

HCS Curriculum: Science 6 – 12
Anatomy & Physiology (High School)
 Hoover City Schools Secondary Curriculum
 Science, 2007

Course Information:

Course Title:	Anatomy & Physiology
Grade Level:	11 – 12
Course Description:	This course includes a study of organization and function of the systems of the human body, including how they respond to the external environment and work together to maintain internal homeostasis. Students will learn the anatomical components of each system and engage in learning experiences both relevant and applicable to their lives. This course incorporates cooperative lab experiences, anatomical dissections, and technology-based investigative work. Substantial reading and independent study outside of class is required.
State COS Correlate:	Human Anatomy and Physiology Elective Core
Calendar Type:	Year
Pre-requisite:	Biology, Chemistry
Co-requisite:	None
Textbook Title:	Essentials of Human Anatomy and Physiology
Textbook Publisher:	Prentice Hall
Textbook ISBN:	0-13-193481-3
Textbook Copy Year:	2006, 8 th ed
Accountability Standards:	None
LEA Curriculum Authors:	Amber Lewis, Carla Slovensky
Date of LEA Approval:	2007

Topical Scope and Sequence:

Unit #	1 st Nine Weeks	Text Reference	Timeline
1	Organization		
	The Human Body: An Orientation	Chapter 1	2.5 weeks
	Biochemistry	Chapter 2	1 week
	Cells and Tissues	Chapter 3	2.5 weeks
2	Cover, Support and Movement		
	Integumentary System and Body Membrane	Chapter 4	2 weeks

Unit #	2 nd Nine Weeks	Text Reference	Timeline
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HCS Curriculum: Science 6 – 12 Anatomy & Physiology (High School)

2	Cover,Support,Movement		
	Skeletal System	Chapter 5	3 weeks
	Muscular System	Chapter 6	3 weeks
3	Regulation and Integration		
	Nervous System: PNS	Chapters 3,7	2 weeks

Unit #	3rd Nine Weeks	Text Reference	Timeline
3	Regulation and Integration		
	Nervous System : CNS	Chapters 3,7,8,9	2 weeks
4	Matter and Energy		
	Digestive System	Chapters 3,9,14	2.5 weeks
5	Maintenance		
	Cardiovascular System and Blood	Chapters 3,10,11	3.5 weeks

Unit #	4th Nine Weeks	Text Reference	Timeline
	Lymphatic System and Immunity	Chapters 9,10,12	2 weeks
5	Maintenance		
	Respiratory System	Chapters 3,13	2 weeks
6	Continuity		
	Urinary System	Chapters 3,15	1 week
	Reproductive System	Chapters 3,9,16	1 week
	Final Lab Experience	ALL	2 weeks

Units and Outcome-Based Objectives:

Unit 1- Organization

Essential Questions:

- *How are anatomy and physiology related?*
- *Why is organization important for the proper function of the human body?*
- *What are the levels of organization within the human body and how do they contribute to its functional systems?*
- *What is the relevance of the specialized language used by anatomists and medical personnel and how is this demonstrated?*

HCS Curriculum: Science 6 – 12 Anatomy & Physiology (High School)

Conceptual Connections:

- Clarity in Organization
- Cooperation
- Form and Function

#	Unit 1 Investigations	Unit Obj Correlation	Type (Dem, Exp, Inq)
1	Identify and Classify Cell Types	3	Investigation
2	Identify and Classify Tissue Types	3	Investigation
3	Histology Lab (Microscopy)	3,5,6,and 7	Investigation

Outcome-Based Objectives:

#	Unit 1 Objectives	Mastery Level (Int, Rev, Mas)	COS Alignment	Dates Taught
1	Use appropriate anatomical terminology.	Mastery	1	
2	Identify anatomical body planes, cavities and regions of the human body.	Introduction	2 P-3	
3	Classify major types of cells.	Review	3 P-1 P-2 P-3	
4	Classify tissues as connective, muscular, nervous or epithelial.	Review	4 P-1 P-2 P-3	

Unit 2- Cover, Support, and Movement

Essential Questions:

- *What are the primary structures and functions of the integumentary, skeletal, and muscular systems?*
- *How do structures within the skeletal and muscular systems coordinate to allow for successful and useful controlled movement?*
- *Why are injuries associated with our main protection from the surrounding environment – our integument – so potentially detrimental?*

Conceptual Connections:

- Form and Function
- Cooperation
- Homeostasis

#	Unit 2 Investigations	Unit Obj Correlation	Type (Dem, Exp, Inq)
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HCS Curriculum: Science 6 – 12 Anatomy & Physiology (High School)

#	Unit 2 Investigations	Unit Obj Correlation	Type (Dem, Exp, Inq)
1	Bone Identification: Which Bone Is It?	4	Investigation/Inquiry
2	Muscle Identification and Movement	7, 8, and 9	Investigation/Demonstration
3	Integumentary, Skeletal, and Muscular Disorders	8, 9, and 12	Investigation/Inquiry

Outcome-Based Objectives:

#	Unit 2 Objectives	Mastery Level (Int, Rev, Mas)	COS Alignment	Dates Taught
1	Identify bones that compose the skeletal system.	Mastery	6 P-1 P-2	
2	Identify functions of the skeletal system.	Review	6a	
3	Identify subdivisions of the skeleton as axial and appendicular skeletons.	Introduction	6b P-1 P-2 P-3	
4	Classify types of joints according to their movement.	Introduction	6c P-1 P-2 P-3	
5	Identify the four bone types.	Introduction	6d P-1 P-2 P-3	
6	Identify various types of skeletal system disorders.	Review	6e	
7	Identify major muscles, including origins, insertions and actions.	Review	7 P-1 P-2 P-3 P-6	
8	Describe common types of body movements, including flexion, extension, abduction and adduction.	Mastery	7a P-1 P-2 P-3 P-6	
9	Classify muscles based on functions in the body, including prime movers, antagonists, synergists and fixators.	Review	7b P-1 P-2 P-3 P-6	
10	Compare skeletal, smooth and cardiac muscles based on their microscopic	Review	7c P-1	

HCS Curriculum: Science 6 – 12 Anatomy & Physiology (High School)

#	Unit 2 Objectives	Mastery Level (Int, Rev, Mas)	COS Alignment	Dates Taught
	anatomy.		P-2 P-3 P-8	
11	Identify diseases and disorders of the muscular system.	Review	7d	
12	Identify anatomical structures and functions of the integumentary system, including accessory organs.	Introduction	5a P-1 P-2	
13	Recognize diseases and disorders of the integumentary system.	Review	5b P-1 P-2 P-3 P-4 P-5 P-6 P-7 P-9 P-10 P-11	

Unit 3- Regulation and Integration

Essential Questions:

- *What are the primary structures and functions of the nervous system?*
- *What are the two major methods by which our body communicates both with the environment and within itself to allow for immediate and long-term responses?*

Conceptual Connections:

- Homeostasis
- Integration
- Communication
- Form and Function

#	Unit 3 Investigations	Unit Obj Correlation	Type (Dem, Exp, Inq)
1	Brain Components	1	Investigation
2	Senses and Perceptions	12	Investigation
3	Neurological Disorders	1 2 4	Investigation

Outcome-Based Objectives:

HCS Curriculum: Science 6 – 12 Anatomy & Physiology (High School)

#	Unit 3 Objectives	Mastery Level (Int, Rev, Mas)	COS Alignment	Dates Taught
1	Identify structures of the nervous system.	Introduction	8 P-1 P-2 P-3 P-4 P-5 P-7 P-9 P-10 P-11	
2	Explain differences in the function of the peripheral nervous system and the central nervous system.	Review	8a P-3 P-6	
3	Label parts of the sensory organs, including the eye, ear, tongue and skin receptors.	Introduction	8b P-1 P-2 P-3 P-5 P-6 P-8	
4	Recognize diseases and disorders of nervous system.	Review	8c	
5	Identify the endocrine glands and their functions.	Review	14 P-6	
6	Describe effects of hormones produced by the endocrine glands.	Mastery	14a P-6	
7	Identify common disorders of the endocrine system.	Review	14b	

Unit 4- Matter and Energy

Essential Questions:

- *What are the primary structures and functions of the digestive system?*
- *How does the body convert foods consumed to usable matter and energy?*
- *What are possible physiological problems that can be attributed to poor nutrition/digestion?*

Conceptual Connections:

- Choices and Behavior
- Systems and Interactions
- Homeostasis

#	Unit 4 Investigations	Unit Obj Correlation	Type (Dem, Exp, Inq)
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HCS Curriculum: Science 6 – 12 Anatomy & Physiology (High School)

#	Unit 4 Investigations	Unit Obj Correlation	Type (Dem, Exp, Inq)
1	Digestion: Molecule Breakdown and Absorption	2, 4, and 5	Investigation

Outcome-Based Objectives:

#	Unit 4 Objectives	Mastery Level (Int, Rev, Mas)	COS Alignment	Dates Taught
1	Identify structures and functions of the digestive system by tracing the pathway of digestion from mouth to anus and discussing nutrient breakdown and absorption throughout.	Mastery	2a P-1 P-2 P-5 P-6	
2	Identify disorders affecting the digestive system.	Review	2b	

Unit 5- Maintenance

Essential Questions:

- *What are the primary structures and functions of the cardiovascular, lymphatic and respiratory systems?*
- *What is the composition of blood and how does it allow for transportation of heat, nutrients and other substances throughout the body?*
- *How does the immune system protect the body against pathogens and disease?*
- *How is gas exchange facilitated by way of the respiratory system?*

Conceptual Connections:

- Homeostasis
- Form and Function
- System interactions

#	Unit 5 Investigations	Unit Obj Correlation	Type (Dem, Exp, Inq)
1	EKG Lab	1 5	Inquiry
2	Heart Structure and Function	1 5	Experiment
3	Blood Components and Function	2 3 4 5	Experiment
4	Lymphatic System: Structures and Functions	8 9	Investigation
5	Respiration Investigation	7	Investigation

HCS Curriculum: Science 6 – 12 Anatomy & Physiology (High School)

Outcome-Based Objectives:

#	Unit 5 Objectives	Mastery Level (Int, Rev, Mas)	COS Alignment	Date Taught
1	Identify structures and functions of the cardiovascular system by tracing the flow of blood through the body.	Mastery	9a	
2	Identify the components and discuss the function of blood.	Introduction	9b P-1 P-2 P-4 P-5 P-7 P-8 P-9 P-10 P-11	
3	Describe blood cell formation.	Introduction	9c	
4	Distinguish among human blood groups.	Review	9d	
5	Describe common cardiovascular diseases and disorders.	Review	9e	
6	Identify structures and functions of the respiratory system by tracing the pathway of the oxygen and carbon dioxide exchange.	Mastery	11a P-1 P-2 P-4 P-5 P-6 P-7 P-8 P-9 P-10 P-11	
7	Recognize common disorders of the respiratory system.	Mastery	11b	
8	Identify the physiological effects and components of the immune system.	Mastery	15	
9	Contrast active and passive immunity.	Review	15a P-2 P-3 P-6 P-8	
10	Evaluate the importance of vaccines.	Review	15b	
11	Recognize disorders and diseases of the immune system.	Review	15c	

Unit 6- Continuity

HCS Curriculum: Science 6 – 12 Anatomy & Physiology (High School)

Essential Questions:

- *What are the primary structures and functions of the male and female reproductive systems?*
- *What are the cycles and mechanisms of reproductions in males and females?*

Conceptual Connections:

- Continuation of a species
- Competition and Interactions
- Form and Function
- Homeostasis

#	Unit 6 Investigations	Unit Obj Correlation	Type (Dem, Exp, Inq)
1	Stages of Fetal Development	3	Investigation
ALL	Cat Dissection: Cumulative Systems Rev.	1,2	Investigation

Outcome-Based Objectives:

#	Unit 6 Objectives	Mastery Level (Int, Rev, Mas)	COS Alignment	Dates Taught
1	Identify structures and functions of the reproductive system.	Mastery	12 P-1 P-2 P-3 P-5 P-6	
2	Differentiate between male and female reproductive systems.	Mastery	12a	
3	Recognize stages of pregnancy and fetal development.	Review	12b P-1 P-2	
4	Identify disorders of the reproductive system.	Review	12c	

Alabama Course of Study Correlation: **Science**

COS Title		Human Anatomy and Physiology Elective Core	Bulletin 2005, No. 20
Std. #	COS Standard		HCS Unit-Objective
	CONTENT STANDARDS		

HCS Curriculum: Science 6 – 12
Anatomy & Physiology (High School)

COS Title		Human Anatomy and Physiology Elective Core	Bulletin 2005, No. 20
Std. #	COS Standard		HCS Unit-Objective
1	Use appropriate anatomical terminology. (<i>Examples: proximal, superficial, medial, supine, superior, inferior, anterior, posterior</i>)		1.1
2	Identify anatomical body planes, body cavities, and abdominopelvic regions of the human body.		1.2
3	Classify major types of cells, including squamous, cuboidal, columnar, simple, and stratified.		1.3
4	Classify tissues as connective, muscular, nervous, or epithelial.		1.4
5	Identify anatomical structures and functions of the integumentary system.		4.12
	a) Identifying accessory organs		4.13
	b) Recognizing diseases and disorders of the integumentary system (<i>Examples: decubitus ulcer, melanoma, psoriasis</i>)		4.12
6	Identify bones that compose the skeletal system.		4.1
	a) Identifying functions of the skeletal system		1.2
	b) Identifying subdivisions of the skeleton as axial and appendicular skeletons		4.3
	c) Classifying types of joints according to their movement		4.4
	d) Identifying the four bone types		4.5
	e) Identifying various types of skeletal system disorders (<i>Examples: fractures, arthritis</i>)		4.6
7	Identify major muscles, including origins, insertions, and actions.		4.7
	a) Describing common types of body movements, including flexion, extension, abduction, and adduction		4.8
	b) Classifying muscles based on functions in the body, including prime movers, antagonists, synergists, and fixators		4.9
	c) Comparing skeletal, smooth, and cardiac muscles based on their microscopic anatomy		4.10
	d) Identifying diseases and disorders of the muscular system (<i>Examples: muscular dystrophy, multiple sclerosis, strain</i>)		4.11
8	Identify structures of the nervous system.		6.1
	a) Explaining differences in the function of the peripheral nervous system and the central nervous system		6.2
	b) Labeling parts of sensory organs, including the eye, ear, tongue, and skin receptors		6.3
	c) Recognizing diseases and disorders of the nervous system (<i>Examples: Parkinson's disease, meningitis</i>)		6.4
9	Identify structures and functions of the cardiovascular system.		3.1 3.2 3.3 3.4

HCS Curriculum: Science 6 – 12
Anatomy & Physiology (High School)

COS Title		Human Anatomy and Physiology Elective Core	Bulletin 2005, No. 20
Std. #	COS Standard		HCS Unit- Objective
	a)	Tracing the flow of blood through the body	3.1
	b)	Identifying components of blood	3.2
	c)	Describing blood cell formation	3.3
	d)	Distinguishing among human blood groups	3.4
	e)	Describing common cardiovascular diseases and disorders (<i>Examples: myocardial infarction, mitral valve prolapse, varicose veins, arteriosclerosis</i>)	3.5
10	Identify structures and functions of the digestive system.		2.1 2.2
	a)	Tracing the pathway of digestion from the mouth to the anus using diagrams	2.1
	b)	Identifying disorders affecting the digestive system (<i>Examples: ulcers, Crohn's disease, diverticulitis</i>)	2.2
11	Identify structures and functions of the respiratory system.		3.6 3.7
	a)	Tracing the pathway of the oxygen and carbon dioxide exchange	3.6
	b)	Recognizing common disorders of the respiratory system (<i>Examples: asthma, bronchitis, cystic fibrosis</i>)	3.7
12	Identify structures and functions of the reproductive system.		7.1
	a)	Differentiating between male and female reproductive systems	7.2
	b)	Recognizing stages of pregnancy and fetal development	7.3
	c)	Identifying disorders of the reproductive system (<i>Examples: endometriosis, sexually transmitted diseases, prostate cancer</i>)	7.4
13	Identify structures and functions of the urinary system.		2.3 2.4
	a)	Tracing the filtration of blood from the kidneys to the urethra	2.3
	b)	Recognizing diseases and disorders of the urinary system (<i>Examples: kidney stones, urinary tract infections</i>)	2.4
14	Identify the endocrine glands and their functions.		6.5
	a)	Describing effects of hormones produced by the endocrine glands	6.6
	b)	Identifying common disorders of the endocrine system (<i>Examples: diabetes, goiter, hyperthyroidism</i>)	6.7
15	Identify physiological effects and components of the immune system.		5.1
	a)	Contrasting active and passive immunity	5.2
	b)	Evaluating the importance of vaccines	5.3

**HCS Curriculum: Science 6 – 12
Anatomy & Physiology (High School)**

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Std. #	COS Standard		HCS Unit- Objective
	c) Recognizing disorders and diseases of the immune system (<i>Examples: acquired immunodeficiency syndrome (AIDS), acute lymphocytic leukemia</i>)		5.4
PROCESS AND APPLICATION STANDARDS			
P-1	Observing: Using one or more of the senses to gather information about one's environment		1.3 1.4 2.1 3.2 3.6 4.1 4.3-5 4.7-11 4.12-13 6.1 6.3 7.1
P-2	Communicating: Conveying oral or written information verbally as well as visually through models, tables, charts, and graphs		1.3 1.4 2.1 3.2 3.6 4.1 4.3 4.4 4.5 4.7-10 4.12 4.13 5.2 6.1 6.3 7.1
P-3	Classifying: Utilizing simple groupings of objects or events based on common properties		1.2-4 4.3-5 4.7-10 4.13 5.2 6.1-3 7.1
P-4	Measuring: Using appropriate metric units for measuring length, volume, and mass		3.2 3.6 6.1

**HCS Curriculum: Science 6 – 12
Anatomy & Physiology (High School)**

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Std. #	COS Standard		HCS Unit- Objective
P-5	Predicting: Proposing possible results or outcomes of future events based on observations and inferences drawn from previous events		2.1 3.2 3.6 4.13 6.3 7.1 7.3
P-6	Inferring: Constructing an interpretation or explanation based on information gathered		1.3 2.1 3.6 4.7-9 4.13 5.2 6.2-3 7.1
P-7	Controlling Variables: Recognizing the many factors that affect the outcome of events and understanding their relationships to each other whereby one factor (variable) can be manipulated while others are controlled		3.2 3.6 4.13 6.1
P-8	Defining Operationally: Stating definitions of objects or events based on observable characteristics		3.2 3.6 4.10
P-9	Formulating Hypotheses: Making predictions of future events based on manipulation of variables		3.2 3.6 4.13 6.1
P-10	Experimenting (Controlled): Conducting scientific investigations systematically, including identifying and framing the question carefully, forming a hypothesis , managing variables effectively, developing a logical experimental procedure , recording and analyzing data , and presenting conclusions based on investigation and previous research		3.2 3.6 4.13 6.1
P-11	Analyzing Data: Using collected data to accept or reject hypotheses		3.2 3.6 4.13 6.1

EXPLORE / PLAN / ACT Standards for Transition Correlation: **Science**

**HCS Curriculum: Science 6 – 12
Anatomy & Physiology (High School)**

Score Range	EPAS Standard	HCS Unit-Objective
20 to 23	Compare data from a simple table, graph, or diagram	3.2 3.6 4.13 6.1
	Determine whether a relationship exists between two variables	3.2 3.6 4.13 6.1
	Identify an inverse relationship between variables in a simple table, graph, or diagram	3.2 3.6 4.13 6.1
24 to 27	Translate information (data or text) into graphic form	1.3 1.4 2.1 3.2 3.6 4.1 4.3 4.4 4.5 4.7-10 4.12 4.13 5.2 6.1 6.3 7.1
	Select data from a complex table, graph, or diagram (e.g., a table or graph with more than three variables)	3.2 3.6 4.13 6.1
	Understand simple lab procedures	3.2 3.6 4.13 6.1
	Identify the control in an experiment	3.2 3.6 4.13 6.1