GRADE(S): 11, 12

UNIT 1: Cells and Tissues

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability (Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS:
 3.1.10.D - Explain the chemical and structural basis of living organisms. Know the role of hormones in regulating biologic activities. Explain cell functions in terms of chemical reactions and energy changes. Explain how cells store and use information to guide their functions.
 3.1.12.A - Discern structural and functional relationships in living things. Describe and explain structural and functional relationships in each of the five (or six) kingdoms.
 3.1.12.B - Explain how genetic information is passed from one generation to the next at the molecular level. Describe the roles of nucleic acids in cellular reproduction and protein synthesis. Describe genetic engineering techniques, applications and impacts. Explain birth defects from the standpoint of embryological development and/or changes in genetic makeup.
 3.1.12.D - Analyze the chemical and structural basis of living organisms. Evaluate metabolic activities using experimental knowledge of enzymes. Infer functions of different anatomical parts given their structure.
 3.2.12.A - Apply concepts about the structure and properties of matter. Identify factors affecting reaction rates including catalysts. Classify types of chemical reactions. Predict chemical properties (e.g., reactivity) based on atomic structure. Apply rules of systemic nomenclature and formula writing to chemical substances.
 3.2.12.B - Apply and analyze energy sources and conversions and their relationship to heat and temperature. Illustrate chemical concepts through the use of models.
 3.3.12.C - Apply energy sources and conversions and their relationship to heat and temperature. Analyze chemical reactions in terms of heat generation.
 3.5.12.A - Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and converting. Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement.
 3.7.12.A - Apply scientific research methods to complex problems. Generate questions that can be studies in science. Evaluate the appropriateness of questions. Design an investigation with adequate control and limited variables to investigate a question. Conduct an experiment.

 Organize experimental information using analytic and descriptive techniques. 			
 Evaluate the significance of experimental information in answering the question. 			
 Project additional questions from a research study that could be studied. 			
 3.7.12.B - Apply problem solving in Technology as a systematic process. Assess the problem. Appraise all aspects of the problem. Prioritize the necessary information. Formulate questions that must be answered. Propose, develop, and appraise a solution. Design, develop, and prioritize alternative methods to achieve solutions. Develop and assess the best of appropriate methodology. Implement and assess the solution. Produce, apply, and appraise a specific solution. Evaluate and assess the solution. 			
 Assess, redesign, and improve if necessary 			
 Analyze and contrast the impacts of the solution. 			
 Communicate and assess the problem, design, and solution. 			
 3.8.12.A - Apply concepts of system, subsystems, feedback, and control to solve complex technological problems. Demonstrate knowledge of systems concepts by designing and modeling control systems that solve specific problems. Apply systems analysis to predict results. Analyze and describe the function, interaction, and relationship among subsystems and the system itself. Compare and contrast several systems that could be applied to solve a single problem. Evaluate the causes of a system's inefficiency. 			
 3.8.12.C - Assess and apply patterns in science and technology. Compare and contrast structure and function relationships as they relate to patterns. 			
 3.9.12.A - Synthesize and evaluate the interactions of science, technology, and society. Compare and contrast how scientific and technological knowledge is both shared and protected. Analyze societal influences on technology and technology's influences on society. Evaluate technological solutions that differ among societies. Evaluate socially proposed limitations of scientific research and technological application. 			
3.9.12.B - Apply the use of ingenuity and technological resources to solve specific societal needs and improve the quality of			
 life. Apply appropriate tools, materials, and processes to solve complex problems. Use knowledge of human abilities to design or modify technologies hat extend and enhance human abilities. Identify and recommend solutions to international problems by applying appropriate physical, communication, or biochemical-related technologies. 			
 3.9.12.C - Assess scientific and technological solutions. Identify and discuss the consequences for not keeping abreast of technological advancements. Propose solutions to specific scientific and technological applications, identifying possible financial considerations. Analyze scientific and technological solutions through the use of risk/benefit analysis. Assess and predict the results of applying technology to solve a problem. Analyze and communicate the positive or negative impacts that a recent technological invention had on society. Evaluate and describe potential impacts from emerging technologies (e.g., assessment alternatives, risks, benefits, costs, economic impacts, and constraints.) 			
UNIT OBJECTIVES:			
1. Students will predict and evaluate the permeability of a membrane.			
2. Students will compare and contrast tissue types.			
3. Students will predict recovery rates for patients with medical conditions based on tissue characteristics.			
4. Students will assess the practical use of tissue transplants.			

5. Students will present a medical condition/disease at a class medical conference on tissues.

ACTIVITIES:	ASSESSMENTS:
 Identify four elements in living things. Identify ten organelles on the cell model and explain their functions. Apply the scientific method to determine the permeability of a membrane. Differentiate functions and locations of the four tissue types. Create a flow chart showing tissue repair (wound healing). Create a brochure to advertise the price of tissues for transplants and research. Evaluate the effectiveness of current tissue technologies. 	 Presentations: (Example: News report as a channel 28 Action News Team) Displays: (hallway window or cardboard presentation display) Skits/plays: (a system components comes to life on a journey through the system) Individualized Study: (approved topic of system under study with report and poster) Dissection: (assessed on dissection technique and proper labeling of organs) Lab Reports
	 Standard Assessments: Quizzes Written Tests Research Paper: (five pages with sources cited) Organ Model Identification Wall Chart Identification.
RESOURCES:	> Essays

> Text:	
<u>Essentials of Human Anatomy</u> and <u>Physiology</u> . Elaine N Marieb, R.N.,	<i>Parent Assessments:</i> (Students work with parent (s) and parent grades the work)
PhD. 1997.	Pathway of cell from glucose to used up protein – Students are given the
Models: brain, heart, spine, skeleton, shoulder, knee, cell	functions of the cell using all four organic compounds.
Wall Charts: all systems	Family health history – Student
Histology Slides: 154	interviews parents and other relatives to recognize health risks and concerns
Anatomy Drawings	for students and family members. This includes an interview with a family
Laboratory exercises	member with a medical condition.
Videos	Structure and functional areas of brain
 Audio Filmstrips 	Students study with their parents and then take quiz. Parents grade and
➤ Internet:	return with notation.
<u>www.looksmart.com</u> (a great starting point for subject of choice)	
www.innerbody.com	
www.madsci.org/~lynn/VH/	
<u>www.nlm.nih.gov/research/visible/visi</u> <u>ble_human.html</u>	
CD: A.D.A.M. (ordered)	
 Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat 	 Diagram the process of mitosis.
Simulation kits: Blood Typing	 Complete the review questions 1-30, page 91
Urinalysis	

Stethoscopes	
Sphygmomanometers	
	ENRICHMENT:
	 Develop a display to explain developmental aspects of cells and tissues.
	2. Use the following terms to explain non- age-related modifications of cells and tissues.
	Neoplasm
	metastasis
	atrophy
	Malignant
	biopsy
	Benign
	Hyperplasia
	 Predict three evolutionary improvements to transcription and translation in protein synthesis.
	 Complete the "at the Clinic" questions 1-6, page 91-92

COURSE:	Human Anatom	y/Physiology
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GRADE(S): 11, 12

UNIT 1: Chemical Pathways

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability (Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS:
 3.1.10.D - Explain the chemical and structural basis of living organisms. Know the role of hormones in regulating biologic activities. Explain cell functions in terms of chemical reactions and energy changes. Explain how cells store and use information to guide their functions.
 3.1.12.A - Discern structural and functional relationships in living things. Describe and explain structural and functional relationships in each of the five (or six) kingdoms.
 3.1.12.B - Explain how genetic information is passed from one generation to the next at the molecular level. Describe the roles of nucleic acids in cellular reproduction and protein synthesis. Describe genetic engineering techniques, applications and impacts. Explain birth defects from the standpoint of embryological development and/or changes in genetic makeup.
 3.1.12.D - Analyze the chemical and structural basis of living organisms. Evaluate metabolic activities using experimental knowledge of enzymes. Infer functions of different anatomical parts given their structure.
 3.2.12.A - Apply concepts about the structure and properties of matter. Identify factors affecting reaction rates including catalysts. Classify types of chemical reactions. Predict chemical properties (e.g., reactivity) based on atomic structure. Apply rules of systemic nomenclature and formula writing to chemical substances.
 3.2.12.8 - Apply and analyze energy sources and conversions and their relationship to heat and temperature. Illustrate chemical concepts through the use of models.
 3.3.12.C - Apply energy sources and conversions and their relationship to heat and temperature. Analyze chemical reactions in terms of heat generation.
 3.5.12.A - Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and converting. Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement.
 3.7.12.A - Apply scientific research methods to complex problems. Generate questions that can be studies in science. Evaluate the appropriateness of questions.

↓ D	Design an investigation with adequate control and limited variables to investigate a question.			
Conduct an experiment.				
	Drganize experimental information using analytic and descriptive techniques.			
◆ L ◆ P	Project additional questions from a research study that could be studied			
3.7.12.8 - Apply	y problem solving in Technology as a systematic process.			
♦ A	Assess the problem.			
	Appraise all aspects of the problem.			
	 Finduze the necessary information. Formulate questions that must be answered 			
♦ P	Propose, develop, and appraise a solution.			
	Design, develop, and prioritize alternative methods to achieve solutions.			
>	 Develop and assess the best of appropriate methodology. 			
♦ Ir	mplement and assess the solution.			
	Produce, apply, and appraise a specific solution.			
◆ E	Valuate and assess the solution.			
	Assess, redesign, and improve in necessary.			
•	Communicate and assess the problem, design, and solution			
, v				
3.8.12.A - Appl ◆ D	y concepts of system, subsystems, feedback, and control to solve complex technological problems. Demonstrate knowledge of systems concepts by designing and modeling control systems that solve specific problems			
♦ A	Apply systems analysis to predict results.			
♦ A	analyze and describe the function, interaction, and relationship among subsystems and the system itself.			
♦ C	Compare and contrast several systems that could be applied to solve a single problem.			
♦ E	valuate the causes of a system's inefficiency.			
3.8.12.C - Asses ♦ C	ss and apply patterns in science and technology. Compare and contrast structure and function relationships as they relate to patterns.			
3.9.12.A - Synth	nesize and evaluate the interactions of science, technology, and society.			
♦ C	Compare and contrast how scientific and technological knowledge is both shared and protected.			
♦ A	Analyze societal influences on technology and technology's influences on society.			
♦ E	valuate technological solutions that differ among societies.			
◆ C	valuate socially proposed limitations of scientific research and technological application.			
3.9.12.B - Apply life.	y the use of ingenuity and technological resources to solve specific societal needs and improve the quality of			
♦ A	Apply appropriate tools, materials, and processes to solve complex problems.			
U ♦ 	lse knowledge of human abilities to design or modify technologies hat extend and enhance human abilities. dentify and recommend solutions to international problems by applying appropriate physical, communication, or piochemical-related technologies.			
3.9.12.C - Asse	ss scientific and technological solutions			
♦ IC	dentify and discuss the consequences for not keeping abreast of technological advancements.			
♦ P	Propose solutions to specific scientific and technological applications, identifying possible financial considerations.			
♦ A	Analyze scientific and technological solutions through the use of risk/benefit analysis.			
♦ A	Assess and predict the results of applying technology to solve a problem.			
♦ A	Analyze and communicate the positive or negative impacts that a recent technological invention had on society.			
◆ E	valuate and describe potential impacts normernerging technologies (e.g., assessment alternatives, fisks, benefits, costs, economic impacts, and constraints.)			
	CTIVES:			
1. Compa	are and contrast the properties of water with its uses in the body.			
2. Apply t	the pH scale to various substances.			
3. Constru	uct the pathway of chemicals through the cell showing the end products.			
I				

4.	4. Evaluate the effectiveness of medical imaging techniques.		
AC	CTIVITIES:	AS	SESSMENTS:
1.	Contrast synthesis, decomposition and exchange reactions.		Presentations: (Example: News report
2.	Explain the importance of water.		as a channel 28 Action News Team)
3.	Compare and contrast the four organic compounds		Displays: (hallway window or cardboard presentation display)
4.	Predict outcomes of pH abnormalities.		Skits/plays: (a system components
5.	Complete a pH lab.		comes to life on a journey through the system)
6.	Apply knowledge of organic compounds to cellular metabolism and chemical pathways.		Individualized Study: (approved topic of system under study with report and poster)
7.	Differentiate between x-rays, PET, CAT, PT, and MRI.		Dissection: (assessed on dissection technique and proper labeling of organs)
			Lab Reports
RE	SOURCES:		
	Text:		
an	Essentials of Human Anatomy	Sta	andard Assessments:
Ph	<u>Physiology</u> . Elaine N Marieb, R.N., D.		Quizzes
	1997.		Written Tests
\checkmark	Models: brain, heart, spine, skeleton, shoulder, knee, cell		Research Paper: (five pages with sources cited)
	Wall Charts: all systems		Organ Model Identification
	Histology Slides: 154		Wall Chart Identification.
	Anatomy Drawings		Essays

Laboratory exercises	
Videos	
Audio Filmstrips	Parent Assessments: (Students work with parent (s) and parent grades the work)
> Internet:	
www.looksmart.com (a great starting point for subject of choice)	Pathway of Cell from glucose to used up protein – Students are given the task to teach their parent (s) the
www.innerbody.com	organic compounds.
www.madsci.org/~lynn/VH/	Family health history – Student
<u>www.nlm.nih.gov/research/visible/visi</u> <u>ble_human.html</u>	to recognize health risks and concerns for students and family members. This
> CD: A.D.A.M. (ordered)	includes an interview with a family member with a medical condition.
 Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat 	Structure and functional areas of brain Students study with their parents and
Simulation kits: Blood Typing	then take quiz. Parents grade and
Urinalysis	
Stethoscopes	
Sphygmomanometers	
	REMEDIATION:
	 Complete the review questions 1-34, page 53-54.
	2. Create a table of the organic

compounds showing monomers, polymers, functions and structure.
ENRICHMENT:
 ENRICHMENT: Create a DNA molecule Create a display of the ATP cycle. Complete the "At the Clinic" questions 1-4, page 54.

GRADE(S): 11, 12

UNIT 1: An Orientation to the Body

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability (Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS:

- 3.1.12.A Discern structural and functional relationships in living things.
 - Describe and explain structural and functional relationships in each of the five (or six) kingdoms.
- 3.1.12.B Explain how genetic information is passed from one generation to the next at the molecular level.
 - Measure the variability of a trait.
 - Describe the roles of nucleic acids in cellular reproduction and protein synthesis.
 - Describe genetic engineering techniques, applications and impacts.
 - Explain birth defects from the standpoint of embryological development and/or changes in genetic makeup.

3.1.12.D - Analyze the chemical and structural basis of living organisms.

- Evaluate metabolic activities using experimental knowledge of enzymes.
- Infer functions of different anatomical parts given their structure.

3.2.12.A - Apply concepts about the structure and properties of matter.

- Identify factors affecting reaction rates including catalysts.
- 3.2.12.B Apply and analyze energy sources and conversions and their relationship to heat and temperature.
 - Demonstrate an understanding of energy and heat by applying appropriate formulas to solve problems.

3.3.12.C - Apply energy sources and conversions and their relationship to heat and temperature.

- Analyze chemical reactions in terms of heat generation.
- 3.5.12.A Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and converting.
 - Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement.
- 3.6.12.A Apply advanced tools, materials, and techniques to answer complex questions.
 - Select and safely apply appropriate tools, materials, and processes necessary to solve complex problems that could result I more than one solution.
 - Evaluate and use technological resources to solve complex multi-step problems.

3.6.12.E - Assess the effectiveness of computer communications systems.

• Analyze the effectiveness of on-line information resources to meet the needs for collaboration, research, publications, communications, and productivity.

3.7.12.A - Apply scientific research methods to complex problems. Generate questions that can be studies in science. Evaluate the appropriateness of questions. • Design an investigation with adequate control and limited variables to investigate a question. • Conduct an experiment. Organize experimental information using analytic and descriptive techniques. Evaluate the significance of experimental information in answering the question. Project additional questions from a research study that could be studied. 3.7.12.8 - Apply problem solving in Technology as a systematic process. Assess the problem. Appraise all aspects of the problem. \triangleleft Prioritize the necessary information. Formulate questions that must be answered. Propose, develop, and appraise a solution. Design, develop, and prioritize alternative methods to achieve solutions. Develop and assess the best of appropriate methodology. Implement and assess the solution. Produce, apply, and appraise a specific solution. Evaluate and assess the solution. Assess, redesign, and improve if necessary. Analyze and contrast the impacts of the solution. 3.7.12.C - Evaluate the nature of scientific and technological knowledge. Know and use the ongoing scientific processes to continually improve and better understand how things work. 3.8.12.A - Apply concepts of system, subsystems, feedback, and control to solve complex technological problems. Demonstrate knowledge of systems concepts by designing and modeling control systems that solve specific problems. • Apply systems analysis to predict results. Analyze and describe the function, interaction, and relationship among subsystems and the system itself. Evaluate the causes of a system's inefficiency. 3.8.12.C - Assess and apply patterns in science and technology. Compare and contrast structure and function relationships as they relate to patterns. 3.9.12.A - Synthesize and evaluate the interactions of science, technology, and society. Analyze societal influences on technology and technology's influences on society. • Evaluate technological solutions that differ among societies. Evaluate socially proposed limitations of scientific research and technological application. 3.9.12.B - Apply the use of ingenuity and technological resources to solve specific societal needs and improve the quality of life. Use knowledge of human abilities to design or modify technologies hat extend and enhance human abilities. **UNIT OBJECTIVES:** 1. Students will apply the concept of physiology to anatomical structures. 2. Students will construct an examination process to determine if an alien is alive. 3. Students will recommend three body systems essential to living, three systems that could be eliminated and the evolutionary adaptations necessary for survival. 4. Students will apply 5 survival needs to maintain homeostasis. 5. Students will evaluate court cases involving medical issues.

ASSESSMENTS:

Human Anatomy and Physiology – Unit 1 – Cells and Tissues	

ACTIVITIES:

1.	Differentiate between anatomy and physiology.	\blacktriangleright	Presentations: (Example: News report as a channel 28 Action News Team)
2.	Apply functions to each of the body systems.	۶	Displays: (hallway window or cardboard presentation display)
3.	List organizational levels.	K	
4.	Rank by importance, the life functions.		comes to life on a journey through the
5.	Write a journal describing settlement on Mars (survival needs) to maintain homeostasis		system) Individualized Study: (approved topic
6.	Redesign the body to eliminate the negative feedback.		of system under study with report and poster) Dissection: (assessed on dissection
7.	Write a Supreme Court decision on euthanasia.		technique and proper labeling of organs)
8.	Write a story for the local newspaper focusing on the legal/ethical issues related to breast cancer testing and insurance coverage.	4	Lab Reports
		Sta	andard Assessments:
		Sta	andard Assessments: Quizzes
		Sta	andard Assessments: Quizzes Written Tests
		Sta	andard Assessments: Quizzes Written Tests Research Paper: (five pages with sources cited)
RE	'SOURCES:	Sta A A A A	andard Assessments: Quizzes Written Tests Research Paper: (five pages with sources cited) Organ Model Identification
RE	SOURCES : Text:	Sta A A A A	andard Assessments:QuizzesWritten TestsResearch Paper:sources cited)Organ Model IdentificationWall Chart Identification.
RE Ar	SOURCES: Text: <u>Essentials of Human Anatomy</u>	Sta	andard Assessments: Quizzes Written Tests Research Paper: (five pages with sources cited) Organ Model Identification Wall Chart Identification. Essays
RE ar	SOURCES: Text: <u>Essentials of Human Anatomy</u> ad <u>Physiology</u> . Elaine N Marieb, R.N.,	Sta	andard Assessments: Quizzes Written Tests Research Paper: (five pages with sources cited) Organ Model Identification Wall Chart Identification. Essays
RE ≻ ar Ph	SOURCES: Text: Essentials of Human Anatomy M Physiology. Elaine N Marieb, R.N., D. 1997.	Sta	andard Assessments: Quizzes Written Tests Research Paper: (five pages with sources cited) Organ Model Identification Wall Chart Identification. Essays
RE ♪ Ph	SOURCES: Text: Essentials of Human Anatomy M Physiology. Elaine N Marieb, R.N., ID. 1997. Models: brain, heart, spine, skeleton, shoulder, knee, cell	Sta A A A A Pa pa	andard Assessments: Quizzes Written Tests Research Paper: (five pages with sources cited) Organ Model Identification Wall Chart Identification. Essays

\triangleright	Wall Charts: all systems	up protein – Students are given the
۶	Histology Slides: 154	task to teach their parent (s) the functions of the cell using all four organic compounds
\succ	Anatomy Drawings	organic compounds.
	Laboratory exercises	 Family health history – Student interviews parents and other relatives
≻	Videos	to recognize health risks and concerns for students and family members. This
≻	Audio Filmstrips	includes an interview with a family member with a medical condition.
≻	Internet:	Structure and functional areas of brain
	<u>www.looksmart.com</u> (a great starting point for subject of choice)	Students study with their parents and then take quiz. Parents grade and return with notation
	www.innerbody.com	
	www.madsci.org/~lynn/VH/	
	www.nlm.nih.gov/research/visible/visi	REMEDIATION:
	ble_human.html	 Complete the review questions on page 19-20.
	CD: A.D.A.M. (ordered)	2. Develop a flow chart of the Core 3,4,5.
۶	Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat	
≻	Simulation kits: Blood Typing	
	Urinalysis	ENRICHMENT:
≻	Stethoscopes	1. Develop a model with body directions,
\triangleright	Sphygmomanometers	terminology.
		 Complete at the Clinic: questions 1 – 4 on page 20

COURSE: Human Anatomy/Physiology	GRADE(S): 11, 12
UNIT 1: Skin and Body Membranes	

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability (Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS:
 3.1.10.D - Explain the chemical and structural basis of living organisms. Know the role of hormones in regulating biologic activities.
 3.1.12.A - Discern structural and functional relationships in living things. Describe and explain structural and functional relationships in each of the five (or six) kingdoms.
 3.1.12.D - Analyze the chemical and structural basis of living organisms. Evaluate metabolic activities using experimental knowledge of enzymes. Infer functions of different anatomical parts given their structure.
 3.5.12.A - Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and converting. Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement.
 3.7.12.A - Apply scientific research methods to complex problems. Generate questions that can be studies in science. Evaluate the appropriateness of questions. Design an investigation with adequate control and limited variables to investigate a question. Conduct an experiment. Organize experimental information using analytic and descriptive techniques. Evaluate the significance of experimental information in answering the question. Project additional questions from a research study that could be studied.
 3.7.12.B - Apply problem solving in Technology as a systematic process. Assess the problem. Appraise all aspects of the problem. Prioritize the necessary information. Formulate questions that must be answered. Propose, develop, and appraise a solution. Design, develop, and prioritize alternative methods to achieve solutions. Develop and assess the best of appropriate methodology. Implement and assess the solution. Produce, apply, and appraise a specific solution. Evaluate and assess the solution. Assess, redesign, and improve if necessary. Analyze and contrast the impacts of the solution.
 3.7.12.C - Evaluate the nature of scientific and technological knowledge. Know and use the ongoing scientific processes to continually improve and better understand how things work. Critically compare or contrast the status of existing theories.
 3.8.12.A - Apply concepts of system, subsystems, feedback, and control to solve complex technological problems. Demonstrate knowledge of systems concepts by designing and modeling control systems that solve specific problems. Apply systems analysis to predict results. Analyze and describe the function, interaction, and relationship among subsystems and the system itself.

- Compare and contrast several systems that could be applied to solve a single problem. Evaluate the causes of a system's inefficiency. 3.8.12.C - Assess and apply patterns in science and technology. Compare and contrast structure and function relationships as they relate to patterns. 3.9.12.A - Synthesize and evaluate the interactions of science, technology, and society. Compare and contrast how scientific and technological knowledge is both shared and protected. Analyze societal influences on technology and technology's influences on society. • Evaluate technological solutions that differ among societies. Evaluate socially proposed limitations of scientific research and technological application. 3.9.12.B - Apply the use of ingenuity and technological resources to solve specific societal needs and improve the quality of life. Apply appropriate tools, materials, and processes to solve complex problems. Use knowledge of human abilities to design or modify technologies hat extend and enhance human abilities. Identify and recommend solutions to international problems by applying appropriate physical, communication, or biochemical-related technologies. 3.9.12.C - Assess scientific and technological solutions. Identify and discuss the consequences for not keeping abreast of technological advancements. • Analyze scientific and technological solutions through the use of risk/benefit analysis. Assess and predict the results of applying technology to solve a problem. costs, economic impacts, and constraints.) 1. Students will evaluate the importance of the life functions. 2. Students will explain skin coloration. 3. Students will differentiate the anatomy and physiology of the skin and body membranes.
- 4. Students will predict evolutionary trends in human skin.
- 5. Students will present a medical condition/disease of the skin at a class medical conference.

ACTIVITIES:		AS	SSESSMENTS:
1.	Develop a table comparing membrane type, location and structure (tissue type).	A	Presentations: (Example: News report as a channel 28 Action News Team)
2.	Rank by importance eight functions of the integumentary system.		Displays: (hallway window or cardboard presentation display)
3.	List the movement of a skin cell from birth to the time it flakes off into the universe.	\mathbf{A}	Skits/plays: (a system components comes to life on a journey through the system)
4.	Draw, label and describe the	\triangleright	Individualized Study: (approved topic

- Propose solutions to specific scientific and technological applications, identifying possible financial considerations.
- Analyze and communicate the positive or negative impacts that a recent technological invention had on society.
- Evaluate and describe potential impacts from emerging technologies (e.g., assessment alternatives, risks, benefits,

UNIT OBJECTIVES:

5. 6.	functions of structures of the skin, including, appendages. Describe factors in skin coloration. Predict the results of developmental changes in the skin as it ages.	> [t c	of system under study with report and poster) Dissection: (assessed on dissection echnique and proper labeling of organs) .ab Reports
		Star	ndard Assessments:
		> (Quizzes
		> \	Written Tests
		≻ F s	Research Paper: (five pages with ources cited)
RF	SOURCES	> (Drgan Model Identification
		> \	Vall Chart Identification.
\blacktriangleright	Text:	≻ E	ssays
ar	Essentials of Human Anatomy		
Ph	<u>Physiology</u> . Elaine N Marieb, R.N., D.		
	1997.	Pare	ent Assessments: (Students work with
\blacktriangleright	Models: brain, heart, spine, skeleton,	par	ent (s) and parent grades the work)
	shoulder, knee, cell	≻ F נ	Pathway of cell from glucose to used up protein – Students are given the
>	Wall Charts: all systems	t f	ask to teach their parent (s) the unctions of the cell using all four
	Histology Slides: 154	C	organic compounds.
	Anatomy Drawings	≻ F	amily health history – Student
\mathbf{A}	Laboratory exercises	t f	o recognize health risks and concerns or students and family members. This

≻	Videos		includes an interview with a family
≻	Audio Filmstrips		member with a medical condition.
\triangleright	Internet:		Students study with their parents and
	www.looksmart.com (a great starting point for subject of choice)		then take quiz. Parents grade and return with notation.
	www.innerbody.com		
	www.madsci.org/~lynn/VH/		
	www.nlm.nih.gov/research/visible/visi ble_human.html		
	CD: A.D.A.M. (ordered)		
	Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat		
	Simulation kits: Blood Typing	RE	MEDIATION:
	Urinalysis	1.	Complete the review questions 1-15, page 112.
≻	Stethoscopes	2.	Highlight the key concepts using
≻	Sphygmomanometers		anatomy diagrams.
		EN	IRICHMENT:
		1.	Diagram three forms of skin cancer

	and explain the "A,B,C,D" rule.
2.	Explain the functional causes of these appearances: Vampires (porphyria), and Touch-Me-Nots (epidermolysis bullosa).
3.	Complete the "At the Clinic" Questions 1-5, page 112.

GRADE(S): 11, 12

UNIT 2: Muscular System

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability (Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS:

3.1.10.D - Explain the chemical and structural basis of living organisms. Know the role of hormones in regulating biologic activities. ٠ 3.1.12.A - Discern structural and functional relationships in living things. • Describe and explain structural and functional relationships in each of the five (or six) kingdoms. 3.1.12.D - Analyze the chemical and structural basis of living organisms. Evaluate metabolic activities using experimental knowledge of enzymes. Infer functions of different anatomical parts given their structure. 3.5.12.A - Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and converting. Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement. 3.7.12.A - Apply scientific research methods to complex problems. Generate questions that can be studies in science. Evaluate the appropriateness of questions. • Design an investigation with adequate control and limited variables to investigate a question. Conduct an experiment. Organize experimental information using analytic and descriptive techniques. • Evaluate the significance of experimental information in answering the question. Project additional questions from a research study that could be studied. 3.7.12.8 - Apply problem solving in Technology as a systematic process. Assess the problem. Appraise all aspects of the problem. Prioritize the necessary information. Formulate questions that must be answered. Propose, develop, and appraise a solution. Design, develop, and prioritize alternative methods to achieve solutions. Develop and assess the best of appropriate methodology. Implement and assess the solution. Produce, apply, and appraise a specific solution. Evaluate and assess the solution. ≻ Assess, redesign, and improve if necessary. Analyze and contrast the impacts of the solution. Communicate and assess the problem, design, and solution. 3.7.12.C - Evaluate the nature of scientific and technological knowledge.

- Know and use the ongoing scientific processes to continually improve and better understand how things work. Critically compare or contrast the status of existing theories. 3.8.12.A - Apply concepts of system, subsystems, feedback, and control to solve complex technological problems. Demonstrate knowledge of systems concepts by designing and modeling control systems that solve specific problems. Apply systems analysis to predict results.
 Analyze and describe the function, interaction, and relationship among subsystems and the system itself. Compare and contrast several systems that could be applied to solve a single problem. • Evaluate the causes of a system's inefficiency. 3.8.12.C - Assess and apply patterns in science and technology. Compare and contrast structure and function relationships as they relate to patterns. 3.9.12.A - Synthesize and evaluate the interactions of science, technology, and society. Compare and contrast how scientific and technological knowledge is both shared and protected. Analyze societal influences on technology and technology's influences on society. Evaluate technological solutions that differ among societies. Evaluate socially proposed limitations of scientific research and technological application. 3.9.12.B - Apply the use of ingenuity and technological resources to solve specific societal needs and improve the quality of life • Apply appropriate tools, materials, and processes to solve complex problems. Use knowledge of human abilities to design or modify technologies hat extend and enhance human abilities. Identify and recommend solutions to international problems by applying appropriate physical, communication, or biochemical-related technologies. 3.9.12.C - Assess scientific and technological solutions. Identify and discuss the consequences for not keeping abreast of technological advancements. Propose solutions to specific scientific and technological applications, identifying possible financial considerations. Analyze scientific and technological solutions through the use of risk/benefit analysis.
 Assess and predict the results of applying technology to solve a problem. • Analyze and communicate the positive or negative impacts that a recent technological invention had on society. Evaluate and describe potential impacts from emerging technologies (e.g., assessment alternatives, risks, benefits, costs, economic impacts, and constraints.) **UNIT OBJECTIVES:** 1. Students will differentiate between the anatomy and physiology of the muscles. 2. Students will explain the sliding filament theory. 3. Students will demonstrate muscle locations, attachments and movements. **ACTIVITIES: ASSESSMENTS**:
- Compare and contrast 3 muscle types.
 Describe the Microscopic structures of skeletal muscle.
 Create a flow chart depicting the events of muscle contraction from the nerve impulse to relaxation.
 Skits/plays: (a system components comes to life on a journey through the
 - 4. Connect muscles with their

movements.	system)		
 Differentiate advantages and disadvantages of muscles, tendons and ligaments. 	 Individualized Study: (approved topic of system under study with report and poster) Dissection: (assessed on dissection technique and proper labeling of organs) Lab Poports 		
	Standard Assessments:		
	Quizzes		
	Written Tests		
	 Research Paper: (five pages with sources cited) 		
RESOURCES:	Organ Model Identification		
Text: Essentials of Human Anatomy	Wall Chart Identification.		
and Physiology Elaine N Marieb, R N	Essays		
PhD.			
1997.			
 Models: brain, heart, spine, skeleton, shoulder, knee, cell 	<i>Parent Assessments:</i> (Students work with parent (s) and parent grades the work)		
Wall Charts: all systems	Pathway of cell from glucose to used		
Histology Slides: 154	up protein – Students are given the		
Anatomy Drawings	functions of the cell using all four organic compounds.		
 Laboratory exercises 	 Family health history – Student 		

A A A	Videos Audio Filmstrips Internet:		interviews parents and other relatives to recognize health risks and concerns for students and family members. This includes an interview with a family member with a medical condition.
AA	<pre>www.looksmart.com (a great starting point for subject of choice) www.innerbody.com www.madsci.org/~lynn/VH/ www.nlm.nih.gov/research/visible/visi ble_human.html CD: A.D.A.M. (ordered) Dissection material: heart, lung,</pre>	•	Structure and functional areas of brain Students study with their parents and then take quiz. Parents grade and return with notation.
	kidneys, brain, cow eye, Fetal pig, cat		
A A	Urinalysis Stethoscopes Sphygmomanometers	ке 1. 2. 3.	MEDIATION: Review and complete questions 1-23, page 193. Diagram the microscopic anatomy of a skeletal muscle. Highlight key concepts using anatomy diagrams.
		EN 1. 2. 3.	RICHMENT: Identify all muscles of the body. Diagram 3 ways ATP is regenerated during muscle activity. Describe role of red, white and intermediary muscle cells and analyze the use of energy and advantages of each for athletic activities.

4 Complete the "At the Clinic" Questions
1-5, pages 193-194.

GRADE(S): 11, 12

UNIT 2: Skeletal System

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability (Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS: 3.1.10.D - Explain the chemical and structural basis of living organisms. Know the role of hormones in regulating biologic activities.

- 3.1.12.A Discern structural and functional relationships in living things.
 - Describe and explain structural and functional relationships in each of the five (or six) kingdoms.
- 3.1.12.D Analyze the chemical and structural basis of living organisms.
 - Evaluate metabolic activities using experimental knowledge of enzymes.
 - Infer functions of different anatomical parts given their structure.
- 3.5.12.A Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and convertina.
 - Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement.

3.7.12.A - Apply scientific research methods to complex problems.

- Generate questions that can be studies in science.
- Evaluate the appropriateness of questions.
- Design an investigation with adequate control and limited variables to investigate a question.
- Conduct an experiment.
 Organize experimental information using analytic and descriptive techniques.
- Evaluate the significance of experimental information in answering the question.
- Project additional questions from a research study that could be studied.

3.7.12.8 - Apply problem solving in Technology as a systematic process.

- Assess the problem. •
 - Appraise all aspects of the problem. \triangleright
 - Prioritize the necessary information.
 - > Formulate questions that must be answered.
 - Propose, develop, and appraise a solution.
 - Design, develop, and prioritize alternative methods to achieve solutions.
 - Develop and assess the best of appropriate methodology.
 - Implement and assess the solution.
 - Produce, apply, and appraise a specific solution.
 - Evaluate and assess the solution.
 - Assess, redesign, and improve if necessary.

 Analyze and contrast the impacts of the solution. Communicate and assess the problem, design, and solution. 					
 3.7.12.C - Evaluate the nature of scientific and technological knowledge. Know and use the ongoing scientific processes to continually improve and better understand how things work. Critically compare or contrast the status of existing theories. 					
 3.8.12.A - Apply concepts of system, subsystems, feedback, and control to solve complex technological problems. Demonstrate knowledge of systems concepts by designing and modeling control systems that solve specific problems. Apply systems analysis to predict results. Analyze and describe the function, interaction, and relationship among subsystems and the system itself. Compare and contrast several systems that could be applied to solve a single problem. Evaluate the causes of a system's inefficiency. 					
 3.8.12.C - Assess and apply patterns in science and technolog Compare and contrast structure and function re 	y. lationships as they relate to patterns.				
 3.9.12.A - Synthesize and evaluate the interactions of science, technology, and society. Compare and contrast how scientific and technological knowledge is both shared and protected. Analyze societal influences on technology and technology's influences on society. Evaluate technological solutions that differ among societies. Evaluate socially proposed limitations of scientific research and technological application. 					
3.9.12.B - Apply the use of ingenuity and technological resource	es to solve specific societal needs and improve the quality of				
 Apply appropriate tools, materials, and processe Use knowledge of human abilities to design or m Identify and recommend solutions to internationabiochemical-related technologies. 	 Ife. Apply appropriate tools, materials, and processes to solve complex problems. Use knowledge of human abilities to design or modify technologies hat extend and enhance human abilities. Identify and recommend solutions to international problems by applying appropriate physical, communication, or biochemical-related technologies. 				
 3.9.12.C - Assess scientific and technological solutions. Identify and discuss the consequences for not kee Propose solutions to specific scientific and techn Analyze scientific and technological solutions the Assess and predict the results of applying technol Analyze and communicate the positive or negative Evaluate and describe potential impacts from elecosts, economic impacts, and constraints.) 	eeping abreast of technological advancements. ological applications, identifying possible financial considerations. ough the use of risk/benefit analysis. ology to solve a problem. tive impacts that a recent technological invention had on society. merging technologies (e.g., assessment alternatives, risks, benefits,				
UNIT OBJECTIVES:					
 Students will differentiate between the system. 	anatomy and physiology of the skeletal				
2. Students will explain bone's strength, fle	exibility and adaptability.				
3. Students will synthesize the microscopic	c anatomy of a long bone.				
ACTIVITIES:	ASSESSMENTS:				
 Prioritize the three main functions of the skeletal systems. 	 Presentations: (Example: News report as a channel 28 Action News Team) 				
2. Identify the bones of the body.	Displays: (hallway window or				
 Predict how bone is formed and remodeled throughout life. 	cardboard presentation display)				

 Create a chart listing the types of bones (4), their locations, and explain the relationship of form and function for each. Diagram the regions of a long bone and its microscopic anatomy. Differentiate between the male and female pelvis. Dissect a bone and identify its parts. 	 Skits/plays: (a system components comes to life on a journey through the system) Individualized Study: (approved topic of system under study with report and poster) Dissection: (assessed on dissection technique and proper labeling of organs) Lab Reports
	Standard Assessments:
	> Quizzes
	 Written Tests
	 Research Paper: (five pages with sources cited)
RESOURCES	Organ Model Identification
N Toyt	Wall Chart Identification.
Essentials of Human Anatomy	> Essays
<u>And</u> <u>Physiology</u> . Elaine N Marieb, R.N., PhD.	
1997.	
 Models: brain, heart, spine, skeleton, shoulder, knee, cell 	<i>Parent Assessments:</i> (Students work with parent (s) and parent grades the work)
Wall Charts: all systems	Pathway of cell from glucose to used up protein – Students are given the task to teach their parent (s) the

≻	Histology Slides: 154	functions of the cell using all four organic compounds
≻	Anatomy Drawings	E Comily boolth history Student
≻	Laboratory exercises	interviews parents and other relatives
≻	Videos	to recognize health risks and concerns for students and family members. This
≻	Audio Filmstrips	includes an interview with a family member with a medical condition.
≻	Internet:	 Structure and functional areas of brain
	www.looksmart.com (a great starting point for subject of choice)	Students study with their parents and then take quiz. Parents grade and return with notation.
	www.innerbody.com	
	www.madsci.org/~lynn/VH/	
	<u>www.nlm.nih.gov/research/visible/visi</u> <u>ble_human.html</u>	
≻	CD: A.D.A.M. (ordered)	
	Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat	
≻	Simulation kits: Blood Typing	REMEDIATION:
	Urinalysis	1 Complete the review questions 1.21
\triangleright	Stethoscopes	page 151-152.
\checkmark	Sphygmomanometers	 Highlight key concepts using the anatomy diagrams.
		ENRICHMENT:
		 Compare and contrast cervical, thoracic and lumbar vertebrae.
		2. Suggest design improvements to

intervertebral disks and spinal curvatures.
 Differentiate between scoliosis, lordosis, and kyphosis.
4. Diagram the three categories of joints and compare the movement of each.
 Complete the "At the Clinic" questions 1-5, page 152.

GRADE(S): 11, 12

UNIT 2: The Nervous System

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability (Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS:

3.1.10.D - Explain the chemical and structural basis of living organisms. Know the role of hormones in regulating biologic activities.

- 3.1.12.A Discern structural and functional relationships in living things.
 - Describe and explain structural and functional relationships in each of the five (or six) kingdoms.

3.1.12.D - Analyze the chemical and structural basis of living organisms.

- Evaluate metabolic activities using experimental knowledge of enzymes.
- Infer functions of different anatomical parts given their structure.
- 3.5.12.A Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and converting.
 - Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement.

3.7.12.A - Apply scientific research methods to complex problems.

- Generate questions that can be studies in science.
- Evaluate the appropriateness of questions.
 Design an investigation with adequate control and limited variables to investigate a question.
- Conduct an experiment.
- Organize experimental information using analytic and descriptive techniques.
- Evaluate the significance of experimental information in answering the question.
- Project additional questions from a research study that could be studied.

3.7.12.8 - Apply problem solving in Technology as a systematic process.

- Assess the problem.
 - Appraise all aspects of the problem. \geq
 - Prioritize the necessary information.
 - Formulate questions that must be answered.
- Propose, develop, and appraise a solution.
 - Design, develop, and prioritize alternative methods to achieve solutions.

Develop and assess the best of appropriate methodology.		
 Implement and assess the solution. Produce apply, and appraise a specific solution. 		
 Evaluate and assess the solution. 		
Assess, redesign, and improve if necessary.		
Analyze and contrast the impacts of the solution.		
 Communicate and assess the problem, design, and solution. 		
 3.7.12.C - Evaluate the nature of scientific and technological knowledge. Know and use the ongoing scientific processes to continually improve and better understand how things work. Critically compare or contrast the status of existing theories. 		
 3.8.12.A - Apply concepts of system, subsystems, feedback, and control to solve complex technological problems. Demonstrate knowledge of systems concepts by designing and modeling control systems that solve specific problems. Apply systems analysis to predict results. Analyze and describe the function, interaction, and relationship among subsystems and the system itself. Compare and contrast several systems that could be applied to solve a single problem. Evaluate the causes of a system's inefficiency. 		
 3.8.12.C - Assess and apply patterns in science and technology. Compare and contrast structure and function relationships as they relate to patterns. 		
 3.9.12.A - Synthesize and evaluate the interactions of science, technology, and society. Compare and contrast how scientific and technological knowledge is both shared and protected. Analyze societal influences on technology and technology's influences on society. Evaluate technological solutions that differ among societies. Evaluate socially proposed limitations of scientific research and technological application. 		
3.9.12.B - Apply the use of ingenuity and technological resources to solve specific societal needs and improve the quality of life.		
 Apply appropriate tools, materials, and processes to solve complex problems. Use knowledge of human abilities to design or modify technologies hat extend and enhance human abilities. Identify and recommend solutions to international problems by applying appropriate physical, communication, or biochemical-related technologies. 		
 3.9.12.C - Assess scientific and technological solutions. Identify and discuss the consequences for not keeping abreast of technological advancements. Propose solutions to specific scientific and technological applications, identifying possible financial considerations. Analyze scientific and technological solutions through the use of risk/benefit analysis. Assess and predict the results of applying technology to solve a problem. Analyze and communicate the positive or negative impacts that a recent technological invention had on society. Evaluate and describe potential impacts from emerging technologies (e.g., assessment alternatives, risks, benefits, costs, economic impacts, and constraints.) 		
UNIT OBJECTIVES:		
 Students will differentiate between the anatomy and physiology of the central nervous system. 		
2. Students will differentiate between the anatomy and physiology of the peripheral nervous system.		
3. Students will assess the structural advantages and disadvantages of a neuron and it's conduction path.		
 Students will present a medical condition/disease of the nervous system at a classroom medical conference. 		

ACTIVITIES:	ASSESSMENTS:
 List the functions of the nervous system, neurons and neuroglia. 	 Presentations: (Example: News report as a channel 28 Action News Team)
2. Classify neurons according to structure of function	 Displays: (hallway window or cardboard presentation display)
 Differentiate between central and peripheral, autonomic and sympathetic parasympathetic nervous systems 	 Skits/plays: (a system components comes to life on a journey through the system)
 Produce a model that demonstrates the events of a nerve impulse and conduction from one neuron to another. 	 Individualized Study: (approved topic of system under study with report and poster) Dissection: (assessed on dissection)
 Color-code the structure of a neuron that best represents its important anatomical regions. 	technique and proper labeling of organs)
6. Differentiate between the 4 regions of the brain	
7. Name the 3 meningeal layers and the function of each.	
	Standard Assessments:
	> Quizzes
RESOURCES	 Written Tests
N Tout	 Research Paper: (five pages with sources cited)
Essentials of Human Anatomy	Organ Model Identification
and <u>Physiology</u> . Elaine N Marieb, R.N.,	 Wall Chart Identification.
PhD. 1997.	≻ Essays
 Models: brain, heart, spine, skeleton, shoulder, knee, cell 	

Wall Charts: all systems	Parent Assessments: (Students work with
Histology Slides: 154	parent (s) and parent grades the work)
Anatomy Drawings	Pathway of cell from glucose to used up protein – Students are given the task to to each their parent (c) the
Laboratory exercises	functions of the cell using all four
> Videos	organic compounds.
Audio Filmstrips	 Family health history – Student interviews parents and other relatives
Internet:	to recognize health risks and concerns for students and family members. This
www.looksmart.com (a great starting point for subject of choice)	includes an interview with a family member with a medical condition.
www.innerbody.com	Structure and functional areas of brain
www.madsci.org/~lynn/VH/	then take quiz. Parents grade and
<u>www.nlm.nih.gov/research/visible/visi</u> <u>ble_human.html</u>	return with notation.
> CD: A.D.A.M. (ordered)	
 Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat 	
Simulation kits: Blood Typing	
Urinalysis	
Stethoscopes	REMEDIATION:
Sphygmomanometers	1. Draw and label a neuron.
	 Complete all review questions 1-25, page 239.
	 Highlight key concepts using anatomy drawings.

ENRICHMENT:

1.	Compare the origins of a CVA with
	Alzheimer's disease, a contusion, and
	concussion and how EEG; evaluate
	neural functioning.

- 2. Identify the functions of each cranial nerve.
- 3. Name the 4 major nerve plexuses, the major nerves of each and their distribution.
- 4. Show the signs, causes and consequences of spina bifida, annechaly, cerebal palsy.
- 5. Complete the "At the Clinic" Questions 1-5, page 239-240.

GRADE(S): 11, 12

UNIT 3: Body Defenses

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability (Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS:

- 3.1.10.D Explain the chemical and structural basis of living organisms.
 - Know the role of hormones in regulating biologic activities.
- 3.1.12.A Discern structural and functional relationships in living things.
 - Describe and explain structural and functional relationships in each of the five (or six) kingdoms.

3.1.12.D - Analyze the chemical and structural basis of living organisms.

- Evaluate metabolic activities using experimental knowledge of enzymes.
- Infer functions of different anatomical parts given their structure.
- 3.5.12.A Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and converting.
 - Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement.

3.7.12.A - Apply scientific research methods to complex problems.

- Generate questions that can be studies in science.
- Evaluate the appropriateness of questions.

 Design an investigation with adequate control and limited variables to investigate a question.
 Conduct an experiment. Organize experimental information using analytic and descriptive techniques.
 Organize experimental information using analytic and descriptive techniques. Evaluate the significance of experimental information in answering the question.
 Evaluate the significance of experimental information in answering the question. Project additional questions from a research study that could be studied
 Troject additional questions from a research study that could be studied.
 3.7.12.8 - Apply problem solving in Technology as a systematic process. Assess the problem.
Appraise all aspects of the problem.
 Prioritize the necessary information.
Formulate questions that must be answered.
 Propose, develop, and appraise a solution.
Design, develop, and prioritize alternative methods to achieve solutions.
Develop and assess the best of appropriate methodology.
Implement and assess the solution. Produce apply and appraise a specific solution.
Finducts and assess the solution
 Assess redesign and improve if necessary
 Analyze and contrast the impacts of the solution.
 Communicate and assess the problem, design, and solution.
3.7.12.C - Evaluate the nature of scientific and technological knowledge.
 Know and use the ongoing scientific processes to continually improve and better understand how things work.
 Critically compare or contrast the status of existing theories.
3.8.12.A - Apply concepts of systems, subsystems, feedback, and control to solve complex technological problems.
 Demonstrate knowledge or systems concepts by designing and modeling control systems that solve specific problems
Apply systems applysis to predict results
 Apply systems and you to predict results. Analyze and describe the function interaction, and relationship among subsystems and the system itself.
 Compare and contrast several systems that could be applied to solve a single problem.
 Evaluate the causes of a system's inefficiency.
<i>3.8.12.C</i> - Assess and apply patterns in science and technology.
 Compare and contrast structure and function relationships as they relate to patterns.
3.9.12.A - Synthesize and evaluate the interactions of science, technology, and society.
 Compare and contrast now scientific and technological knowledge is both shared and protected.
Analyze societal initiatices on technology and technology similarices on society. Evaluate technological colutions that differ among societies.
 Evaluate technological solutions that differentiation solution solution solution solution and technological application
 Evaluate socially proposed limitations of scientific research and technological application.
3.9.12.8 - Apply the use of ingenuity and technological resources to solve specific societal needs and improve the quality of
 Apply appropriate tools, materials, and processes to solve complex problems.
 Use knowledge of human abilities to design or modify technologies hat extend and enhance human abilities.
 Identify and recommend solutions to international problems by applying appropriate physical, communication, or
biochemical-related technologies.
3.9.12. <i>C</i> - Assess scientific and technological solutions.
 Identify and discuss the consequences for not keeping abreast of technological advancements.
 Propose solutions to specific scientific and technological applications, identifying possible financial considerations.
 Analyze scientific and rechnological solutions through the use of fisk/benefit analysis. Assess and predict the results of applying technology to solve a problem.
 Analyze and communicate the positive or pegative impacts that a recent technological invention had on society.
Evaluate and describe potential impacts from emerging technologies (e.g. assessment alternatives risks benefits
costs, economic impacts, and constraints.)
UNIT OBJECTIVES:

1. The students will differentiate between the endocrine glands, the hormones they produce and their functions.

- 2. The students will predict the success of future health supplements.
- 3. The students will present a medical condition/disease of the endocrine glands at a classroom medical conference.

ACTIVITIES:	ASSESSMENTS:
 Complete a table identifying the major endocrine glands, the hormones produced, and their functions. Compare and contrast endocrine and exocrine glands. Connect negative feedback, blood levels of hormones and the effective results. 	 Presentations: (Example: News report as a channel 28 Action News Team) Displays: (hallway window or cardboard presentation display) Skits/plays: (a system components comes to life on a journey through the system) Individualized Study: (approved topic of system under study with report and poster) Dissection: (assessed on dissection technique and proper labeling of organs) Lab Reports
	Standard Assessments:
	> Quizzes
	> Written Tests
RESOURCES:	 Research Paper: (five pages with sources cited)
Text: <u>Essentials of Human Anatomy</u>	Organ Model Identification
and <u>Physiology</u> . Elaine N Marieb, R.N., PhD.	Wall Chart Identification.

	1997.	> Essays
٨	Models: brain, heart, spine, skeleton, shoulder, knee, cell	
≻	Wall Charts: all systems	Parent Assessments: (Students work with
≻	Histology Slides: 154	parent (s) and parent grades the work)
≻	Anatomy Drawings	Pathway of cell from glucose to used up protein – Students are given the
≻	Laboratory exercises	task to teach their parent (s) the
≻	Videos	organic compounds.
≻	Audio Filmstrips	Family health history – Student interviews parents and other relatives
≻	Internet:	to recognize health risks and concerns
	www.looksmart.com (a great starting point for subject of choice)	for students and family members. This includes an interview with a family member with a medical condition.
	www.innerbody.com www.madsci.org/~lynn/VH/ www.nlm.nih.gov/research/visible/visi ble_human.html	Structure and functional areas of brain Students study with their parents and then take quiz. Parents grade and return with notation.
AAA	CD: A.D.A.M. (ordered) Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat Simulation kits: Blood Typing Urinalysis	 <i>REMEDIATION:</i> 1. Complete the review questions 1-16, page 292. 2. Highlight key concepts using anatomy diagrams.
≻	Stethoscopes	
≻	Sphygmomanometers	ENRICHMENT:
		 Create a display showing the formation of a function of insulin and complete a glucagon and its effect on blood sugar levels.

2. "At the Clinic" questions 1-4, page 293.

COURSE: Human Anatomy/Physiology GRADE(S): 11, 12

UNIT 3: Endocrine System

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability (Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS:

3.1.10.D - Explain the chemical and structural basis of living organisms.

- Know the role of hormones in regulating biologic activities.
- 3.1.12.A Discern structural and functional relationships in living things.
 - Describe and explain structural and functional relationships in each of the five (or six) kingdoms.
- 3.1.12.D Analyze the chemical and structural basis of living organisms.
 - Evaluate metabolic activities using experimental knowledge of enzymes.
 - Infer functions of different anatomical parts given their structure.
- 3.5.12.A Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and convertina.
 - Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement.

3.7.12.A - Apply scientific research methods to complex problems.

- Generate questions that can be studies in science.
- Design an investigation with adequate control and limited variables to investigate a question.
- Conduct an experiment.
- Organize experimental information using analytic and descriptive techniques.
- Evaluate the significance of experimental information in answering the question.
- Project additional guestions from a research study that could be studied.
- 3.7.12.8 Apply problem solving in Technology as a systematic process.
 - Assess the problem.
 - Appraise all aspects of the problem. ≻
 - Prioritize the necessary information.
 - \triangleright Formulate questions that must be answered.
 - Propose, develop, and appraise a solution.
 - Design, develop, and prioritize alternative methods to achieve solutions.

Develop and assess the best of appropriate methodology.			
 Implement and assess the solution. Produce apply and appraise a specific solution. 			
 Evaluate and assess the solution. 			
Assess, redesign, and improve if necessary.			
Analyze and contrast the impacts of the solution	tion.		
 Communicate and assess the problem, design, and solution. 			
3.7.12.C - Evaluate the nature of scientific and technological knowledge.			
 Know and use the ongoing scientific processes to continually improve and better understand how things work. 			
 Critically compare or contrast the status of existing theories. 			
 3.8.12.A - Apply concepts of system, subsystems, feedback, and control to solve complex technological problems. Demonstrate knowledge of systems concepts by designing and modeling control systems that solve specific problems. Apply systems analysis to predict results. Analyze and describe the function, interaction, and relationship among subsystems and the system itself. 			
 Compare and contrast several systems that could Evaluate the causes of a system's inefficiency. 	be applied to solve a single problem.		
3.8.12.C - Assess and apply patterns in science and technology			
Compare and contrast structure and function relations	ationships as they relate to patterns.		
 3.9.12.A - Synthesize and evaluate the interactions of science, technology, and society. Compare and contrast how scientific and technological knowledge is both shared and protected. Analyze societal influences on technology and technology's influences on society. Evaluate technological solutions that differ among societies. Evaluate socially proposed limitations of scientific research and technological application. 			
3.9.12.8 - Apply the use of ingenuity and technological resource	es to solve specific societal needs and improve the quality of		
 Apply appropriate tools, materials, and processes 	to solve complex problems.		
 Use knowledge of human abilities to design or modify technologies hat extend and enhance human abilities. Identify and recommend solutions to international problems by applying appropriate physical, communication, or biochemical-related technologies. 			
 3.9.12.C - Assess scientific and technological solutions. Identify and discuss the consequences for not keeping abreast of technological advancements. Propose solutions to specific scientific and technological applications, identifying possible financial considerations. Analyze scientific and technological solutions through the use of risk/benefit analysis. Assess and predict the results of applying technology to solve a problem. Analyze and communicate the positive or negative impacts that a recent technological invention had on society. Evaluate and describe potential impacts from emerging technologies (e.g., assessment alternatives, risks, benefits, costs, economic impacts, and constraints.) 			
UNIT OBJECTIVES:			
 The students will differentiate between the endocrine glands, the hormones they produce and their functions. 			
2. The students will predict the success of future health supplements.			
 The students will present a medical condition/disease of the endocrine glands at a classroom medical conference. 			
ACTIVITIES:	ASSESSMENTS:		
 Complete a table identifying the major endocrine glands, the 	Presentations: (Example: News report		

	hormones produced, and their functions.	as a channel 28 Action News Team)
5.	Compare and contrast endocrine and exocrine glands.	 Displays: (hallway window or cardboard presentation display)
6.	Connect negative feedback, blood levels of hormones and the effective results.	 Skits/plays: (a system components comes to life on a journey through the system)
		 Individualized Study: (approved topic of system under study with report and poster) Dissection: (assessed on dissection technique and proper labeling of organs) Lab Reports
		Standard Assessments:
		> Quizzes
RE	SOURCES:	> Quizzes> Written Tests
RE >	SOURCES: Text:	 > Quizzes > Written Tests > Research Paper: (five pages with sources cited)
RE ♪	SOURCES: Text: <u>Essentials of Human Anatomy</u> Id	 > Quizzes > Written Tests > Research Paper: (five pages with sources cited) > Organ Model Identification
RE ► ar Ph	SOURCES: Text: <u>Essentials of Human Anatomy</u> Id <u>Physiology</u> . Elaine N Marieb, R.N., D.	 > Quizzes > Written Tests > Research Paper: (five pages with sources cited) > Organ Model Identification > Wall Chart Identification.
<i>RE</i> → <u>ar</u> Ph	SOURCES: Text: Essentials of Human Anatomy d Physiology. Elaine N Marieb, R.N., D. 1997.	 > Quizzes > Written Tests > Research Paper: (five pages with sources cited) > Organ Model Identification > Wall Chart Identification. > Essays
<i>RE</i> → ar Ph	SOURCES: Text: Essentials of Human Anatomy d Physiology. Elaine N Marieb, R.N., D. 1997. Models: brain, heart, spine, skeleton, shoulder, knee, cell	 > Quizzes > Written Tests > Research Paper: (five pages with sources cited) > Organ Model Identification > Wall Chart Identification. > Essays
RE > A Ph >	SOURCES: Text: Essentials of Human Anatomy d Physiology. Elaine N Marieb, R.N., D. 1997. Models: brain, heart, spine, skeleton, shoulder, knee, cell Wall Charts: all systems	 > Quizzes > Written Tests > Research Paper: (five pages with sources cited) > Organ Model Identification > Wall Chart Identification. > Essays
RE > ar Ph > >	SOURCES: Text: Essentials of Human Anatomy M Physiology. Elaine N Marieb, R.N., D. 1997. Models: brain, heart, spine, skeleton, shoulder, knee, cell Wall Charts: all systems Histology Slides: 154	 > Quizzes > Written Tests > Research Paper: (five pages with sources cited) > Organ Model Identification > Wall Chart Identification. > Essays

≻	Anatomy Drawings	up protein – Students are given the	
≻	Laboratory exercises	functions of the cell using all four	
۶	Videos	organic compounds.	
≻	Audio Filmstrips	Family health history – Student interviews parents and other relative	∋s
≻	Internet:	to recognize health risks and conce for students and family members. Th	rns his
	www.looksmart.com (a great starting point for subject of choice)	includes an interview with a family member with a medical condition.	
	www.innerbody.com	 Structure and functional areas of brace Students study with their parents a 	ain and
	www.madsci.org/~lynn/VH/	then take quiz. Parents grade and	
	www.nlm.nih.gov/research/visible/visi ble_human.html		
≻	CD: A.D.A.M. (ordered)	REMEDIATION:	
A A	CD: A.D.A.M. (ordered) Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat	<i>REMEDIATION:</i>1. Complete the review questions 1-16 page 292.),
AAA	CD: A.D.A.M. (ordered) Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat Simulation kits: Blood Typing	 <i>REMEDIATION:</i> 1. Complete the review questions 1-16 page 292. 2. Highlight key concepts using anatom 	n, my
AAA	CD: A.D.A.M. (ordered) Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat Simulation kits: Blood Typing Urinalysis	 <i>REMEDIATION:</i> 1. Complete the review questions 1-16 page 292. 2. Highlight key concepts using anatom diagrams. 	o, my
AAAA	CD: A.D.A.M. (ordered) Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat Simulation kits: Blood Typing Urinalysis Stethoscopes	 <i>REMEDIATION:</i> 1. Complete the review questions 1-16 page 292. 2. Highlight key concepts using anatom diagrams. 	o, my
AAAAA	CD: A.D.A.M. (ordered) Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat Simulation kits: Blood Typing Urinalysis Stethoscopes Sphygmomanometers	 <i>REMEDIATION:</i> 1. Complete the review questions 1-16 page 292. 2. Highlight key concepts using anatom diagrams. 	o, my
AAAAA	CD: A.D.A.M. (ordered) Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat Simulation kits: Blood Typing Urinalysis Stethoscopes Sphygmomanometers	 <i>REMEDIATION:</i> 1. Complete the review questions 1-16 page 292. 2. Highlight key concepts using anatol diagrams. <i>ENRICHMENT:</i> 3. Create a display showing the formation of a function of insulin and complete a glucagon and its effect blood sugar levels. 	o, my d

COURSE: Human Anatomy/Physiology	GRADE(S): 11, 12

UNIT 3: Special Senses

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability

(Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS:
 3.1.10.D - Explain the chemical and structural basis of living organisms. Know the role of hormones in regulating biologic activities.
 3.1.12.A - Discern structural and functional relationships in living things. Describe and explain structural and functional relationships in each of the five (or six) kingdoms.
 3.1.12.D - Analyze the chemical and structural basis of living organisms. Evaluate metabolic activities using experimental knowledge of enzymes. Infer functions of different anatomical parts given their structure.
 3.5.12.A - Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and converting. Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement.
 3.7.12.A - Apply scientific research methods to complex problems. Generate questions that can be studies in science. Evaluate the appropriateness of questions. Design an investigation with adequate control and limited variables to investigate a question. Conduct an experiment. Organize experimental information using analytic and descriptive techniques. Evaluate the significance of experimental information in answering the question. Project additional questions from a research study that could be studied.
 3.7.12.B - Apply problem solving in Technology as a systematic process. Assess the problem. Appraise all aspects of the problem. Prioritize the necessary information. Formulate questions that must be answered. Propose, develop, and appraise a solution. Design, develop, and prioritize alternative methods to achieve solutions. Develop and assess the best of appropriate methodology. Implement and assess the solution. Produce, apply, and appraise a specific solution. Evaluate and assess the solution. Assess, redesign, and improve if necessary. Analyze and contrast the impacts of the solution.
 3.7.12.C - Evaluate the nature of scientific and technological knowledge. Know and use the ongoing scientific processes to continually improve and better understand how things work. Critically compare or contrast the status of existing theories.
 3.8.12.A - Apply concepts of system, subsystems, feedback, and control to solve complex technological problems. Demonstrate knowledge of systems concepts by designing and modeling control systems that solve specific problems. Apply systems analysis to predict results. Analyze and describe the function, interaction, and relationship among subsystems and the system itself. Compare and contrast several systems that could be applied to solve a single problem.

 3.8.12.C - Assess and apply patterns in science and technology. Compare and contrast structure and function relationships as they relate to patterns. 			
 3.9.12.A - Synthesize and evaluate the interactions of science, technology, and society. Compare and contrast how scientific and technological knowledge is both shared and protected. Analyze societal influences on technology and technology's influences on society. Evaluate technological solutions that differ among societies. Evaluate socially proposed limitations of scientific research and technological application. 			
 3.9.12.B - Apply the use of ingenuity and technological resources to solve specific societal needs and improve the quality of life. Apply appropriate tools, materials, and processes to solve complex problems. Use knowledge of human abilities to design or modify technologies hat extend and enhance human abilities. Identify and recommend solutions to international problems by applying appropriate physical, communication, or biochemical-related technologies. 3.9.12.C - Assess scientific and technological solutions. Identify and discuss the consequences for not keeping abreast of technological advancements. Propose solutions to specific scientific and technological solutions through the use of risk/benefit analysis. Analyze scientific and technological solutions through the use of risk/benefit analysis. Assess and predict the results of applying technology to solve a problem. Analyze and communicate the positive or negative impacts that a recent technological invention had on society. Evaluate and describe potential impacts from emerging technologies (e.g., assessment alternatives, risks, benefits, costs, economic impacts, and constraints.) 			
 UNIT OBJECTIVES: Students will differentiate between the anatomy and physiology of the eye, ear, nose and tongue sensors. Students will predict evolutionary trends in human sensory systems. Students will present a medical condition/disease of a special sense at a class medical conference. 			
ACTIVITIES:	ASSESSMENTS:		
 Identify the structures of the eye, ear, tongue and explain these functions. Differentiate between the 3 tunics of the eye. Compare rods and copes 	 Presentations: (Example: News report as a channel 28 Action News Team) Displays: (hallway window or cardboard presentation display) 		
 4. Trace the pathway of light from its source to the brain. 	 Skits/plays: (a system components comes to life on a journey through the 		
 Create a flow chart of sound from source to the brain. Diagram the 4 areas of taste and explain the factors that modify the sense of taste. 	 Individualized Study: (approved topic of system under study with report and poster) 		
	▷ Dissection: (assessed on dissection)		

 Describe location, structure, and function of the olfactory receptors. 	technique and proper labeling of organs)
	Lab Reports
	Standard Assessments:
	Written Tests
	 Research Paper: (five pages with sources cited)
 Fext: Essentials of Human Anatomy 	 Organ Model Identification Wall Chart Identification.
<u>and</u> <u>Physiology</u> . Elaine N Marieb, R.N., PhD. 1997.	Essays
 Models: brain, heart, spine, skeleton, shoulder, knee, cell Wall Charts: all systems Histology Slides: 154 Anatomy Drawings Laboratory exercises 	 Parent Assessments: (Students work with parent (s) and parent grades the work) Pathway of cell from glucose to used up protein – Students are given the task to teach their parent (s) the functions of the cell using all four organic compounds.
 > Videos > Audio Filmstrips > Internet: www.looksmart.com (a great starting 	Family health history – Student interviews parents and other relatives to recognize health risks and concerns for students and family members. This includes an interview with a family member with a medical condition.

AA	point for subject of choice) www.innerbody.com www.madsci.org/~lynn/VH/ www.nlm.nih.gov/research/visible/visi ble_human.html CD: A.D.A.M. (ordered) Dissection material: heart, lung, kidneys brain cow eye Fetal pig_cat	Structure and functional areas of brain Students study with their parents and then take quiz. Parents grade and return with notation.
≻	Simulation kits: Blood Typing	REMEDIATION:
	Urinalysis Stethoscopes Sphygmomanometers	 Complete all review questions 1-29 (264). Highlight key concepts using anatomy diagrams. Label parts of ear, eye, tongue and nose. ENRICHMENT:
		 As a dentist, explain these conditions to your patients: accommodation, astigmatism, blind spot, cataract,

emmetropia, glaucoma, hyperopia, myopia, refraction.
2. Write a report of vision correction surgeries.
3. Differentiate between sensurineural and conductive deafness.
 Complete the "At the Clinic" Questions 1-6, page 265.

COURSE:	Human Anatom	y/Physiology
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GRADE(S): 11, 12

UNIT 4: Blood and Circulatory Systems

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability (Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS:

- 3.1.10.D Explain the chemical and structural basis of living organisms.
 - Know the role of hormones in regulating biologic activities.
- 3.1.12.A Discern structural and functional relationships in living things.
 - Describe and explain structural and functional relationships in each of the five (or six) kingdoms.

3.1.12.D - Analyze the chemical and structural basis of living organisms.

- Evaluate metabolic activities using experimental knowledge of enzymes.
- Infer functions of different anatomical parts given their structure.
- 3.5.12.A Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and converting.
 - Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement.

3.7.12.A - Apply scientific research methods to complex problems.

- Generate questions that can be studies in science.
- Evaluate the appropriateness of questions.
- Design an investigation with adequate control and limited variables to investigate a question.
- Conduct an experiment.
- Organize experimental information using analytic and descriptive techniques.
- Evaluate the significance of experimental information in answering the question.
- Project additional questions from a research study that could be studied.

3.7.12.8 - Apply problem solving in Technology as a systematic process.

- Assess the problem.
 - > Appraise all aspects of the problem.
 - Prioritize the necessary information.
 - > Formulate questions that must be answered.
 - Propose, develop, and appraise a solution.
 - > Design, develop, and prioritize alternative methods to achieve solutions.
 - > Develop and assess the best of appropriate methodology.
 - Implement and assess the solution.
 - Produce, apply, and appraise a specific solution.
 - Evaluate and assess the solution.
 - > Assess, redesign, and improve if necessary.
 - Analyze and contrast the impacts of the solution.
 - Communicate and assess the problem, design, and solution.

3.7.12.C - Evaluate the nature of scientific and technological knowledge.

- Know and use the ongoing scientific processes to continually improve and better understand how things work.
- Critically compare or contrast the status of existing theories.

3.8.12.A - Apply concepts of system, subsystems, feedback, and control to solve complex technological problems.

Demonstrate knowledge of systems concepts by designing and modeling control systems that solve specific problems. Apply systems analysis to predict results. Analyze and describe the function, interaction, and relationship among subsystems and the system itself. Compare and contrast several systems that could be applied to solve a single problem. Evaluate the causes of a system's inefficiency. 3.8.12.C - Assess and apply patterns in science and technology. Compare and contrast structure and function relationships as they relate to patterns. 3.9.12.A - Synthesize and evaluate the interactions of science, technology, and society. Compare and contrast how scientific and technological knowledge is both shared and protected. Analyze societal influences on technology and technology's influences on society. Evaluate technological solutions that differ among societies. Evaluate socially proposed limitations of scientific research and technological application. 3.9.12.B - Apply the use of ingenuity and technological resources to solve specific societal needs and improve the quality of life. • Apply appropriate tools, materials, and processes to solve complex problems. Use knowledge of human abilities to design or modify technologies hat extend and enhance human abilities. Identify and recommend solutions to international problems by applying appropriate physical, communication, or biochemical-related technologies. 3.9.12.C - Assess scientific and technological solutions. Identify and discuss the consequences for not keeping abreast of technological advancements. Propose solutions to specific scientific and technological applications, identifying possible financial considerations.
Analyze scientific and technological solutions through the use of risk/benefit analysis.
Assess and predict the results of applying technology to solve a problem.
Analyze and communicate the positive or negative impacts that a recent technological invention had on society. Evaluate and describe potential impacts from emerging technologies (e.g., assessment alternatives, risks, benefits, costs, economic impacts, and constraints.) **UNIT OBJECTIVES:** 1. Students will utilize modern scientific thought to judge the ancient adage that blood and the heart are the center of life. 2. Students will identify the anatomy of the heart. 3. Students differentiate anatomy and physiology of the cardiovascular system. **ACTIVITIES:** ASSESSMENTS: 1. Describe the functions of blood that Presentations: (Example: News report) as a channel 28 Action News Team) makes it essential for homeostasis. 2. Compare and contrast plasma and Displays: (hallway window or formed elements. cardboard presentation display) 3. Chart the events in hemostasis. Skits/plays: (a system components 4. Differentiate between the 4 blood comes to life on a journey through the groups. system)

Individualized Study: (approved topic)

of system under study with report and

5. Trace the pathway of blood through the heart and lungs.

Human Anatomy and Physiology – Unit 1 – Cells and Tissues

 Explain systole, diastole, stroke volume, cardiac cycle, heart sounds, murmur, blood pressure and pulse. Compare and contrast the structure and function of arteries, veins, and capillaries. Name 2 types of structures in the lymphatic system and explain how it is functionally related to the cardiovascular and immune systems. Describe the composition of lymph, how it is formed and transported. Differentiate the function of lymph nodes, tonsils, the thymus, Peyers' patches and the spleen. 	 poster) Dissection: (assessed on dissection technique and proper labeling of organs) Lab Reports Lab Reports Standard Assessments: Quizzes Written Tests Research Paper: (five pages with sources cited) Organ Model Identification Wall Chart Identification. Essays
	<i>Parent Assessments:</i> (Students work with parent (s) and parent grades the work)
RESOURCES:	Pathway of cell from glucose to used up protein – Students are given the task to teach their parent (s) the functions of the cell using all four organic compounds.
<u>Essentials of Human Anatomy</u> <u>and</u> <u>Physiology</u> . Elaine N Marieb, R.N., PhD. 1997.	Family health history – Student interviews parents and other relatives to recognize health risks and concerns for students and family members. This includes an interview with a family

	member with a medical condition.
 Models: brain, heart, spine, skeleton, shoulder, knee, cell 	 Structure and functional areas of brain Students study with their parents and
Wall Charts: all systems	then take quiz. Parents grade and
Histology Slides: 154	return with notation.
Anatomy Drawings	
Laboratory exercises	
> Videos	
Audio Filmstrips	
> Internet:	
www.looksmart.com (a great starting point for subject of choice)	
www.innerbody.com	REMEDIATION:
www.madsci.org/~lynn/VH/	1. Complete all review questions 1-17 (pg. 312) and 1-33 (pg. 352-353).
<u>www.nlm.nih.gov/research/visible/visi</u> <u>ble_human.html</u>	2. Highlight all key concepts using anatomy diagrams.
> CD: A.D.A.M. (ordered)	
 Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat 	
Simulation kits: Blood Typing	
Urinalysis	
Stethoscopes	
Sphygmomanometers	
	ENRICHMENT:
	1. Name the elements of the intrinsic conduction system of the heart and

describe the pathway of impulses through this system
 Identify the body's major arteries and veins and name the body region supplied by each.
 Read an electrocardiogram and create a display.
 Describe the unique feature of special circulation of the body, arterial circulation of brain, hepatic-portal circulation and fetal circulation.
5. Complete "At the Clinic" Questions 1-6 (page 312) and 1-6 (page 353).

GRADE(S): 11, 12

UNIT 4: Respiratory System

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability (Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS:

3.1.10.D - Explain the chemical and structural basis of living organisms. Know the role of hormones in regulating biologic activities. ٠ 3.1.12.A - Discern structural and functional relationships in living things. • Describe and explain structural and functional relationships in each of the five (or six) kingdoms. 3.1.12.D - Analyze the chemical and structural basis of living organisms. Evaluate metabolic activities using experimental knowledge of enzymes. Infer functions of different anatomical parts given their structure. 3.5.12.A - Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and converting. Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement. 3.7.12.A - Apply scientific research methods to complex problems. Generate questions that can be studies in science. Evaluate the appropriateness of questions. • Design an investigation with adequate control and limited variables to investigate a question. Conduct an experiment. Organize experimental information using analytic and descriptive techniques. • Evaluate the significance of experimental information in answering the question. Project additional questions from a research study that could be studied. 3.7.12.8 - Apply problem solving in Technology as a systematic process. Assess the problem. Appraise all aspects of the problem. Prioritize the necessary information. Formulate questions that must be answered. Propose, develop, and appraise a solution. Design, develop, and prioritize alternative methods to achieve solutions. Develop and assess the best of appropriate methodology. Implement and assess the solution. Produce, apply, and appraise a specific solution. Evaluate and assess the solution. ≻ Assess, redesign, and improve if necessary. Analyze and contrast the impacts of the solution. Communicate and assess the problem, design, and solution. 3.7.12.C - Evaluate the nature of scientific and technological knowledge.

 Know and use the ongoing scientific processes to continually improve and better understand how things work. Critically compare or contrast the status of existing theories. 		
 .8.12.A - Apply concepts of system, subsystems, feedback, and control to solve complex technological problems. Demonstrate knowledge of systems concepts by designing and modeling control systems that solve specific problems. Apply systems analysis to predict results. Analyze and describe the function, interaction, and relationship among subsystems and the system itself. Compare and contrast several systems that could be applied to solve a single problem. Evaluate the causes of a system's inefficiency. 		
 8.12.C - Assess and apply patterns in science and technology. Compare and contrast structure and function relationships as they relate to patterns. 		
 3.8.12.D - Analyze scale as a way of relating concepts and idea Compare and contrast various forms of dimension Analyze and apply appropriate measurement sca 	is to one another by some measure. nal analysis. ales when collecting data.	
 3.9.12.A - Synthesize and evaluate the interactions of science, technology, and society. Compare and contrast how scientific and technological knowledge is both shared and protected. Analyze societal influences on technology and technology's influences on society. Evaluate technological solutions that differ among societies. Evaluate socially proposed limitations of scientific research and technological application. 		
3.9.12.8 - Apply the use of ingenuity and technological resource	es to solve specific societal needs and improve the quality of	
 Apply appropriate tools, materials, and processes Use knowledge of human abilities to design or mo Identify and recommend solutions to international biochemical-related technologies. 	to solve complex problems. dify technologies hat extend and enhance human abilities. problems by applying appropriate physical, communication, or	
 3.9.12.C - Assess scientific and technological solutions. Identify and discuss the consequences for not keeping abreast of technological advancements. Propose solutions to specific scientific and technological applications, identifying possible financial considerations. Analyze scientific and technological solutions through the use of risk/benefit analysis. Assess and predict the results of applying technology to solve a problem. Analyze and communicate the positive or negative impacts that a recent technological invention had on society. Evaluate and describe potential impacts from emerging technologies (e.g., assessment alternatives, risks, benefits, costs, economic impacts, and constraints.) 		
UNIT OBJECTIVES:		
1. Students will differentiate between the anatomy and physiology of the respiratory system.		
2. Students will explain the physics of breathing using respiratory terminology.		
 Students will assess the risks of our atmosphere and develop devises to filter air, which can be used in the external nares. 		
4. Students will present a medical condition/disease at a medical conference on the respiratory system.		
ACTIVITIES:	ASSESSMENTS:	
1. Trace the path of oxygen from the time it enters your nostrils until CO2 is	Presentations: (Example: News report as a channel 28 Action News Team)	

	exhaled.	≻	Displays: (hallway window or
2.	Describe the protective mechanisms		cardboard presentation display)
	of the respiratory system	\succ	Skits/plays: (a system components
3.	Prepare a speech to the NART (National Association of Respiratory		comes to life on a journey through the
	Therapists) in which you encourage		system
	them (using humor) to use human terms for their medical jargon:		Individualized Study: (approved topic of system under study with report and
	cellular respiration		Dissection: (assessed on dissection
	external respiration		technique and proper labeling of organs)
	internal respiration		Lab Reports
	tital volume	-	
	vital capacity		
	rocidual air		
		Sta	andard Assessments:
	expiration		Quizzes
	inspiration	Ν	Writton Tosts
	expiratory reserve volume		Witten rests
	inspiratory reserve volume		Research Paper: (five pages with sources cited)
4.	Dissect lung tissue.		Organ Model Identification
		≻	Wall Chart Identification.
			Essays
		Da	aront Assassments: (Students work with
		pa	arent (s) and parent grades the work)
		\mathbf{A}	Pathway of cell from glucose to used up protein – Students are given the task to teach their parent (s) the functions of the cell using all four

	organic compounds.
RESOURCES: Text: <u>Essentials of Human Anatom</u> and <u>Physiology</u> . Elaine N Marieb, PhD. 1997.	 Family health history – Student interviews parents and other relatives to recognize health risks and concerns for students and family members. This includes an interview with a family member with a medical condition. Structure and functional areas of brain Students study with their parents and then take quiz. Parents grade and return with notation.
 Models: brain, heart, spine, skele shoulder, knee, cell 	ton,
Wall Charts: all systems	
Histology Slides: 154	
Anatomy Drawings	
 Laboratory exercises 	REMEDIATION:
> Videos	 Complete review questions 1-21, page 406
 Audio Filmstrips 	2. Highlight key concepts using anatomy
> Internet:	ulagrams
www.looksmart.com (a great sta point for subject of choice)	rting
www.innerbody.com	
www.madsci.org/~lynn/VH/	
<u>www.nlm.nih.gov/research/visible</u> <u>ble_human.html</u>	<u>e/visi</u>
> CD: A.D.A.M. (ordered)	
 Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig 	, cat 1. Describe the process of gas

Simulation kits: Blood Typing	exchanges in the lungs and tissues.
Urinalysis	2. Compare risk verses asset for each physical factor that influences
Stethoscopes	respiratory rate.
Sphygmomanometers	questions, 1-5, page 406.

GRADE(S): 11, 12

UNIT 4: Urinary System

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability (Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS: 3.1.10.D - Explain the chemical and structural basis of living organisms. Know the role of hormones in regulating biologic activities. 3.1.12.A - Discern structural and functional relationships in living things. • Describe and explain structural and functional relationships in each of the five (or six) kingdoms.

- 3.1.12.D Analyze the chemical and structural basis of living organisms.
 - Evaluate metabolic activities using experimental knowledge of enzymes.
 - Infer functions of different anatomical parts given their structure.
- 3.5.12.A Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and convertina.
 - Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement.

3.7.12.A - Apply scientific research methods to complex problems.

- Generate guestions that can be studies in science.
- Evaluate the appropriateness of questions.
- Design an investigation with adequate control and limited variables to investigate a question.
- Conduct an experiment.
 Organize experimental information using analytic and descriptive techniques.
- Evaluate the significance of experimental information in answering the question.
- Project additional questions from a research study that could be studied.

3.7.12.8 - Apply problem solving in Technology as a systematic process.

- Assess the problem. •
 - Appraise all aspects of the problem. \triangleright
 - ≻ Prioritize the necessary information.
 - > Formulate questions that must be answered.
 - Propose, develop, and appraise a solution.
 - Design, develop, and prioritize alternative methods to achieve solutions.
 - Develop and assess the best of appropriate methodology.
 - Implement and assess the solution.
 - Produce, apply, and appraise a specific solution.
 - Evaluate and assess the solution.
 - Assess, redesign, and improve if necessary.

3712 C - Evaluate the nature of scientific and technological kn	owledge
 Know and use the ongoing scientific processes to Critically compare or contrast the status of existing 	continually improve and better understand how things work. g theories.
 3.8.12.A - Apply concepts of system, subsystems, feedback, and Demonstrate knowledge of systems concepts by a problems. Apply systems analysis to predict results. Analyze and describe the function, interaction, ar Compare and contrast several systems that could Evaluate the causes of a system's inefficiency. 	a control to solve complex technological problems. designing and modeling control systems that solve specific and relationship among subsystems and the system itself. I be applied to solve a single problem.
 3.8.12.C - Assess and apply patterns in science and technology Compare and contrast structure and function relations 	ationships as they relate to patterns.
 3.9.12.A - Synthesize and evaluate the interactions of science, to Compare and contrast how scientific and technol Analyze societal influences on technology and te Evaluate technological solutions that differ among Evaluate socially proposed limitations of scientific 	echnology, and society. logical knowledge is both shared and protected. chnology's influences on society. g societies. research and technological application.
3.9.12.B - Apply the use of ingenuity and technological resource	es to solve specific societal needs and improve the quality of
 Apply appropriate tools, materials, and processes Use knowledge of human abilities to design or mo Identify and recommend solutions to international biochemical-related technologies. 	to solve complex problems. dify technologies hat extend and enhance human abilities. problems by applying appropriate physical, communication, or
 3.9.12.C - Assess scientific and technological solutions. Identify and discuss the consequences for not kee Propose solutions to specific scientific and technol Analyze scientific and technological solutions thro Assess and predict the results of applying technological solutions and technological solutions to regative Evaluate and describe potential impacts from emcosts, economic impacts, and constraints.) 	eping abreast of technological advancements. logical applications, identifying possible financial considerations. rugh the use of risk/benefit analysis. bgy to solve a problem. ve impacts that a recent technological invention had on society. rerging technologies (e.g., assessment alternatives, risks, benefits,
UNIT OBJECTIVES:	
1. Students will differentiate between the system.	anatomy and physiology of the urinary
 Students will present a medical condition 	on/disease of the urinary system at a
medical conference.	
medical conference.	
ACTIVITIES:	ASSESSMENTS:

nephron that are responsible for filtration, reabsorption, and secretion	as a channel 28 Action News Team)
and the composition of the resultant urine.	 Displays: (hallway window or cardboard presentation display)
2. Using a model, identify each region of the kidney (hilus, cortex, medulla, medullary pyramids, calces, pelvis, and renal columns.)	 Skits/plays: (a system components comes to life on a journey through the system)
3. Connect the structure and function of ureters, urinary bladder and urethra.	Individualized Study: (approved topic of system under study with report and poster)
 Dissect a kidney and label each region. 	 Dissection: (assessed on dissection technique and proper labeling of
5. Complete the urinalysis simulation lab.	organs)
	Lab Reports
	Standard Assessments:
	Written Tests
RESOURCES	 Written Tests Research Paper: (five pages with sources cited)
RESOURCES:	 > Written Tests > Research Paper: (five pages with sources cited) > Organ Model Identification
RESOURCES: ➤ Text:	 Written Tests Research Paper: (five pages with sources cited) Organ Model Identification Wall Chart Identification.
 RESOURCES: > Text: <u>Essentials of Human Anatomy</u> <u>and</u> 	 > Guizzes > Written Tests > Research Paper: (five pages with sources cited) > Organ Model Identification > Wall Chart Identification. > Essays
RESOURCES: ► Text: <u>Essentials of Human Anatomy</u> and <u>Physiology</u> . Elaine N Marieb, R.N., PhD	 Vultices Written Tests Research Paper: (five pages with sources cited) Organ Model Identification Wall Chart Identification. Essays
RESOURCES: > Text: Essentials of Human Anatomy and Physiology. Elaine N Marieb, R.N., PhD. 1997.	 > Guizzes > Written Tests > Research Paper: (five pages with sources cited) > Organ Model Identification > Wall Chart Identification. > Essays
<i>RESOURCES:</i> > Text: Essentials of Human Anatomy and Physiology. Elaine N Marieb, R.N., PhD. 1997. > Models: brain, heart, spine, skeleton, shoulder, knee, cell	 Written Tests Research Paper: (five pages with sources cited) Organ Model Identification Wall Chart Identification. Essays

≻	Wall Charts: all systems		up protein – Students are given the task to teach their parent (s) the
≻	Histology Slides: 154		functions of the cell using all four
≻	Anatomy Drawings	~	Established atthe bisteries of the least
≻	Laboratory exercises		interviews parents and other relatives
۶	Videos		to recognize health risks and concerns for students and family members. This
≻	Audio Filmstrips		includes an interview with a family member with a medical condition.
≻	Internet:	\triangleright	Structure and functional areas of brain
	www.looksmart.com (a great starting point for subject of choice)		Students study with their parents and then take quiz. Parents grade and return with notation.
	www.innerbody.com		
	www.madsci.org/~lynn/VH/		
	<u>www.nlm.nih.gov/research/visible/visi</u> <u>ble_human.html</u>		
≻	CD: A.D.A.M. (ordered)		
۶	Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat		
≻	Simulation kits: Blood Typing	RE	EMEDIATION:
	Urinalysis	1.	Complete the review questions 1-19, page 470.
	Stethoscopes	2.	Highlight the key concepts using the
\triangleright	Sphygmomanometers		anatomy diagrams.

ENRICHMENT:
 Identify hormones active in the urinary system and explain their roles.
2. Differentiate between polyuria, anuria, oliguria, and diuresis.
 Describe the effects of aging on the urinary system.
 Complete the "At the Clinic" questions 1-5, page 470.

GRADE(S): 11, 12

UNIT 4: Digestive System

NATIONAL STANDARDS:

SCIENCE THEMES: Systems and Interactions, Models, Patterns of Change, Stability (Constancy), Energy, Scale, Change Over Time

PROCESS SKILLS: Observing, Classifying, Measuring, Analyzing and Interpreting Data, Formulating Hypotheses, Predicting, Experimenting/Testing, Variable Recognition and Control

BENCHMARKS:

STATE STANDARDS:

3.1.10.D - Explain the chemical and structural basis of living organisms.

- Know the role of hormones in regulating biologic activities.
- 3.1.12.A Discern structural and functional relationships in living things.
 - Describe and explain structural and functional relationships in each of the five (or six) kingdoms.
- 3.1.12.D Analyze the chemical and structural basis of living organisms.
 - Evaluate metabolic activities using experimental knowledge of enzymes.
 - Infer functions of different anatomical parts given their structure.
- **3.5.12.A** Analyze biochemical-related technologies of propagating, growing, maintaining, adapting, treating, and converting.
 - Analyze specific examples where engineering has impacted society in protection, personal health application and physical enhancement.

3.7.12.A - Apply scientific research methods to complex problems.

- Generate questions that can be studies in science.
- Evaluate the appropriateness of questions.
- Design an investigation with adequate control and limited variables to investigate a question.
- Conduct an experiment.
- Organize experimental information using analytic and descriptive techniques.
- Evaluate the significance of experimental information in answering the question.
- Project additional questions from a research study that could be studied.

3.7.12.B - Apply problem solving in Technology as a systematic process.

- Assess the problem.
 - > Appraise all aspects of the problem.

Prioritize the necessary information.
Formulate questions that must be answered.
 Propose, develop, and appraise a solution.
Design, develop, and prioritize alternative methods to achieve solutions.
Develop and assess the best of appropriate methodology.
 Produce apply and appraise a specific solution
 Evaluate and assess the solution.
Assess, redesign, and improve if necessary.
Analyze and contrast the impacts of the solution.
 Communicate and assess the problem, design, and solution.
3712 C - Evaluate the nature of scientific and technological knowledge
 Know and use the ongoing scientific processes to continually improve and better understand how things work.
 Critically compare or contrast the status of existing theories.
3.8.12.A - Apply concepts of system, subsystems, feedback, and control to solve complex technological problems.
 Demonstrate knowledge of systems concepts by designing and modeling control systems that solve specific problems
 Apply systems analysis to predict results.
 Analyze and describe the function, interaction, and relationship among subsystems and the system itself.
 Compare and contrast several systems that could be applied to solve a single problem.
 Evaluate the causes of a system's inefficiency.
 3.8.12.C - Assess and apply patients in science and lectinology. Compare and contrast structure and function relationships as they relate to patterns
• Compare and contrast structure and function relationships as they relate to patterns.
3.9.12.A - Synthesize and evaluate the interactions of science, technology, and society.
 Compare and contrast how scientific and technological knowledge is both shared and protected.
 Analyze societal influences on technology and technology's influences on society.
 Evaluate technological solutions that differ among societies. Evaluate socially proposed limitations of scientific research and technological application
 Evaluate socially proposed limitations of scientific research and technological application.
3.9.12.B - Apply the use of ingenuity and technological resources to solve specific societal needs and improve the quality of life.
 Apply appropriate tools, materials, and processes to solve complex problems.
 Use knowledge of human abilities to design or modify technologies hat extend and enhance human abilities.
 Identify and recommend solutions to international problems by applying appropriate physical, communication, or
biochemical-related technologies.
3.9.12.C - Assess scientific and technological solutions.
 Identify and discuss the consequences for not keeping abreast of technological advancements.
 Propose solutions to specific scientific and technological applications, identifying possible financial considerations.
 Analyze scientific and technological solutions through the use of risk/benefit analysis.
 Assess and predict the results of applying technology to solve a problem. Applying and communicate the positive or positive imposts that a respect to characterized invention had an equiption.
 Analyze and communicate the positive of negative impacts that a recent technological invention had on society. Evaluate and describe potential impacts from emerging technologies (e.g., assessment alternatives, risks, benefits)
costs, economic impacts, and constraints.)
1. Students will differentiate between the anatomy and physiology of the digestive
system
System.
2. Students will connect digestive activities with the movements of muscles.
3. Students will graph their metabolic activity during the school day.
4. Students will assess the influence of stress on the digestive organs.
5. Students will present a medical condition/disease of the digestive system at a

medical conference.

ACTIVITIES:		ASSESSMENTS:				
1.	Describe the functions of each part of the digestive system.	Pr a:	resentations: (Example: News report s a channel 28 Action News Team)			
2.	You are a cafeteria french fry. Describe your journey from ingestion to excretion and what you are experiencing as the events of your	> D C	 Displays: (hallway window or cardboard presentation display) Skits/plays: (a system components comes to life on a journey through the system) Individualized Study: (approved topic of system under study with report and poster) Dissection: (assessed on dissection technique and proper labeling of organs) 			
3.	journey change you. Compare and contrast metabolism, catabolism, and anabolism	C SY				
4.	Create a chart of hormones and enzymes involved in digestion showing their functions and the results of their activity.	 In of p D te 				
5.	Describe the composition and function of saliva.	OI > La				
6.	Describe the mechanism of swallowing, vomiting and defecation.					
		Stan	dard Assessments:			
		> Q	Duizzes			
		> W	/ritten Tests			
		► Re	esearch Paper: (five pages with ources cited)			
		> 0	organ Model Identification			
RESOURCES:		> W	/all Chart Identification.			
\checkmark	Text: <u>Essentials of Human Anatomy</u>	≻ Es	ssays			
<u>ar</u>	nd <u>Physiology</u> . Elaine N Marieb, R.N.,					

PhD.	Parent Assessments: (Students work with
1997.	parent (s) and parent grades the work)
Models: brain, heart, spine, skeleton, shoulder, knee, cell	 Pathway of cell from glucose to used up protein – Students are given the task to teach their parent (s) the functions of the cell using all four organic compounds. Eamily health bistory – Student
Wall Charts: all systems	
Histology Slides: 154	
Anatomy Drawings	interviews parents and other relatives
 Laboratory exercises 	for students and family members. This
> Videos	member with a medical condition.
Audio Filmstrips	Structure and functional areas of brain
Internet:	then take quiz. Parents grade and
www.looksmart.com (a great starting point for subject of choice)	return with notation.
www.innerbody.com	
www.madsci.org/~lynn/VH/	
<u>www.nlm.nih.gov/research/visible/visi</u> <u>ble_human.html</u>	REMEDIATION:
> CD: A.D.A.M. (ordered)	 Complete the review questions 1-35, page 447-448.
 Dissection material: heart, lung, kidneys, brain, cow eye, Fetal pig, cat 	2. Highlight key concepts using anatomy diagrams.
Simulation kits: Blood Typing	
Urinalysis	
 Stethoscopes 	
 Sphygmomanometers 	
	ENRICHMENT:

1.	Describe the end products of protein, fat and carbohydrate digestion.
2.	Create a poster or experiment, which demonstrates the significance of essential nutrients and calories.
3.	Create a presentation showing the process and results of the Krebs Cycle, Glycolysis, and electron transport chain, and oxidative phosphoylation.
4.	Complete the "At the Clinic" questions1-5, page 448.