



Tomah Area School District
High Quality Student Learning
Every Child. Every Day.

Essential Learning

Grade/Course: HS Clinical Observations

Essential Knowledge:

Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.

Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.

Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.

Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.

Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.

Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring.

Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors.

Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.

Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells.

Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.

Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.

Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.

Construct an explanation based on evidence for how natural selection leads to adaptation of populations.

Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species

Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.

Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.

Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions but changing conditions may result in a new ecosystem.

Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity. *

Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.

Units

1. Nature of Science
2. Homeostasis
3. Cell Processes
4. Genetics
5. Evolution
6. Ecology



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Essential Learning

Grade/Course: HS Biology

Essential Knowledge:

Students use science and engineering practices, crosscutting concepts, and an understanding of *structures and processes (on a scale from molecules to organisms)* to make sense of phenomena and solve problems.

- Structure and Function
- Growth and Development of Organisms
- Organization for Matter and Energy Flow in Organisms
- Information Processing

Students use science and engineering practices, crosscutting concepts, and an understanding of *interactions, energy, and dynamics within ecosystems* to make sense of phenomena and solve problems.

- Interdependent Relationships in Ecosystems
- Cycles of Matter and Energy Transfer in Ecosystems
- Ecosystem Dynamics, Functioning, and Resilience
- Social Interactions and Group Behavior

Students use science and engineering practices, crosscutting concepts, and an understanding of *heredity* to make sense of phenomena and solve problems.

- Inheritance of Traits
- Variation of Traits

Students use science and engineering practices, crosscutting concepts, and an understanding of *biological evolution* to make sense of phenomena and solve problems.

- Evidence of Common Ancestry and Diversity
- Natural Selection
- Adaptation
- Biodiversity and Humans

Units:

1. Nature of Science
2. Homeostasis
3. Cell Processes
4. Genetics
5. Evolution
6. Ecology



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Essential Learning

Grade/Course: HS Chemistry

Essential Knowledge:

Students use science and engineering practices, crosscutting concepts, and an understanding of matter and its interactions to make sense of phenomena and solve problems.

- Structure and Function
- Chemical Reactions

Students use science and engineering practices, crosscutting concepts, and an understanding of forces, interactions, motion, and stability to make sense of phenomena and solve problems.

- Types of Interactions

Students use science and engineering practices, crosscutting concepts, and an understanding of energy to make sense of phenomena and solve problems.

- Conservation of Energy and Energy Transfer

Students use science and engineering practices, crosscutting concepts, and an understanding of waves and their applications in technologies for information transfer to make sense of phenomena and solve problems.

- Wave Properties

Students use science and engineering practices, disciplinary core ideas, and cause and effect relationships to make sense of phenomena and solve problems.

Students analyze and interpret data, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.

Students use mathematics and computational thinking, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.

Students construct explanations and design solutions, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.

Units:

- Introduction to Chemistry
- The Atom and Periodic Table
- Electrons and Light
- Covalent Bonding
- Ionic Bonding
- Chemical Equations
- The Mole and Stoichiometry
- Gas Laws



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Essential Learning

Grade/Course: HS Clinical Observations

Essential Knowledge:

Systems: Identify how key systems affect services performed and quality of care.

- Describe the responsibilities of consumers within the healthcare system (such as: self-advocacy, patient compliance, provider and consumer obligations).
- Assess the impact of emerging issues on healthcare delivery systems (such as: technology, epidemiology, bioethics, and socioeconomics).

Employability Skills: Utilize employability skills to enhance employment opportunities and job satisfaction.

- Research levels of education, credentialing requirements, and employment trends in health professions.
- Distinguish differences among careers within health science pathways (diagnostic services, therapeutic services, health informatics, support services, or biotechnology research and development).
- Develop components of a personal portfolio.
- Identify strategies for pursuing employment (social media, personal networking, job sites, and internships).

Legal Responsibilities: Describe legal responsibilities, limitations, and implications on healthcare worker actions.

- Apply standards for the safety, privacy and confidentiality of health information (HIPAA, privileged communication).

Units:

1. Career Introduction
2. Career Requirements
3. HIPPA/ Ethics
4. Professionalism/Interprofessionalism
5. Cultural Competence
6. Technology Use
7. Balancing Personal Life and Work
8. Open Topic (choose one that you are interested in)



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Essential Learning

Grade/Course: HS Conceptual Biology (PLA Program)

Essential Knowledge:

Students use science and engineering practices, crosscutting concepts, and an understanding of structures and processes (on a scale from molecules to organisms) to make sense of phenomena and solve problems.

- Structure and Function
- Growth and Development of Organisms
- Organization for Matter and Energy Flow in Organisms
- Information Processing

Students use science and engineering practices, crosscutting concepts, and an understanding of interactions, energy, and dynamics within ecosystems to make sense of phenomena and solve problems.

- Interdependent Relationships in Ecosystems
- Cycles of Matter and Energy Transfer in Ecosystems
- Ecosystem Dynamics, Functioning, and Resilience
- Social Interactions and Group Behavior

Students use science and engineering practices, crosscutting concepts, and an understanding of heredity to make sense of phenomena and solve problems.

- Inheritance of Traits
- Variation of Traits

Students use science and engineering practices, crosscutting concepts, and an understanding of biological evolution to make sense of phenomena and solve problems.

- Evidence of Common Ancestry and Diversity
- Natural Selection
- Adaptation
- Biodiversity and Humans

Units:

Workshop #1: Who Am I?

Artifacts:

1. An Inventory of My Traits
2. A Recipe for Traits
3. Coin Flip Genetics
4. Genetic Disorder Research Project
5. Design a Species

Workshop #2: Our Changing Planet

Artifacts:

1. Biodiversity Patterns of Speciation and Extinction
2. The Great Fossil Find
3. Scavenger Hunt: Simulating Natural Selection
4. Artificially Selecting Dogs
5. The Biology of Skin Color

Workshop #3: Medicinal Plants

Artifacts:

1. Medicinal Plant Research
2. Onion Cell Mitosis
3. Photosynthesis: How important is it to medicine?
4. Seed Germination Experiment
5. Root Beer Lab

Workshop #4: Wilderness Within Reach

Artifacts:

1. Owl Pellet Dissection
2. Oh Deer! Carrying Capacity Game
3. Ecology Observations on School Grounds
4. Isopod Behavior Lab
5. Human Impact Project





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Essential Learning

Grade/Course: HS Earth & Space

Essential Knowledge:

Students use science and engineering practices, crosscutting concepts, and an understanding of *Earth's place in the universe to make sense of phenomena and solve problems.*

- The Universe and Its Stars
- Earth and the Solar System
- The History of Planet Earth

Students use science and engineering practices, crosscutting concepts, and an understanding of Earth's systems to make sense of phenomena and solve problems.

- Earth Materials and Systems
- Plate Tectonics and Large-Scale System Interactions
- The Roles of Water in Earth's Surface Processes
- Weather and Climate
- Biogeology

Students use science and engineering practices, disciplinary core ideas, and *patterns* to make sense of phenomena and solve problems.

Students use science and engineering practices, disciplinary core ideas, and an understanding of *scale, proportion and quantity* to make sense of phenomena and solve problems.

Students use science and engineering practices, disciplinary core ideas, and an understanding of *systems and models* to make sense of phenomena and solve problems.

Students *ask questions and define problems*, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.

- Defining Problems

Students *develop and use models*, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.

- Developing Models

Students *plan and carry out investigations*, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.

- Planning and Conducting Investigations

Students *analyze and interpret data*, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.

- Analyze and Interpret Data

Students use *mathematics and computational thinking*, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.

- Qualitative and Quantitative Data

(Every unit)

Students use science and engineering practices, disciplinary core ideas, and cause and effect relationships to make sense of phenomena and solve problems.

Students analyze and interpret data, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.

Students construct explanations and design solutions, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.

Students *engage in argument from evidence*, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.

Units:

1. Space Semester:

- The Beginnings
- How our Solar System Works
- Parts of our Solar System
- Our Sun
- Stars
- Galaxies

2. Earth Semester:

- Welcome to Earth
- Minerals & Rocks
- Water
- Weather & Climate
- Glaciers





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Essential Learning

Grade/Course: HS Environmental Chemistry

Essential Knowledge:

Students use science and engineering practices, crosscutting concepts, and an understanding of content to make sense of phenomena and solve problems.

- Organization for Matter and Energy Flow in Organisms

Students use science and engineering practices, crosscutting concepts, and an understanding of the *interactions, energy, and dynamics within ecosystems* to make sense of phenomena and solve problems.

- Interdependent Relationships in Ecosystems
- Cycles of Matter and Energy Transfer in Ecosystems
- Ecosystem Dynamics, Functioning, and Resilience
- Social Interactions and Group Behavior

Students use science and engineering practices, crosscutting concepts, and an understanding of *matter and its interactions* to make sense of phenomena and solve problems.

- Structures and Properties of Matter
- Chemical Reactions
- Nuclear Processes

Students use science and engineering practices, crosscutting concepts, and an understanding of *forces, interactions, motion and stability* to make sense of phenomena and solve problems.

- Types of Interactions

Students use science and engineering practices, crosscutting concepts, and an understanding of *energy* to make sense of phenomena and solve problems.

- Conservation of Energy and Energy Transfer
- Energy in Chemical Processes and Everyday Life

Students use science and engineering practices, crosscutting concepts, and an understanding of *Earth's place in the universe* to make sense of phenomena and solve problems.

- The Universe and Its Stars

Students use science and engineering practices, crosscutting concepts, and an understanding of *engineering design* to make sense of phenomena and solve problems.

- Defining and Delimiting Engineering Problems
- Developing Possible Solutions
- Optimizing the Design Solution

Units:

1. Matter
2. Atomic Structure
3. Periodic Table and Elements
4. Role of Carbon
5. Nuclear Energy

6. Alternative Energies
7. Water for Life
8. Polymers
9. Macromolecules
10. Recycling
11. Genetically Modified Organisms





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Essential Learning

Grade/Course: Grade 10 Health Occupations

Essential Knowledge:

Students will analyze the influence of family, peers, culture, media, technology, and other factors on health behaviors.

- Analyze how internal influences, including perception of social norms among peers, can influence individuals' health behaviors and that of certain populations
- Predict how various external and internal influences will interact and impact the health behavior of populations.

Students will demonstrate the ability to access valid information and products and services to enhance health.

- Determine the availability of information, products, and services that enhance health.
- Access health information, products, and services that improve health outcomes.
- Evaluate the validity of sources of health information using key criteria.

Students will demonstrate the ability to use interpersonal communication skills to enhance health and avoid or reduce health risks.

- Reflect on the impact of communication on enhancing health.
- Demonstrate strategies to prevent interpersonal conflicts.
- Demonstrate ways, such as restorative justice practices, to manage or resolve interpersonal conflicts without harming self or others

Students will demonstrate the ability to advocate for personal, family, and community health.

- Adapt health-enhancing messages and persuasive communication techniques to a specific target audience
- Develop a plan to advocate for a personal, family, or community health issue.

Essential Questions:

1. What were significant trends in the history of health care?
2. What were major advancements in each time period in health care?
3. Who were some people that achieved discoveries that lead to health care improving?
4. What are the different types of health care facilities?
5. What services are offered by profit and nonprofit agencies?
6. What are the principles and key terms in insurance plans?
7. What are the different educational requirements for degrees?
8. What are different categories of careers in the health care?
9. What are different resources and opportunities for different health care careers?
10. What are standards of professional appearance including uniforms and self-care?
11. What are the different communication processes in health care with patients?
12. What is teamwork?
13. What are the styles of leadership?
14. How can time management and goal setting effect stress?
15. What are torts?
16. What are contract laws and how they affect Health Care?

17. What are basic rules for ethics?
18. What are patient rights?

Units:

1. History and Trends of Health Care
2. Health Care Facilities
3. Health Careers
4. Professional and Personal Characteristics
5. Legal and Ethical Responsibilities





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Essential Learning

Grade/Course: HS Physics

Essential Knowledge:

Students use science and engineering practices, crosscutting concepts, and an understanding of *forces, interactions, motion, and stability* to make sense of phenomena and solve problems.

- Forces and Motion
- Types of Interactions

Students use science and engineering practices, crosscutting concepts, and an understanding of *energy* to make sense of phenomena and solve problems.

- Definitions of Energy
- Conservation of Energy and Energy Transfer
- Relationships between Energy and Forces

Students use science and engineering practices, crosscutting concepts, and an understanding of *waves and their applications in technologies for information transfer* to make sense of phenomena and solve problems.

- Wave Properties
- Electromagnetic Radiation

Students use science and engineering practices, crosscutting concepts, and an understanding of *engineering design* to make sense of phenomena and solve problems.

- Developing Possible Solutions
- Optimizing the Design Solution

Students use *mathematics and computational thinking*, in conjunction with using crosscutting concepts and disciplinary core ideas, to make sense of phenomena and solve problems.

Units:

1. Motion
2. Forces
3. Torque, Stability, and Center of Gravity
4. Energy and Momentum
5. Temperature and Pressure
6. Waves, Sound, and Light



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Essential Learning

Grade/Course: HS Professional Patient Care

Essential Knowledge:

Academic Foundations in Health Science: Students will apply the academic subject matter required for proficiency within their area

- Identify diseases and disorders which affect the human body and related biomedical therapies.
- Use knowledge of life stages to interact effectively with patients, clients, and residents

Employability Skills for Healthcare Workers: Students will demonstrate how their employability skills enhance their employment opportunities and job satisfaction

- Demonstrate skills related to seeking and applying for employment to find and obtain a healthcare job.

Ethical Practices for Healthcare Environments: Students will apply accepted ethical practices with respect to cultural, social, and ethnic differences within the healthcare environment and perform quality healthcare delivery

- Demonstrate respect and appreciation for diversity of individuals within the healthcare setting

Safety within Healthcare Settings: Students will analyze the existing and potential hazards to clients, co-workers, and self, working to prevent injury or illness through safe work practices and follow health and safety policies and procedures.

- Explain principles and practices of infection control in healthcare.
- Examine emergency procedures and protocols within the healthcare setting

Health Maintenance Practices: Students will analyze the fundamentals of wellness and the prevention of disease processes, practicing preventative health behaviors among clients

- Apply health science concepts to identify behaviors that promote health and wellness
- Describe and apply strategies for the prevention of diseases including health screenings and examinations

Health Information Technology for Healthcare Applications: Students will use information technology applications required within all career specialties. They will demonstrate use as appropriate to healthcare applications

- Apply basic computer literacy skills to health science occupations

Units:

1. Human Growth and Development
2. Cultural Diversity
3. Geriatric Care
4. Diet and Nutrition
5. Computers and Technology
6. Safety
7. Infection Control
8. Preparing for the World of Work