Miami Dade College

Course Description

ESC1000 | General Education Earth Science | 3.00 credits

Using the scientific method, critical thinking skills and data analysis, this course will examine the fundamental processes of the earth system, composed of an atmosphere, hydrosphere, lithosphere, biosphere, and exosphere, through time. The course will also explore interactions between these spheres, including critical analysis of scientific theories and emphasize earth's connections with humans. Student learning outcomes: students will use critical thinking to recognize the rigorous standards of scientific theories; students will analyze and synthesize earth science data to draw scientifically valid conclusions; students will recognize the different time scales associated with different earth processes; students will effectively describe interactions between humans and the earth's spheres; and students will apply their understanding of earth science principles to complex global and local issues.

Course Competencies:

Competency 1: The student will demonstrate understanding of the scientific method and critical thinking skills by:

1. Formulating testable hypotheses about Earth system processes
2. Designing controlled experiments to investigate Earth system interactions
3. Analyzing and interpreting data from various Earth science disciplines
4. Evaluating the validity and reliability of scientific claims
5. Synthesizing information from multiple sources to draw evidence-based conclusions

Competency 2: The student will explore the fundamental processes of the Earth system by:

1. Examining the composition and dynamics of the atmosphere
2. Investigating the hydrologic cycle and its impact on Earth's systems
3. Analyzing the structure and processes of the lithosphere
4. Studying the interactions within the biosphere and its role in Earth's systems
5. Researching the characteristics and significance of the exosphere

Competency 3: The student will analyze interactions between Earth's spheres by:

1. Identifying feedback loops within and between Earth's systems
2. Modeling the carbon cycle across multiple spheres
3. Investigating the impact of plate tectonics on atmospheric and oceanic processes
4. Assessing the role of the biosphere in regulating Earth's climate
5. Examining the effects of solar radiation on Earth's systems

Competency 4: The student will critically analyze scientific theories related to Earth science by:

1. Comparing and contrasting competing theories of Earth's formation
2. Evaluating evidence supporting climate change theories

3. Assessing the strengths and limitations of plate tectonic theory
4. Analyzing the development and acceptance of the theory of evolution
5. Investigating current debates in Earth science and their implications

Competency 5: The student will explore Earth's connections with humans by:

1. Examining the impact of human activities on Earth's systems
2. Analyzing the consequences of natural disasters on human societies
3. Investigating the role of Earth's resources in human development
4. Assessing the effectiveness of various environmental conservation strategies
5. Evaluating potential solutions to global environmental challenges

General Education Learning Outcomes:

1. Use quantitative analytical skills to evaluate and process numerical data
2. Solve problems using critical and creative thinking and scientific reasoning
3. Describe how natural systems function and recognize the impact of humans on the environment