Sciences Learning Outcomes
Biological and Physical Sciences

Goal #1: Students will be able to reason scientifically.

Outcome #1: Understand the nature of scientific truth

Component #1. Explain the role of data collection and analysis in the development of scientific knowledge

Component #2: Explain the self-correcting nature of science

Outcome #2: Recognize relationships among variables tested in a scientific experiment

Component #1: Collect meaningful data from an experiment

Component #2: Apply mathematical techniques to analyze collected data using current technology

Component #3: Apply statistical methods to evaluate experimental data

Component #4: Draw relevant conclusions from experimental results

Goal #2: Students will communicate scientific ideas clearly and effectively.

Outcome #1: Communicate in the scientific tradition

Component #1: Utilize scientific terminology correctly

Component #2: Express the results of scientific work clearly and concisely

Component #3: Explain the solutions to problems using correct mathematical vocabulary and mathematical notation

Goal #3: Students will understand the basic principles of the biological sciences OR the physical sciences OR the mathematical sciences OR informatics.

Outcome for Biology: Students will be able to describe the unifying principles of biology

Component #1: Explain similar/identical features of living systems
Component #2: Explain biodiversity

Component #3: Describe the cellular and molecular basis of genetics

Outcome for the Physical Sciences: Students will understand phenomena that govern the physical universe

Component #1: Explain the relationship between the structure of substances and their physical properties and reactivity at the molecular and atomic levels

Component #2: Explain the interaction of the forces of nature, such as electromagnetism, gravity, and nuclear forces

Component #3: Explain the unifying principle of plate tectonics and how it relates to the origin of Earth’s physical phenomena, including rocks, volcanoes, and earthquakes

Outcome for the Mathematical Sciences: Students will be able to formulate and solve problems mathematically

Component #1: Perform algorithmic and logical procedures

Component #2: Interpret the results of their computations

Component #3: Use appropriate technology

Component #4: Formulate a hypothesis and determine its validity

Outcome for Informatics: Students will be able to describe the roles of technology to address computational needs in the modern world

Component #1: Utilize computing terminology correctly

Component #2: Explain benefits/risks of technology reliance in society

Component #3: Use fundamental programming elements