Course Syllabus

Course Information

Course Title: Physical Geology

Subject and Number: GLY 1010

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

Class Number: LOREM IPSUM

Term and Year: LOREM IPSUM

Course Modality: MDC Modalities

Instructor Information

Name: LOREM IPSUM

Department and Campus: LOREM IPSUM

Office location: LOREM IPSUM

Office hours: *(communicate course office hours with students)*

Phone number: 123-456-7890

Email: LOREM IPSUM

Communication Policy: *(Faculty will establish protocols for communication with students)*

Required Textbook, Course Materials, and Technology

Required course materials: *(Textbook(s), library reserves, shark pack, and/or other required readings. Include ISBN Number and author(s))*

List optional/supplemental materials/OER: LOREM IPSUM

Technology & Technical Skill Requirements: *(Technology tools or equipment students need to complete this course are included)*

Grading Policy & Assessment Methods

List all activities, papers, quizzes, tests, etc. including grading scale used for final grade calculation. Relationships between the final grade and the learner's accumulated points or percentages/weights breakdown for each assessment or component of the course grade.

Include policy on late submissions.

For MDC Live and MDC Online courses, include policy regarding exams (e.g., ProctorU, Respondus Lockdown and Monitor, etc.)

If applicable, include guidelines for extra credit.

Incomplete Grades: View the college's procedures for Incomplete Grades

Miami Dade College Policies

Attendance Policy: *(Faculty include precise statements about illnesses/emergencies/ tardiness, missed assignments/make-up.)*

Students Rights and Responsibilities: *Policies addressing academic integrity and plagiarism, code of conduct, grade appeals, religious observations, services for students with special needs, student complaints, and other.*

For more information, visit the Student's Rights and Responsibilities page

Available Support Services & Resources

- Tutoring Labs and Technology – Learning Resources
- Virtual Tutoring through Learning Resources or Smarthinking Online Tutoring
- ACCESS: A Comprehensive Center for Exceptional Student Services
- Advisement
- Password and Login Technical Support
- Technical Support for MDC Live and MDC Online Courses
- SMART Plan

(Faculty select from the above if applicable and include additional course/campus specific resources)

Available Support Services & Resources

- Public Safety - Services
- Hurricane and Other Natural Disasters: In the event of a hurricane or other disaster, the class follows the schedule established by the College for campus-based courses. Please visit the MDC website or call the MDC Hotline (305-237-7500) for situation updates.

Course Description

GLY 1010 | Physical Geology| 3 credits

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

Course Competencies

Competency 1:

The student will demonstrate knowledge of basic chemistry and Earth materials by:

- *Defining atom, element, isotope, ion, compound, mineral, and rock.
- Explaining basic atomic structure and chemical bonding.
- Defining and identifying the physical properties of minerals.
- Distinguishing between silicate and nonsilicate minerals.
- Defining and distinguishing between igneous, sedimentary, and metamorphic rocks.
- Understanding and explaining the rock

Learning Outcomes

- Critical thinking
- Cultural / Global Perspective
- Ethical Issues

Competency 2:

The student will demonstrate knowledge of the Continental Drift Theory, Plate Tectonics, related internalgeological processes, and associated landforms by:

- *Discussing the dynamic interaction between Earth's lithosphere and asthenosphere.
- Comparing and contrasting three types of plate boundaries and the motion occurring at each type.
- Analyzing the geological processes occurring at each type of plate boundary.
- Explain the surface landforms resulting from geological processes at each type of boundary

Learning Outcomes

- Communication
- Critical thinking
- Social Responsibility
- Computer / Technology Usage
- Environmental Competency 3:

Competency 3:

The student will demonstrate knowledge of seismic activity and the geological hazards it poses to human populations by:

- Defining related vocabulary including earthquake, fault, seismic energy, focus, epicenter, magnitude, intensity, and seismology.
- Comparing the types of seismic energy waves and ground motion associated with each aspect.
- Locating and describing major earthquake belts of the Earth and U.S. areas of widely recognized risk.
- Evaluating earthquake related hazards and methods for their reduction: ground shaking, fire, tsunamis, and structural damage.
- Discussing earthquake prediction and forecasting.
- Analyzing and discussing proposed methods of reduced structural damage before, during and after an earthquake.
- Discussing earthquake awareness and concerns related to predictions and urban planning

Learning Outcomes

- Critical thinking
- Information Literacy
- Cultural / Global Perspective
- Ethical Issues

Competency 4:

The student will demonstrate knowledge of volcanic activity and the hazards it poses to human populations and the environment by:

- Defining related vocabulary including volcano, magma, lava, geyser, hot spring, fumarole, laccolith, batholith, and pluton
- Comparing the types of locations of volcanic activity, including mid-ocean ridges, fissures, vent eruptions, and hot spots.
- Classifying volcanoes by structure and activity such as explosiveness and magma/lave viscosity
- Describing and analyzing the primary and secondary effects of volcanic hazards.
- Discussing issues in predicting volcanic eruptions.
- Analyzing past, present, and future volcanic eruptions and hazards in order to establish patterns, and urban population procedures

Learning Outcomes

- Critical thinking
- Information Literacy
- Cultural / Global Perspective

Competency 5:

The student will demonstrate knowledge of Earth's surface processes and hazards they pose by:

- Defining terminology used for surface processes such as stream, stream channel, drainage basin, tributary, distributivity, floodplain, stream discharge, stream velocity, stream gradient, base level, and sediment transport.
- Defining the Hydrological Cycle.

- Comparing the three types of sediment transport and sorting by streams: bedload, suspended load, and dissolved load.
- Describing floodplain evolution and distinguishing the differences between a rising flood, and a flash flood.
- Discussing the consequences of development in floodplains and the effects of flood hazards on human populations.
- Analyzing natural and hard stabilization efforts in reducing flood hazards.
- Recognizing coastal hazards.
- Distinguish between emergent and subsegment shorelines
- Describing coastal erosion and coastal sediment transport and deposition.
- Analyzing coastal dynamics and hazards relative to sea level fluctuations, storms, and coastal erosion.
- Defining the types of mass movements:
- fall, slide, slump, flows, and avalanches
- Listing and describing the factors affecting slope stability: gravity, water, vegetation, and earthquakes.
- Listing and describing the types of glaciers.
- Describing glacial formation and movement.
- Describing glacial erosion and deposition and classifying associated features.
- Discuss past climates and environments related to ice ages and possible causes.
- Evaluating natural deserts and the relationship with atmospheric currents (wind).
- Distinguish between different deserts relative to quantity of sand, vegetation, and wind direction.

Learning Outcomes

- Communication
- Critical thinking
- Information Literacy
- Cultural / Global Perspective
- Environmental Responsibility

Competency 6:

The student will analyze and identify Earth's natural resources by:

- Distinguishing between surface water and groundwater resources.
- Comparing confined and unconfined aquifers.
- Evaluating consequences of groundwater withdrawal.
- Identifying landform features associated with subsurface water.
- Discussing weathering and soil formations.
- 6. Defining a soil profile and the soil horizons.
- Defining ore deposits and classifying types of mineral deposits.
- Describing the formation of oil and natural gas deposits.
- Describe and discuss Hydraulic Fracturing and Acid Fracturing.

Learning Outcomes

- Critical thinking
- Information Literacy
- Social Responsibility
- Environmental Responsibility

Competency 7:

- The student will demonstrate knowledge of geological history by:
- Determine a time sequence of geological events and distinguish between numerical and relative dating.
- Define the term fossil and describe the various types and the conditions that favor the preservation of organisms.
- Explain the ways fossils and rocks are used in the correlation of rock layers.
- Discuss how unstable isotopes are used to determine numerical dates.
- Explain how numerical dates are determined for sedimentary rocks.
- Distinguish between the units of the geological time scale.

Learning Outcomes

- Critical thinking
- Information Literacy
- Social Responsibility
- Environmental Responsibility