

Physical Science 107

Welcome to Physical Science 107 — Current Public Issues in Physical Science. Two sections will be offered Spring 2012: PHY SCI 107 Rm 3833 Section C: 11:00 am to 12:20 pm MW Section H: 11:00 am to 12:20 pm TTh

Course Catalog Description



[download poster](#)

PHYSICAL SCIENCE 076 0107 - Current Public Issues in Physical Science

Interdisciplinary approach to physical sciences; current public issues serve as a framework for course that covers earth sciences (conservation, pollution, space exploration) as well as other branches of science and social and humanistic aspects; integrates significant aspects of physical science with student's other studies as well as daily living. Writing assignments, as appropriate to the discipline, are part of the course. 3 credit hours, 3 lecture hours per week based on sixteen weeks.

Instructor

[Professor Walker](#)

jwalker@ccc.edu

Office: 3850

Phone: (773) 907-4698

Website: JustOnly.com/physci/

Textbook

No textbook is required for this course but you are required to purchase a bound composition book (no spiral notebooks) to be used as a course journal.



[Journal Checklist](#)
[Journal Rubric](#)

Statement of Course Goal

The goal of this course is to inspire you and challenge you to learn about important issues based in the physical sciences such as anthropogenic climate change, soil chemistry and conservation, ocean chemistry and energy use and to gain a deeper understanding of the problems, solutions and controversies discussed in the news media.

Course Introduction

[Notes from Introductory Powerpoint \(9.4M\)](#)

Resources

[Comparitive Map of the Atmosphere](#) (originally from NASA 1962 data via [Wikipedia: Earth's atmosphere](#))
[Geological Time Scale](#)
[Climate Map](#)
[Estimated U.S. Energy Use in 2010](#)
[Energy Use, Google Public Data](#)

International Websites

[United Nations Framework Convention on Climate Change](#)

Government Organizations (.gov)

[United States Geological Survey](#)
[National Oceanic and Atmospheric Administration](#)
[United States Environmental Protection Agency](#)
[United States Department of Agriculture](#)
[Intergovernmental Panel on Climate Change](#)
[Argonne National Laboratory](#)
[Energy Flow](#)
[NASA Goddard Institute for Space Studies](#)

Organizations (.org)

[National Snow and Ice Data Center: Arctic Sea Ice News and Analysis](#)
[American Museum of Natural History \(Science\)](#)
[350.org](#)
[CO2now.org](#)
[The Post Carbon Reader](#)
[America's Power](#)
[Chicago Climate Reaction](#)

Educational Organizations (.edu)

[LEARN: Atmospheric Science Explorers - Cycles of the Atmosphere](#)
[Drought Monitor](#)
[Cameron Douglas Craig - Eastern Illinois University - video series](#)

dot com websites (.com)

[Weather Underground](#)

People

[David Archer](#)
[Dr. Stephen Schneider](#)
[Mark Lynas](#)
[James Hansen](#)
[Jon Foley](#)

News

[USA Today](#)
[The Wall Street Journal](#)
[The New York Times](#)
[The Washington Post](#)
[Chicago Tribune](#)
[Chicago Sun-Times](#)
[Science Daily](#)
[Le Monde](#)
[The Independent](#)

Articles of Interest

[The Nine Planetary Boundaries](#)
[Planetary Boundaries: Scientific Article](#)

Simulations

[Sea Level Rise](#)

Truman College Mission Statement

"Our Mission dedicates us to deliver high-quality, innovative, affordable and accessible educational opportunities and services that prepare students for a rapidly changing and diverse global economy."

FERPA

FERPA (Family Educational Rights and Privacy Act) is a federal law that protects the privacy of student educational records: <http://www.ed.gov/policy/gen/guid/fpco/ferpa/index.html>. Faculty cannot reveal information about students, or discuss student records over the phone or unsecure e-mail. CCC student e-mail meets FERPA requirements.

Student Services

The [Student Services Department](#) provides a broad range of services to assist students in achieving their academic and life goals.

Students with Disabilities

The [Truman College Disability Access Center \(DAC\)](#) verifies needs pursuant to the American Disabilities Act (ADA), determines student academic accommodations, and issues accommodation letters. The center is located in room 1428 with phone number: (773) 907-4725. Linda Ford is the director.

Tutoring Center

The [tutoring center](#) is located in room L129, 773-907-4785.

TRIO Student Support Services

[TRIO](#) is for low-income students, first generation college students, or students with disabilities who need academic support: room 1435, 773-907-4797. Registration is required at the start of each semester.

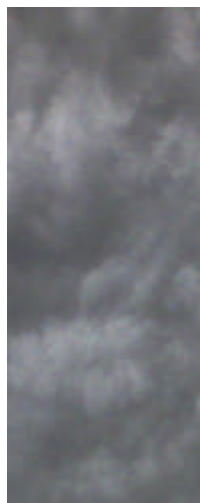
Student Success and Leadership Institute (SSLI)

[SSLI](#) is for students who need various other support services to achieve their educational goals: room 1435, 773-907-4714

Physical Science 107

April 22nd is Earth Day!

Unit One: Air



- week 1 [Earth's Atmosphere](#): We will learn about the composition, temperature and structure of the atmosphere. We will study the movement of energy through matter, the relationship of the Sun and the Earth, and the behaviors of gases.
- week 2 [Ground Level Air Pollutants](#): We will learn about the six major air pollutants. We will examine the chemical properties of pollutants and how they are measured.
- week 3 [Stratospheric Ozone](#): We will learn about the function of ozone in our stratosphere and about the chemical reactions that disturb our ozone layer.
- week 4 [Greenhouse Gases and Climate Change](#): We will study the causes, concerns and controversies of climate change.

Unit Two: Water



- week 5 [Hydrologic Cycle](#): We will study how water moves about our planet, how it is transformed to water vapor, liquid water, and ice and how it is stored and used on Earth.
- week 6 [Ocean Acidification](#): We will look at one of the consequences of increased carbon dioxide in the atmosphere - the lowering of the pH of the ocean.
- week 7 [Ocean Pollution](#): We will look at how pollutants collect in the ocean and the chemical consequences of this.
- week 8 [Fresh Water](#): We will learn about how drinking water is prepared, how fresh water is stored and is transported on our Earth, and we will learn about our fresh water resources.

Unit Three: Earth



- week 9 [Carbon Cycle](#): We will look at the chemistry of carbon and the many transformations it undergoes as it travels around our planet.
- week 10 [Nitrates, Phosphates and Sulfates](#): We will learn about the chemistry of these compounds and their essential role in soil. We will also learn about how they move around the planet.
- week 11 [Soil Chemistry](#): We will learn how soil is structured, what is needed for soil to be able to sustain plant life, what chemical processes occur in soil, and how soil is formed.
- week 12 [Soil: Erosion and Conservation](#): We will look at soil as a resource and study the chemical and physical processes that affect it.

Unit Four: Fire



week 13 [Carbon Based Fuels](#): We will look at petroleum based fuels, biodiesel fuels and learn about these resources.

week 14 [Lithium](#): We will examine the role of lithium fuel cells and batteries in our energy resources.

week 15 [Wind and Solar Energy](#): We will learn about renewable sources of energy.

week 16 [Nuclear Fuels](#): We will study nuclear fuels and nuclear power plants - both existing technology and possibilities in the future.

Physical Science 107 Grading Policy

Your Grade will be based on four exams (20%), a journal (40%), class activities and class participation (20%) and a research project (20%). A multiple choice exam will be given at the completion of each unit. You will be given a choice for the format of your research project - a research paper, a media presentation (video, slide show), a visit to a company (coal plant, solar cell plant, etc), a live interview with an authority on one of the course topics, or perhaps you have an idea of your own to propose. The research project will be due at the end of the course.

GRADING SCALE

Letter Grade	Percentage
A	90%
B	80%
C	70%
D	60%
F	below 60%
I	*Incomplete
ADW	**Administrative Withdrawal
NSW	***No Show Withdrawal

*"I" (Incomplete) are non-grades received by students who have actively pursued the course and are doing passing work at the end of the course, but who have not completed the course's final examination and/or other specific course assignments.

**ADW (Administrative Withdrawal). Any student who is not actively pursuing the course objectives will be administratively withdrawn from the course at mid-term. An ADW will be given if a student does not complete at least 70% of all assignments; homework, exams, laboratories, quizzes due prior to mid-term by the mid-term date. Since make up work is NOT permitted this means that attendance is extremely important and excessive absences will most likely result in an ADW.

***NSW (No Show Withdrawal). Any student who misses the first two classes and does not discuss with me the circumstances of these absences will be given an NSW after the second class. A student who attends the first class and

then fails to attend the next two classes and fails to discuss with me the circumstances of these absences will be given an NSW. Any student who misses more than half of the classes in the first two weeks of the term will also be given an NSW if we do not discuss the circumstances of these absences. In my discussion with you I will determine if it is feasible for you to successfully pursue the course objectives under whatever circumstances are causing you to miss class. Your success is very important to me and I know, from years of experience, that your success depends on your commitment and ability to attend the class and participate in all activities.

Make-Up Policy

Make-Up work is not permitted under any circumstances. This includes but is not limited to hospitalization, deaths in the family, illness, family emergencies. Life happens to everyone. This is why one exam will be dropped from your grade with no penalties. If circumstances arise that prevent you from actively participating in all aspects of this course please let me know. There is no substitute for attending classes regularly and on time. Please choose someone else in the class that will be able to exchange notes with you in the event either of you misses class. You are responsible for all missed announcements, assignments and class work. Please do not use the phrase "I didn't know" to excuse any missed work. Check the website often. Announcements and assignments are posted and updated regularly.

Physical Science 107

General Student Learning Outcomes for Physical Science 107

At the completion of this course, the successful student will be able to do the following:

- Use scientific terms correctly that are currently found in news articles (New York Times et. al.)
- Research a Physical Science topic effectively and write an informational paper on this topic.
- Access information from U.S. governmental websites for the Physical Sciences including USGS, NOAA and EPA.
- Compare various energy resources in terms of efficiency and environmental impact.
- Discuss current topics in Physical Science e.g. climate change, sources of energy, sustainability, ocean acidification etc. and rationally support a point of view put forth on these issues.
- Critically interpret graphs, data charts, and general information provided to the public.

General Education Goals Established by Truman College

Taking a course in Physical Science helps a student achieve all of the following general education goals. How this occurs is explained below.

- communicate effectively in both written and oral forms
Students will keep a journal. Students will write a paper on a current topic in Physical Science.
- gather, interpret and analyze data
Students will analyze charts, graphs and data presented to the public on current issues in Physical Science
- demonstrate the ability to think critically, abstractly and logically
The Scientific Method is predicated upon deductive and inductive logical reasoning. Students will study applications of the scientific method to information gathered by the scientific community. Students will be required to defend positions based on evidence.
- work with a variety of technologies
Students use computers, digital imaging devices, media, the Internet, podcasts, all in the pursuit of scientific knowledge.
- exhibit social and ethical responsibility
This very serious goal is addressed on many levels in the physical science course by analyzing the social impacts of issues studied in the Physical Sciences
- perform productively in the workforce
Organizational skills are improved in this general education course. Scientific literacy is developed.
- demonstrate the ability to learn independently
Students are given independent projects to complete in the course. They are also given questions to research independently. Reporting these results to the class develops their ability to speak confidently to their peers.
- gain awareness of their role in the global community
By discussing the way that physical science is connected to other occupations and careers we develop student awareness about their career choice and its dependencies on a basic understanding of the general science.

Physical Science and Engineering Departmental Learning Outcomes

Upon graduation with an Associate degree from Truman College a student should be able to:

- Organize, analyze and interpret information and use the scientific method to make inferences.
- Exhibit knowledge of scientific concepts through written and oral communication.
- Demonstrate excellent laboratory skills and techniques including the proper use of relevant instruments and related technologies.
- Use the lexicon of science to explain abstract scientific concepts.
- Relate concepts learned in Physical Science and Engineering Department classes to real world situations.