

**University of Puerto Rico
Mayagüez Campus**

1. General Information:

Course Number: GEOL 3105

Course Title: Images of Planet Earth

Credit - Hours: 3 crs.

2. Course Description:

This is an introduction to the new, rapidly evolving, and interdisciplinary field of Earth System Science. The course emphasizes the ideas of Earth as a planet within the solar system; the interactions among the geosphere, hydrosphere, cryosphere, atmosphere, biosphere; and the global change. Studying Earth as a system is accomplished most readily by the analysis of remote sensing data. Images acquired by airborne and space-based sensors are used throughout the course.

3. Pre/Co-requisites:

None

4. Textbook, Supplies and Other Resources:

The Blue Planet, An Introduction to Earth System Science

Skinner, Brian J., Stephen C. Porter and Daniel B. Botkin

Edition 1999

Publisher: John Wiley and Sons, New York

5. Purpose:

Free elective.

6. Course Goals:

Increasing awareness of a dynamic Earth has created the new interdisciplinary field of Earth System, which focuses on the interactions among physical, chemical, and biological processes in order to address global change and environmental issues. These issues are critical for the 21st century and every college graduate should be aware of both the problems and the techniques of evaluating and understanding them. The primary techniques used to study these interactions on a global scale involve satellite and airborne remote sensing. To fully comprehend the implications of natural and anthropomorphic effects, students must understand the interactions and familiarize themselves with modern techniques. This basic level course, open to all students. Will increase the choice of science requirements for non-majors to include global change and remote sensing.

7. Requirements:

- Students are required to attend classes.
- No makeup examinations will be given except under extraordinary circumstances.
- The quizzes are unscheduled and may be given at any time.
- Some questions in the exams will be taken from material discussed only in class and not covered in the textbook or reading material.
- Students must turn off all electronic devices during the class.

8. Laboratory/Field Work (If applicable):

9. Department/Campus Policies:

9a. Class attendance: Class attendance is compulsory. The University of Puerto Rico, Mayagüez Campus, reserves the right to deal at any time with individual cases of non-attendance. Professors are expected to record the absences of their students. Frequent absences affect the final grade, and may even result in total loss of credits. Arranging to make up work missed because of legitimate class absence is the

responsibility of the student. (Bulletin of Information Undergraduate Studies, pp 39 1995-96)

9b. Absence from examinations: Students are required to attend all examinations. If a student is absent from an examination for a justifiable reason acceptable to the professor, he or she will be given a special examination. Otherwise, he or she will receive a grade of zero or "F" in the examination missed. (Bulletin of Information Undergraduate Studies, pp 39, 1995-96)

9c. Final examinations: Final written examinations must be given in all courses unless, in the judgment of the Dean, the nature of the subject makes it impracticable. Final examinations scheduled by arrangements must be given during the examination period prescribed in the Academic Calendar, including Saturdays. (see Bulletin of Information Undergraduate Studies, pp 39, 1995-96).

9d. Partial withdrawals: A student may withdraw from individual courses at any time during the term, but before the deadline established in the University Academic Calendar. (see Bulletin of Information Undergraduate Studies, pp 37, 1995-96).

9e. Complete withdrawals: A student may completely withdraw from the University of Puerto Rico, Mayagüez Campus, at any time up to the last day of classes. (see Bulletin of Information Undergraduate Studies, pp 37, 1995-96).

9f. Disabilities: All the reasonable accommodations according to the Americans with Disability Act (ADA) Law will be coordinated with the Dean of Students and in accordance with the particular needs of the student.

9g. Ethics: Any academic fraud is subject to the disciplinary sanctions described in article 14 and 16 of the revised General Student Bylaws of the University of Puerto Rico contained in Certification 018-1997-98 of the Board of Trustees. The professor will follow the norms established in articles 1-5 of the Bylaws.

10. Campus Resources (If applicable):

General Library and University Computer Center is available to obtain professor's reference materials. The University's Counseling Office has a tutorial program for students who need extra help.

11. General Topics:

- Introduction to Earth Systems Science
- Observing the Earth as a system
- Satellite and airborne remote sensing platforms
- The lithosphere and asthenosphere
- The hydrosphere and cryosphere
- The atmosphere
- The biosphere
- Global change through the geologic past
- Anthropomorphic effects.

**University of Puerto Rico
Mayagüez Campus**

B. Instructor Information Sheet:

1. General Information:

Instructor: Dr. Fernando Gilbes Santaella
Title: Professor
Office: F-417
Phone: 787-832-4040 Ext. 3000
Office Hours: MWF 10:30-12:30
E-mail / URL: gilbes@cacique.uprm.edu

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- The biosphere
- Global change through the geologic past
- Anthropomorphic effects.

12. Course Outline and Schedule:

The Earth System (Two Weeks)

- Interaction among the Earth components
- The Earth as a planet in the solar system
- Earth's nearest neighbors
- The Sun: the driving mechanism of cycles on Earth

Observing the Earth from Space (Three Weeks)

- Introduction to fundamental concepts of remote sensing
- Overview of existing and previous airborne and spaceborne sensors
- Image processing and interpretation
- Aerial photography

- EXAM ONE

The lithosphere and asthenosphere (Two Weeks)

- Plate Tectonics

- Earthquakes
- Volcanoes

The hydrosphere and cryosphere (Two Weeks)

- Water on land
- Snow and ice
- The oceans

- EXAM TWO

The atmosphere (Two Weeks)

- Composition and structure of the atmosphere
- Winds and weather
- Earth's climate

The biosphere and integration of the processes (Three Weeks)

- Life on Earth
- Evolution of the biosphere
- Anthropogenic effects
- Global Change

- FINAL EXAM

13. Evaluating/ Grade Reporting:

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| • Two partial examinations: | 50% |
| • Final examination: | 25% |
| • Assignments and Quizzes: | 25% |

14. Additional References:

Web Page: <http://cacique.uprm.edu/geol3105>