	<ul> <li>Body membranes line or cover, protect, and lubricate body</li> </ul>
	surfaces.
	<ul> <li>The integumentary system has several important functions in</li> </ul>
	helping the body maintain homeostasis.
	<ul> <li>The epidermis has multiple layers and each layer has its own</li> </ul>
Essential	characteristics.
Understandings	<ul> <li>Epidermal derivatives like sebaceous glands, sweat gland, hair,</li> </ul>
	and nails perform a specific function for the skin.
	<ul> <li>Different factors determine skin color.</li> </ul>
	<ul> <li>Burns can be differentiated into first-, second-, and third-degree.</li> </ul>
	<ul> <li>Skin cancers can be characterized as basal cell carcinoma,</li> </ul>
	squamous cell carcinoma, and malignant melanoma.
	<ul> <li>What is the function of each membrane and what is its location in</li> </ul>
	the body?
Essential	What are the functions of the integumentary system?
Questions	<ul> <li>What are the five layers of the epidermis and what are the</li> </ul>
	characteristics of each layer?
	What function do skin derivatives perform in the skin?
	<ul> <li>How is skin color determined and what role does melanin play in</li> </ul>
	the body?
	How are first-, second-, and third-degree burns classified?
	How are skin cancers classified?
	<ul> <li>Membranes line body cavities and surround and protect the body.</li> </ul>
	<ul> <li>Skin is the largest organ of the body.</li> </ul>
	<ul> <li>The skin protects the body and helps it maintain homeostasis in</li> </ul>
	multiple ways.
Essential	The skin is divided into the epidermis, dermis, and sub-cutaneous
Knowledge	layers.
	<ul> <li>Each layer of the skin has specific defining characteristics.</li> </ul>
	<ul> <li>Sweat glands and sebaceous glands perform multiple functions.</li> </ul>
	<ul> <li>Common afflictions of the skin include acne, boils, and fungal</li> </ul>
	infections.
	<ul> <li>Skin color is determined by melanin amounts.</li> </ul>
	<ul> <li>Burns make people susceptible to dehydration and infection.</li> </ul>
	The skin is susceptible to skin cancer.
	Cutaneous membrane
	Mucous membrane (mucosa)
	Serous membrane (serosa)
Vocabulary	Parietal layer
	Visceral layer
	Perioneum
	Pleura
	Pericardium

	Synovial membranes
	Bursae
	Skin or integument
	Keratin
	Epidermis
	Blister
	Subcutaneous tissue or hypodermis
	Strata (layers) of epidermis:
	<ul> <li>Stratum basale (stratum germinativum)</li> </ul>
	Stratum spinosum
	• Stratum granulosum
	Stratum lucidum
	Stratum corneum
	Keratinocytes (keratin cells)
	Dandruff
	Melanin
	Melanocytes
	Freckles/moles
	Horpos simploy (cold soros)
	Dormis
	Dennis Papillany layor
	Papillary layer Meissner's corpusatos
	Retigular lover
	Relicular layer
	Pacifian corpuscies
	Decubitus ulcers Melanin
	Carolene Ovugan rich homoglahin
	Cyanagia
	Cydriosis Dednese er en/theme
	Rediess of erymenia Beller or blooching
	Failor of bialicriting
	Bruisos or black and blue marks
	Skin opponderee
	Skill appendages
	Exocilite giarius Sebesesus (cil) glanda
	Sebaceous (oii) gianus
	Sebulii
	Sepontea
	Sweat giands or sudoriferous giands
	Abochne glangs

	Hair
	Hair follicles
	Matrix
	Medulla
	Cortex
	Cuticle
	Hair follicles
	Epidermal sheath
	Dermal sheath
	Papilla
	Arrector pili
	Nail
	Body
	Cuticle
	Nail matrix
	Lunula
	Athlete's foot
	Boils
	Carbuncles
	Cold sores (fever blisters)
	Contact dermatitis
	Impetigo
	Peoriasis
	Rum
	Bullo of pipos
	First degree burne
	Filst-degree builts
	Second-degree burns
	Skin eeneer
	Squamous cell carcinoma Melignent meleneme
	APCD Dula
	ADOD Nule     Bosognize the role membranes play throughout the hady
Econtial	<ul> <li>Recognize the role membranes play throughout the body.</li> <li>Decognize that the skin plays a multitude of important role.</li> </ul>
Essential	<ul> <li>Recognize that the skin plays a multitude of important role throughout the body.</li> </ul>
SKIIIS	Infoughout the body.
	<ul> <li>Be able to diagram the three layers of the skin.</li> <li>Summer and the determined skin solar.</li> </ul>
	<ul> <li>Summarize what determines SKIN Color.</li> <li>Distinguish between first second and third degree human</li> </ul>
	<ul> <li>Distinguish between first-, second-, and third-degree burns</li> <li>Distinguish between basel cell correspondence of the second sec</li></ul>
	<ul> <li>Distinguish between basal cell carcinoma, squamous cell</li> <li>aproineme, and molignent molecome.</li> </ul>
	carcinoma, and malignant melanoma.
Delated	Science
Kelated	A. Unitying Themes
Maine Learning	AT.Systems

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<b></b>	
Results	Students apply an understanding of systems to explain and
	analyze man-made and natural phenomena.
	a. Analyze a system using the principles of boundaries,
	subsystems, inputs, outputs, feedback, or the system's
	relation to other systems and design solutions to a system
	problem.
	b. Explain and provide examples that illustrate how it may not
	always be possible to predict the impact of changing some
	part of a man-made or natural system.
	A3.Constancy and Change
	Students identify and analyze examples of constancy and change
	that result from varying types and rates of change in physical,
	biological, and technological systems with and without
	counterbalances.
	B. The Skills and Traits of Scientific Inquiry and Technological Design
	B1.Skills and Traits of Scientific Inquiry
	Students methodically plan, conduct, analyze data from, and
	communicate results of in-depth scientific investigations,
	including experiments guided by a testable hypothesis.
	a. Identify questions, concepts, and testable hypotheses that
	guide scientific investigations.
	<ul> <li>b. Design and safely conduct methodical scientific</li> </ul>
	investigations, including experiments with controls.
	c. Use statistics to summarize, describe, analyze, and
	interpret results.
	d. Formulate and revise scientific investigations and models
	using logic and evidence.
	e. Use a variety of tools and technologies to improve
	investigations and communications.
	f. Recognize and analyze alternative explanations and
	models using scientific criteria.
	g. Communicate and defend scientific ideas.
	B2.Skills and Traits of Technological Design
	Students use a systematic process, tools and techniques, and
	a variety of materials to design and produce a solution or
	product that meets new needs or improves existing designs.
	a. Identify new problems or a current design in need of
	improvement.
	b. Generate alternative design solutions.
	c. Select the design that best meets established criteria.
	d. Use models and simulations as prototypes in the design
	planning process.
	e. Implement the proposed design solution.

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<ol> <li>Evaluate the solution to a design problem and the</li> </ol>
consequences of that solution.
<ul> <li>g. Present the problem, design process, and solution to a</li> </ul>
design problem including models, diagrams, and
demonstrations.
C. The Scientific and Technological Enterprise
C1.Understandings of Inquiry
Students describe key aspects of scientific investigations: that
they are guided by scientific principles and knowledge, that
they are performed to test ideas, and that they are
communicated and defended publicly.
a. Describe how hypotheses and past and present knowledge
guide and influence scientific investigations.
<ul> <li>Describe how scientists defend their evidence and</li> </ul>
explanations using logical argument and verifiable results.
C2.Understanings About Science and Technology
Students explain how the relationship between scientific
inquiry and technological design influences the advancement
of ideas, products, and systems.
<ul> <li>Provide an example that shows how science advances</li> </ul>
with the introduction of new technologies and how solving
technological problems often impacts new scientific
knowledge.
<ul> <li>b. Provide examples of how creativity, imagination, and a</li> </ul>
good knowledge base are required to advance scientific
ideas and technological design.
C3.Science, Technology, and Society
Students describe the role of science and technology in
creating and solving contemporary issues and challenges.
b. Explain how ethical, societal, political, economic, and
cultural factors influence personal health, safety, and the
quality of the environment.
c. Explain how ethical, societal, political, economic, religious,
and cultural factors influence the development and use of
science and technology.
C4.History and Nature of Science
Students describe the human dimensions and traditions of
science, the nature of scientific knowledge, and historical
episodes in science that impacted science and society.
<ul> <li>Describe the ethical traditions in science including peer</li> </ul>
review, truthful reporting, and making results public.
b. Select and describe one of the major episodes in the
history of science including how the scientific knowledge

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 ome of megamentary bystem
changed over time and any important effects on science and society.
c. Give examples that show how societal, cultural, and
scientists.
d. Provide examples of criteria that distinguish scientific
explanations from pseudoscientific ones.
D. The Physical Setting
D2.Earth
Students describe and analyze the biological, physical,
energy, and numan influences that shape and alter Earth Systems.
<ul> <li>c. Describe and analyze the effects of biological and</li> </ul>
geophysical influences on the origin and changing nature of Earth Systems.
d. Describe and analyze the effects of human influences on
Earth Systems.
D3.Matter and Energy
Students describe the structure, behavior, and interactions of
matter at the atomic level and the relationship between matter
and energy.
h. Describe radioactive decay and half-life.
E. The Living Environment
E1.Biodiversity
Students describe and analyze the evidence for relatedness
among and within diverse populations of organisms and the importance of biodiversity
a Explain how the variation in structure and behavior of a
population of organisms may influence the likelihood that
some members of the species will have adaptations that
allow them to survive in a changing environment.
b. Describe the role of DNA sequences in determining the
degree of kinship among organisms and the identification
of species.
c. Analyze the relatedness among organisms using structural
and molecular evidence.
d. Analyze the effects of changes in biodiversity and predict
possible consequences.
E2.Ecosystems
Students describe and analyze the interactions, cycles, and
factors that affect short-term and long-term ecosystem stability
and change.

	onit 5. integumentary System
	<ul> <li>a. Explain why ecosystems can be reasonably stable over hundreds or thousands of years, even though populations may fluctuate.</li> <li>b. Describe dynamic equilibrium in ecosystems and factors</li> </ul>
	that can, in the long run, lead to change in the normal pattern of cyclic fluctuations and apply that knowledge to actual situations.
	E3.Cells
	Students describe structure and function of cells at the intracellular and molecular level including differentiation to form systems, interactions between cells and their environment, and the impact of cellular processes and changes on individuals.
	<ul> <li>a. Describe the similarities and differences in the basic functions of cell membranes and of the specialized parts within cells that allow them to transport materials, capture and release energy, build proteins, dispose of waste, communicate, and move.</li> </ul>
	<ul> <li>b. Describe the relationship among DNA, protein molecules, and amino acids in carrying out the work of cells and how this</li> </ul>
	is similar among all organisms. c. Describe the interactions that lead to cell growth and division
	(mitosis) and allow new cells to carry the same information as the original cell (meiosis)
	d. Describe ways in which cells can malfunction and put an organism at risk.
	<ul> <li>Describe the role of regulation and the processes that maintain an internal environment amidst changes in the external environment.</li> </ul>
	<ul> <li>f. Describe the process of metabolism that allows a few key biomolecules to provide cells with necessary materials to perform their functions.</li> <li>g. Describe how colls differentiate to form specialized systems.</li> </ul>
	for carrying out life functions. =4 Heredity and Reproduction
	Students examine the role of DNA in transferring traits from generation to generation, in differentiating cells, and in evolving new species.
	<ul> <li>Explain how the instructions in DNA that lead to cell differentiation result in varied cell functions in the organism and DNA.</li> </ul>

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	d. Describe the possible causes and effects of gene
	mutations.
	E5.Evolution
	Students describe the interactions between and among
	species, populations, and environments that lead to natural
	selection and evolution.
	a. Describe the premise of biological evolution, citing
	evidence from the fossil record and evidence based on the
	observation of similarities within the diversity of existing
	organisms.
	<ul> <li>Describe the origins of life and how the concept of natural</li> </ul>
	selection provides a mechanism for evolution that can be
	advantageous or disadvantageous to the next generation.
	c. Explain why some organisms may have characteristics that
	have no apparent survival or reproduction advantage.
	d. Relate structural and behavioral adaptations of an
	organism to its survival in the environment.
Sample	Three Point Discriminatory Lab
Lessons	<ul> <li>Hair and Skin Microscope Lab</li> </ul>
and	<ul> <li>Iodine Test for Sweat on Skin</li> </ul>
Activities	<ul> <li>Label the structures of skin on a model or diagram</li> </ul>
	<ul> <li>View skin, hair/fur, and nails during a rat and fetal pig dissection</li> </ul>
	<ul> <li>Read articles related to disorders caused by homeostatic</li> </ul>
	imbalance in the integumentary system
Sample	<ul> <li>Quiz</li> </ul>
Classroom	Chapter Test
Assessment	Worksheets
Methods	Labs
	<u>Publications</u> :
	<ul> <li>Essentials of Human Anatomy and Physiology, 9<sup>th</sup> edition</li> </ul>
	by Elaine N. Marieb
Sample	<ul> <li>Anatomy and Physiology Coloring Workbook: A Complete</li> </ul>
Resources	Study Guide by Elaine N. Marieb
	<ul> <li>Essentials of Human Anatomy and Physiology Laboratory</li> </ul>
	Manual by Elaine N. Marieb
	■ <u>Videos</u> :
	<ul> <li>National Geographic: Inside the Living Body</li> </ul>
	<ul> <li>National Geographic: The Incredible Human Machine</li> </ul>
	Other Resources
	Lab Supplies