

**New Jersey Institute of Technology
College of Science and Liberal Arts
Department of Physics
The Earth in Space, Section 004**

Phys 203–004

Spring 2023

Mondays, 11:30 a.m. to 12:50 p.m.

Thursdays, 08:30 a.m. to 09:50 a.m.

Kupfrian Hall, Room 211

Kupfrian Hall, Room 105

Textbook

David McConnell and David Steer. *The Good Earth: Introduction to Earth Science*, Fifth Edition. McGraw-Hill Education, United States of America, 2020.

Grade

Your final grade will be based upon four examinations (20% each) and one Final Examination (20%). The examinations will be administered on the following dates.

First Examination	Monday, February 06, 2023
Second Examination	Monday, March 06, 2023
Third Examination	Monday, April 03, 2023
Fourth Examination	Monday, April 24, 2023
Final Examination	to be announced

If you miss an examination, you will receive a grade of zero that will be calculated into your final grade. There are no make-up examinations. The following table will determine your final grade.

85% to 100%	A
80% to 84%	B+
70% to 79%	B
65% to 69%	C+
50% to 64%	C
40% to 49%	D
0% to 39%	F

The examination grades will not be curved, nor will the final grades be curved. Each examination, including the Final Examination, will consist of multiple-choice and/or true-false questions, all of which will come directly from topics discussed in class, topics discussed in the textbook, and topics discussed in the online notes. Each examination, including the Final Examination, will be closed book and closed notes. No formula sheet or cheat sheet will be provided, nor will either be permitted for any of the examinations.

The Earth in Space (Phys 203) and The Earth in Space Laboratory (Phys 203A) are two separate courses for which you will receive two separate and independently-determined grades. Moreover, you are free to be registered for either one of these courses without being registered for the other course. If you are registered for both courses, withdrawal from one course does not mean you must withdraw from the other course.

Learning Objectives and Outcomes

understand that the Earth is a geological, oceanographic, atmospheric, and biological system
recall the geographic coordinate system
understand different types of map projections
comprehend atomic theory, including subatomic particles
comprehend molecular theory, including different types of chemical bonding
describe states of matter and phase changes
discuss the properties of minerals
understand different mineral groups, with strong emphasis on the silicate minerals
analyze the different types of rocks and how they form
comprehend the interior structure of the geosphere
understand the Theory of Plate Tectonics
discuss the observational evidence for the Theory of Plate Tectonics
use the Theory of Plate Tectonics to study orology, seismology, and vulcanology
calculate the age of the Earth from radioactive dating
discuss the geological processes on the ocean floor
analyze the chemistry and the thermodynamics of the oceans using salinity, temperature, and pressure
understand the biological processes in the oceans
describe the currents and waves in the oceans
discuss landforms of coasts and shores
summarize the basics of the atmosphere, including its composition and its layers
analyze the thermodynamics of the atmosphere using pressure, temperature, and relative humidity
understand the Bjørgvin Theory of Meteorology
apply the Bjørgvin Theory of Meteorology to meteorological processes using air masses and fronts
comprehend climatological processes that cause ice ages, glacial periods, and interglacial periods
predict the terrestrial landscapes/environments we find on continents
understand the continuous weathering and erosion of terrestrial landforms
analyze different types of soil and determine which are best and which are worst for agriculture
compare and contrast different types of mass wasting processes
explain how fluvial processes operate in river valleys and floodplains
understand how groundwater processes sculpt karst topographies
explain how aeolian processes affect deserts
summarize how glacial processes shape mountains and valleys