. The course is designed to give the students a selective overview of human anatomical structure and an analysis of human physiological principles. Labs will include slide work, dissection of various animals and studies of the human skeleton. The course will also use computer simulated dissection.

Medical Terminology is embedded in the study of Anatomy & Physiology and teaches words that pertain to body systems, anatomy, physiology, medical processes and procedures and a variety of diseases. It provides specialized language for the health care team, enabling health care workers to communicate in an accurate, articulate and concise manner. This course is designed to give the students a comprehensive knowledge of word construction, definition and use of terms related to all areas of medical science. The course includes but is not limited to terms related to anatomy of the human body, functions of health and disease, and the use of language in diagnosing and treating conditions related to all of the human body systems. This course replaces the earlier study of Latin and Greek for future healthcare professionals, as it focuses words used in the medical fields.

OBJECTIVES, ESSENTIAL QUESTIONS, ENDURING UNDERSTANDINGS

- Living systems, from the organismal to the cellular level, demonstrate the complementary nature of structure and function.
- Many diseases are caused by organisms such as bacteria and viruses and other microbes, whereas others are caused by intrinsic failures of one or more body systems.
- Biotechnology is the use of biological knowledge to solve human problems.

CONTENT AREA STANDARDS

9-12.HS-LS1-4.4	Systems and system models.
9-12.HS-LS1-1.6.1	Construct an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.
9-12.HS-LS1-1.6.1	students investigate systems by examining the properties of different materials, the structures of different components, and their interconnections to reveal the system's

function and/or solve a problem. They infer the functions and properties of natural and designed objects and systems from their overall structure, the way their components are shaped and used, and the molecular substructures of their various materials.

9-12.HS-LS1-3.LS1.A.1

Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system.

9-12.HS-LS1-1.LS1.A.1

Systems of specialized cells within organisms help them perform the essential functions of life.

9-12.HS-LS1-2.LS1.A.1

Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.

9-12.HS-LS1-4.LS1.B.1

In multicellular organisms individual cells grow and then divide via a process called mitosis, thereby allowing the organism to grow. The organism begins as a single cell (fertilized egg) that divides successively to produce many cells, with each parent cell passing identical genetic material (two variants of each chromosome pair) to both daughter cells. Cellular division and differentiation produce and maintain a complex organism, composed of systems of tissues and organs that work together to meet the needs of the whole organism.

RELATED STANDARDS (Technology, 21st Century Life & Careers, ELA Companion Standards are Required)

SCI.HS-ETS1-2

Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

CCSS.Math.Content.HSS-ID.B

Summarize, represent, and interpret data on two categorical and quantitative variables

VHEL.9-12.9.4.12.H.(1).1

Explain planned procedures and goals to patients/clients and use a range of response strategies to address patient/client questions and concerns.

VHEL.9-12.9.4.12.H.(1).2

Communicate patient/client information among team members allowing for feedback as needed to facilitate a team approach to patient care.

VHEL.9-12.9.4.12.H.(2).3

Interpret and respond to requests for procedures, plan implementation of services, and prepare for specific procedures in the course of conducting regular diagnostic services.

VHEL.9-12.9.4.12.H.2

Demonstrate mathematics knowledge and skills required to pursue the full range of postsecondary education and career opportunities.

VHEL.9-12.9.4.12.H.3

Demonstrate science knowledge and skills required to pursue the full range of postsecondary education and career opportunities.

VHEL.9-12.9.4.12.H.6

Demonstrate use of the concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.

VHEL.9-12.9.4.12.H.7

Locate, organize, and reference written information from various sources to communicate with others.

VHEL.9-12.9.4.12.H.8

Evaluate and use information resources to accomplish specific occupational tasks.

VHEL.9-12.9.4.12.H.16

Employ critical thinking skills (e.g., analyze, synthesize, and evaluate) independently and in teams to solve problems and make decisions.

VHEL.9-12.9.4.12.H.18

Identify, write, and monitor performance goals to guide progress in assigned areas of responsibility and accountability.

VHEL.9-12.9.4.12.H.19

Conduct technical research to gather information necessary for decision-making.

VHEL.9-12.9.4.12.H.31

Describe and use quality control systems and practices to ensure quality products and services.

VHEL.9-12.9.4.12.H.38	Employ leadership skills to accomplish goals and objectives.
VHEL.9-12.9.4.12.H.44	Demonstrate an understanding of the roles and responsibilities of all members of the healthcare team, including their ability to promote the delivery of quality healthcare.
VHEL.9-12.9.4.12.H.45	Apply ethical reasoning to a variety of situations in order to make ethical decisions.
VHEL.9-12.9.4.12.H.48	Demonstrate an understanding of accepted ethical practices with respect to cultural, social, and ethnic differences, and explain how this understanding helps ensure delivery of quality healthcare.
VHEL.9-12.9.4.12.H.62	Demonstrate knowledge of technical skills required for career pathways in this cluster, including occupational safety techniques, OSHA Standard Precautions, and safety procedures designed to protect clients, co-workers, and self.

STUDENT LEARNING TARGETS

Declarative Knowledge

Students will understand:

- The structure and function of the male and female reproductive system.
- How homeostasis is maintained in the reproductive systems of both males and females.
- The role that the pituitary and hypothalamus has in regulating the reproductive systems of both males and females.
- The three trimesters of pregnancy and how the embryo and fetus develop at each stage.
- The role the placenta place in maintaining pregnancy
- how medications can affect fetal development.
- how multiple conditions can affect fertility.
- Multicellular organisms have a hierarchical structural organization, in which any one system is made up of numerous parts and is itself a component of the next level.

Procedural Knowledge

Students will be able to:

- Demonstrate the principles of body mechanics for positioning, transferring and transporting of patients/clients, and perform them without injury to the patient/client or self.
- Utilize communication strategies to answer patient/client questions and concerns on planned procedures and goals.
- Construct an explanation based on valid and reliable evidence obtained from a variety of sources (including students' own investigations, models, theories, simulations, peer review) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.
- Construct an explanation based on evidence how a systems of specialized cells within organisms help

them perform the essential functions of life.

- Identify in multicellular organisms individual cells grow and then divide via a process called mitosis, thereby allowing the organism to grow.
- Identify that organism begins as a single cell (fertilized egg) that divides successively to produce many cells, with each parent cell passing identical genetic material (two variants of each chromosome pair) to both daughter cells.
- Demonstrate cellular division and differentiation produce and maintain a complex organism, composed of systems of tissues and organs that work together to meet the needs of the whole organism.
- Read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently.
- Identify that all cells contain genetic information in the form of DNA molecules. Genes are regions in the DNA that contain the instructions that code for the formation of proteins, which carry out most of the work of cells.
- Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.
- Read and comprehend science/technical texts in the grades 11-CCR text complexity band independently and proficiently.
- Demonstrate language arts knowledge and skills required to pursue the full range of postsecondary education and career opportunities.
- Demonstrate mathematics knowledge and skills required to pursue the full range of postsecondary education and career opportunities.
- Evaluate and use information resources to accomplish specific occupational tasks.
- Communicate information within a healthcare classroom and demonstrate how to convey this information to appropriate departments and professionals in a timely manner to facilitate sharing of key diagnostic information used in treating patients.
- Apply the quantitative and qualitative terminology and codes for a range of medical information and analyze the information for designated purposes in order to facilitate the flow of information among individuals in a healthcare environment.
- Interpret verbal and nonverbal cues/behaviors to enhance communication.
- Apply active listening skills to obtain and clarify information.
- Develop and interpret tables, charts, and figures to support written and oral communications.
- Apply biochemistry, cell biology, genetics, mathematics, microbiology, molecular biology, organic chemistry, and statistics concepts to conduct effective biotechnology research and development.
- employ critical thinking skills (e.g., analyze, synthesize, and evaluate) independently and in teams to solve problems and make decisions.
- demonstrate an understanding of the roles and responsibilities of all members of the healthcare team, including their ability to promote the delivery of quality healthcare.
- Apply ethical reasoning to a variety of situations in order to make ethical decisions.
- Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
- Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.
- Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.
- Evaluate the hypotheses, data, analysis, and conclusions in a science or technical text, verifying the data when possible and corroborating or challenging conclusions with other sources of information.
- Summarize, represent, and interpret data on a single count or measurement variable.
- Fit a function to the data; use functions fitted to data to solve problems in the context of the data.
- Identify a full range of career and postsecondary education opportunities within the career cluster.
- Use technology to access, manage, integrate, and disseminate information.

- Use effective oral and written communication strategies for creating, expressing, and interpreting information and ideas that incorporate technical terminology and information.

EVIDENCE OF LEARNING

Formative Assessments

- Informal checks for understanding
- Exit tickets
- Do now
- Homework (Chapter Outcome Outlines)
- Study guide questions.
- Video Overviews with guided notes
- Discuss terminology words and pronunciation.
- Give practice in both pronunciation and understanding the words.
- Provide students with handouts for in-class collaborative work
- Crossword Puzzles, Word Searches and case studies pertinent to the unit and have students analyze and define medical terms.
- StudyWare Games and Quizzes as time permits
- Current events in Healthcare: Discussion Circle

Summative Assessments

- Laboratory activity examining the histology of the reproductive system and various tissue types
- Dissection of the Mink (comparative study)
- POGIL-Hormonal control of the reproductive system
- Quiz on the male and female reproductive system
- Abbreviations quiz
- Case Study analysis
- Chapter test on the Reproduction and Human Development
- Rutgers Examination Semester II and Medical Terminology
- Benchmarks – departmental benchmark given at the end of MP1 and MP3 based on lab practices
- Alternative Assessments
 - Lab inquiries and investigations
 - Lab Practicals
 - Exploratory activities based on phenomenon

- Gallery walks of student work
- Creative Extension Projects
- Build a model of a proposed solution
- Let students design their own flashcards to test each other
- Keynote presentations made by students on a topic
- Portfolio

RESOURCES (Instructional, Supplemental, Intervention Materials)

Erlich Text : Chapter 14

Erlich Instructor's Manual Ch.14 Resources:

Crossword Puzzles, Word Searches and case studies

Chapter Quizzes, Tests

Cengage StudyWare CD-ROM :

Chapter 14 games and quizzes

Recommended

DVD "Life's Greatest Miracle" PBS: NOVA

Erlich Text : Chapter 15

Erlich Instructor's Manual Ch.15 Resources:

Crossword Puzzles, Word Searches and case studies

Chapter Quizzes, Tests

Cengage StudyWare CD-ROM :

Chapter 15 games and quizzes

Preserved Mink

INTERDISCIPLINARY CONNECTIONS

- Integrate quantitative or technical information expressed in words in a text. Distinguish among facts, reasoned judgment based on research findings, and speculation in a text.
- Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.
- Experimentation
- Social Emotional Learning
- Engineering

ACCOMMODATIONS & MODIFICATIONS FOR SUBGROUPS

See link to Accommodations & Modifications document in course folder.