

# SLO Presentation

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ESCI

Date: 09-15-2022

## ISLO

### Civic Engagement

- Students will develop values and beliefs in their role as a member of local, national and global societies to promote truth, fairness and goodwill to others. They will use the democratic process to further their values and beliefs and recognize and accept differing perspectives based on cultural diversity. They will engage in actions which provide service to others and have a positive impact on their local community.

### Communication and Expression

- Students will demonstrate the ability to effectively and appropriately communicate their thoughts and ideas both in written and oral forms. They will develop verbal and non-verbal delivery skills, in an appropriate manner, to communicate their ideas as well as evaluate the ideas of others in a wide variety of contexts.

### Critical Thinking and Quantitative Reasoning

- Students will demonstrate the ability to recognize assumptions within an argument and actively and skillfully analyze underlying reasoning to develop a conclusion. They will apply qualitative and/or quantitative analysis to solve problems, predict outcomes, test hypotheses, and explore alternatives in an ethical manner.

### Information Literacy

- Students will demonstrate the ability to determine when gathering additional information is necessary. They will use appropriate resources and technologies to locate, evaluate and incorporate the information when developing supporting arguments and drawing conclusions. Students will also develop the ability to understand any legal, ethical or social issues regarding the use of information.

### Personal Knowledge and Responsibility

- Students will develop the necessary skills to define, maintain and complete their personal educational goals. They will learn to work independently to accomplish personal goals toward realizing their full potential academically, physically and emotionally whether for personal enrichment, further education or career advancement.

Science, Engineering, and Math
ESCI
<b>Natural Sciences-General</b> <ul style="list-style-type: none"><li>• Students will.....</li></ul>
<b>CSLO</b>
<b>ESCI104 - Oceanography</b> <ul style="list-style-type: none"><li>• Critique mankind's changing relationship with the ocean system.</li><li>• Synthesize the role of gravity, pressure, chemistry and density in the Earth-moon system, Earth's atmosphere, Earth's ocean, and Earth's interior.</li><li>• Recall the dynamic processes involved in tectonic plate motions, including the geographic landforms associated with continental margins, ocean basins and mid-ocean ridges.</li><li>• Combine an understanding of oceanic properties and processes with the biotic relationships found in the ocean's ecosystems.</li><li>• Differentiate between the types of tides, sediment types and distribution, erosional and depositional landforms, types of estuaries, wave dynamics, coastal currents, rocky and sandy beaches, and vertical ocean zones.</li><li>• Explain the patterns of seasons and insolation, sea surface temperatures, prevailing global winds, ocean salinity, ocean surface currents, deep ocean currents, el Nino and La Nina, and climate change.</li></ul>
<b>ESCI104L - Oceanography Laboratory</b> <ul style="list-style-type: none"><li>• Students apply knowledge of the scientific method and an ability to apply it in critical evaluation of oceanographic observations, data and trends in ocean science.</li><li>• Students synthesize the role of gravity, pressure, chemistry and density in the Earth-moon system, Earth's atmosphere, Earth's ocean, and Earth's interior.</li><li>• Students interpret bathymetry and navigation information from a NOAA marine chart.</li><li>• Students describe the seasonal patterns of insolation, phytoplankton productivity, salinity, sea surface temperatures, and ocean circulation.</li><li>• Students combine an understanding of oceanic properties and processes with the biotic relationships found in the ocean's ecosystems.</li></ul>

- Students differentiate between the types of tides, sediment types and distribution, erosional and depositional landforms, types of estuaries, wave dynamics, coastal currents, rocky and sandy beaches, and vertical ocean zones.

### ESCI106 - Weather and Climate

- Describe the basic techniques used by meteorologists (and other scientists) to gather and interpret atmospheric data.
- Recall the typical vertical variation of the basic variables used to quantify the atmospheric state, including temperature, pressure, humidity, winds, and natural and anthropogenic particles.
- Identify basic cloud types and discuss their formation mechanisms, together with the precipitation types and other materials that precipitation cleanses from the air.
- Describe a variety of large-scale atmospheric phenomena, including the extratropical cyclone, the jet stream, and the general circulation.
- Describe a variety of mesoscale and small-scale atmospheric phenomena, including tropical storms, severe thunderstorms, and tornadoes.
- Discuss climate and climate change, together with the possible influences that humans have on diverse climate phenomena.

### ESCI106L - Weather and Climate Laboratory

- Interpret atmospheric data on weather maps, Stüve diagrams, and meteograms.
- Decode symbols and describe atmospheric variables including; temperature, pressure, humidity, winds, and natural and anthropogenic particles.
- Identify basic cloud types and locate and track areas of precipitation using weather radar.
- Model a variety of large-scale atmospheric phenomena, including the extratropical cyclone, the jet stream, and the general circulation.
- Demonstrate understanding of El Nino, thunderstorms, tornadoes, and hurricanes as they appear on maps, graphs, and images.
- Portray statistical climate values on a climograph and interpret local and global climate data.

### ESCI110 - Introduction to Earth Science

- Demonstrate an understanding of the role of gravity and density in the formation of galaxies and solar systems.
- Differentiate between the constructive and destructive forces that shape Earth's topography and discuss the internal and external processes that drive these forces these forces.
- Demonstrate an understanding of how streams, groundwater, glaciers, and ocean currents act to weather, erode, and deposit earth materials
- Synthesize the atmospheric processes that heat and cool the atmosphere, drive wind, generate clouds and precipitation, and cause storms.
- In laboratory, apply the scientific method.
- In laboratory, use physical properties to identify minerals and rocks.
- Describe the relative movement of Earth's tectonic plates at each type of plate boundary and the type of crust involved, identify landforms associated with each type of boundary, and locate on a world map where each boundary should be found.
- In laboratory, describe the Earth-Sun relationship and its influence on Earth's seasons.

### ESCI180 - Earth Science Materials and Preparations

- Students apply knowledge from ESCI 110, GEOL 101, GEOG 101, or GEOG 101L in the preparation of a laboratory course.
- Students knowledge of the scientific method and an ability to apply it in critical evaluation of oceanographic observations, data and trends in ocean science.
- Students work with a mentor professor to learn stockroom organization, assisting, or leadership skills.
- Students synthesize the role of gravity, pressure, chemistry and density in the Earth-moon system, Earth's atmosphere, Earth's ocean, and Earth's interior.

### ESCI298 - Directed Studies

- Students apply scientific method to research project.
- Students demonstrate ability to compose a "college-level" scientific research report.
- Students demonstrate ability to conduct independent research.