Course Information Form (CIF)

Course Code: ESC 101 (IAI P1 905L)

Course Title: Introduction to Weather

Department: Natural Sciences
PCS Code: 1.1 - Baccalaureate/Transfer
CIP Code: 40.0401
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 3-2-4
Credit Hour Distribution:

Lecture: 3	Lab: 2	Clinical: 0	**Total: 4**

General Course Information

Catalog Description

Basic meteorology with emphasis on applying meteorological principles to everyday weather. Topics include warming the earth and atmosphere, earth-sun relationships, air temperature and pressure, winds, humidity, atmospheric circulation, cloud development, precipitation, air masses and fronts, thunderstorms, tornadoes, and hurricanes.

General Course Objectives

- To examine atmospheric processes and related weather phenomena.
- To develop skills needed to read and identify weather conditions reported on surface weather maps.
- To recognize the significance of interactions between the seven common weather elements in precipitating weather changes.
- To demonstrate knowledge of the basic physics of the atmosphere.

Minimum Placement Levels

English	Reading	Math
Placement out of ENG 099	Placement out of CCS 098	None

Prerequisites

None

Methods of Evaluation

3-4 objective exams, 1 cumulative final exam, 15 written and practical lab exercises, 5-7 discussion forums, and 5-10 homework assignments.

Instructional Materials and Additional Supplies

Essentials Of Meteorology, C. Donald Aherns, Brooks/Cole; Cengage Learning.
ESC 101 Lab Packet, Julie Angel.

Course Content

General Learning Outcomes (GLOs)

- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Weather and Climate	1. Read and interpret the current weather conditions depicted on surface weather charts. 2. Discuss instruments used to measure atmospheric elements.	3	4	0
The Earth's Atmosphere	1. Relate the upper air chart to the surface features. 2. Differentiate the characteristics and vertical structure of the four layers of earth's atmosphere.	3	2	0
Warming the Earth and the Atmosphere	1. Recognize the significance of energy and heat transfer between objects with different temperatures, the heat energy associated with changes of phase of water, and how these processes relate to familiar weather phenomena. 2. Explore earth-sun relationships and the reason for seasons.	4	4	0
Air Temperature	1. Describe the main causes of seasonal temperature variations on the earth. 2. Discuss the daily heating and cooling cycle in a thin layer of air near the surface of the earth. 3. Convert temperatures among the three common scales. 4. Investigate the vertical changes in temperature in earth's atmosphere.	6	2	0
Humidity, Relative Humidity, Saturation, and Condensation	1. Explain and calculate humidity, relative humidity, and saturation. Discuss how they relate to each of the products of condensation (dew, frost, haze, fog, and clouds).	6	4	0
Atmospheric Stability, Cloud Development, Precipitation Processes, and Types	1. Recognize clouds and precipitation types as visual indicators of the physical processes taking place in the atmosphere. 2. Recognize how precipitation types serve as indicators of vertical temperature variations in the atmosphere.	6	4	0
Atmospheric Pressure and Winds	1. Describe how and why atmospheric pressure varies at earth's surface and throughout earth's atmosphere. 2. Show how the wind should blow in a particular region by examining surface and upper-air charts.	4	2	0
Atmospheric Circulations	1. Identify the four scales of atmospheric motion and apply the forces that influence atmospheric motions at the surface and aloft.	2	0	0
Air Masses, Fronts, and Middle-Latitude Cyclones	1. Identify air mass types by temperature and moisture characteristics and recognize the source regions and movement of air masses affecting the United States. 2. Associate different kinds of fronts with pre-frontal and post-frontal weather conditions. 3. Identify a middle-latitude cyclone on a surface weather map.	4	2	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Hurricanes	1. Identify where and when tropical cyclones form and give examples of the extremely dangerous weather conditions they produce. 2. Discuss economic and human impacts related to destruction of property and loss of life.	3	2	0
Thunderstorms and Tornadoes	1. Give examples of different types of thunderstorms and conditions necessary to produce tornadoes. 2. Discuss safety precautions for severe weather events.	4	4	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
45	30	0