

**PITTSBURG STATE UNIVERSITY
DEPARTMENT OF PHYSICS**

Instructor:	Angelyn Hobson
Email:	ahobson@pittstate.edu
Office:	Yates Hall 305; (620) 235-4392
Office Hours:	See below.
Course Title:	PHYS 166-01: Introduction to Meteorology
Term:	Fall 2018
Meeting Times and Locations:	TR 9:30-10:45, Yates 215
Textbook:	<i>Meteorology Today</i> , C. Donald Ahrens and Robert Henson, 11th Ed., Cengage

COURSE DESCRIPTION AND PREREQUISITES

Catalog Description: A descriptive survey of atmospheric science integrating the concepts of weather patterns, climate, atmospheric composition and structure, pressure, wind, and impact of pollution.

Co-requisite: This lecture class is independent of the laboratory (PHYS 167-99). *The lecture class is required to take the lab.*

LEARNING OUTCOMES

Upon completion of this course, you will be able to:

- Know the physics and forces controlling atmospheric motion and various weather phenomena
- Interpret meteorological charts, such as surface analyses, radar, and satellite
- Understand the mechanisms behind cloud development and precipitation
- Recognize human impacts on climate and be aware of potential climate change scenarios
- Identify common features of severe and hazardous weather

GRADES

Grades will be based on three unit exams, homework, and the final. Some material over which you will be tested might not be discussed in class, but will be based upon material in the textbook. Students are encouraged to begin homework assignments prior to due date so that they may seek assistance from me if needed. Please notify me in advance if you are going to be absent for an exam so we can schedule a make-up time for you. Final grades will follow this scale based on the percentage of total points earned: >90 % **A**; 75 - 90% **B**; 60 - 75% **C**; 50 - 60% **D**. Grades will be determined from the following:

Homework: 100 points total

Tests: 150 points total (3 exams)

Final: 50 points total (1 exam)

Class Participation: up to 15 points extra credit

ACADEMIC INTEGRITY

All work submitted for a grade **MUST** be your own original work. *Plagiarism of any type will NOT be tolerated.* You are welcome to use online resources and/or discussions with other students to help you understand concepts and material better, but your answer should be in your own words and not copied from any source. If you are consulting outside sources (a website, book, etc.) to help with your answer, that source should be provided. *Whenever an outside source is directly quoted, the quote MUST be marked by quotation marks or italics and its source properly acknowledged.*

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OFFICE HOURS

	Monday	Tuesday	Wednesday	Thursday	Friday
9:00-10:00	PHYS 171-01		PHYS 171-01		PHYS 171-01
10:00-11:00	OFFICE HOURS	PHYS 166-01 OFFICE HOURS	OFFICE HOURS	PHYS 166-01 OFFICE HOURS	
11:00-12:00					
12:00-1:00		PHYS 167-01	PHYS 172-04	PHYS 167-02	FACULTY MEETING
1:00-2:00					
2:00-3:00		PHYS 172-05	PHYS 172-06	PHYS 172-10	
3:00-4:00					

COURSE TOPICS AND SCHEDULE

I reserve the right to modify course topics and the presentation as needed (particularly if interesting weather justifies a class discussion)! We will not have time for in-depth lectures on every topic. Consequently, you are expected to read the assigned chapters of the textbook (or other materials) before class. Coming prepared will allow you to maximize your time by being able to ask specific questions.

Tentative Dates

Reading by Chapter

Earth and Atmospheric Properties

Aug 21	Syllabus, Introduction, 1. Earth and its Atmosphere
Aug 23	1. Earth and its Atmosphere (continued)
Aug 28	2. Energy: Warming the Earth and the Atmosphere
Aug 30	3. Seasonal and Daily Temperatures <i>HW 1 due on Canvas at 11:55pm</i>
Sept 4	4. Atmospheric Humidity
Sept 6	5. Condensation: Dew, Fog, and Clouds
Sept 11	Complete material and review for exam <i>HW 2 due on Canvas at 11:55pm</i>

Sept 13 – Exam 1

Tentative Dates

Readings by Chapter

Clouds, Precipitation, and Global Patterns

Sept 18	6. Stability and Cloud Development
Sept 20	6. Stability and Cloud Development (continued)
Sept 25	7. Precipitation
Sept 27	8. Air Pressure and Winds <i>HW 3 due on Canvas at 11:55pm</i>
Oct 2	9. Winds: Small Scale and Local

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<i>Oct 4</i>	10. Wind: Global Systems
<i>Oct 9</i>	10. Wind: Global Systems (continued)
<i>Oct 11</i>	<i>Fall Break</i>
<i>Oct 16</i>	Complete material and review for exam
Oct 18 – Exam 2	

Tentative Dates	Readings by Chapter	Storms, Climate, and Severe Weather
<i>Oct 23</i>	11. Air Masses & Fronts	
<i>Oct 25</i>	12. Middle-Latitude Cyclones	
<i>Oct 30</i>	12. Middle-Latitude Cyclones (continued)	
<i>Nov 1</i>	13. Climate	
<i>Nov 6</i>	13. Climate (continued)	
<i>Nov 8</i>	14. Radar and Thunderstorms: Part I <i>HW 4 due on Canvas at 11:55pm</i>	
<i>Nov 13</i>	15. Radar and Thunderstorms: Part I (continued)	
Nov 15 – Exam 3		

Tentative Dates	Readings by Chapter	Meteorology Applications
<i>Nov 20</i>	15. Thunderstorms: Part II and Tornadoes	
<i>Nov 21-23</i>	<i>Thanksgiving Break</i>	
<i>Nov 27</i>	15. Thunderstorms: Part II and Tornadoes (continued)	
<i>Nov 29</i>	16. Hurricanes <i>HW 5 due on Canvas at 11:55pm</i>	
<i>Dec 4</i>	18. Light, Color, and Optics	
<i>Dec 6</i>	Review for final	
<i>Dec 10-14</i>	<i>Final Exam Week</i>	

GENERAL EDUCATION LEARNING GOALS

This course counts toward the requirements in General Education for your degree program. General Education is an important part of your educational program at Pittsburg State University that has been designed to implement the following philosophy.

General education is the study of humans in their global setting. The general education curriculum, therefore, acts as the heart of a university education by developing the capacities that typify the educated person and providing a basis for life-long learning and intellectual, ethical, and aesthetic fulfillment. General education examines the world around us and fosters an understanding of our interactions with the world and our place in the universe. General education celebrates the creative capacities of humankind and helps to preserve and transmit to future generations the values, knowledge, wisdom, and sense of history that are our common heritage.

Goals of General Education for this Course: This course will help you to accomplish some of the Goals and Objectives of General Education, including the development of your ability to use the tools of mathematics to communicate and to formulate and solve problems, (1.3), to distinguish between relevant and irrelevant information in problem solving, (2.1), to articulate a problem and develop a logical and reasonable response to it using appropriate resources, (2.2), to apply generalizations, principles, theories, or rules to the real world, (2.3) to analyze and synthesize information, (2.4), and to understand the basic principles, facts, theories, methods, analysis, and description in the physical sciences, (4.1 and 4.2), and how they contribute to the general welfare, (4i.3); to evaluate the impact of scientific, technological, economic, and intellectual change on social and political institutions, (4ii.2), on individuals, social structures, the economy and the world (4iv.1), and to articulate possible solutions to the problems that arise from the same, (4iv.2).

Upon successful completion of this course, you will meet the following selected goals.

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Goal 1: Students should be able to communicate effectively.

3. Demonstrate the ability to formulate and solve problems using the tools of mathematics.

Goal 2: Students should be able to think critically.

1. Demonstrate the ability to distinguish between relevant and irrelevant information in problem solving.
2. Articulate a problem and develop a logical and reasonable response to it using appropriate sources.
3. Apply generalizations, principles, theories, or rules to the real world.
4. Demonstrate the ability to analyze and synthesize information.

Goal 3: Students should be able to function responsibly in the world in which they live.

1. Demonstrate understanding of basic principles, facts, and theories of the biological and physical sciences.
2. Demonstrate understanding of the basic methods of inquiry, analysis, and description in the biological and physical sciences.
3. Demonstrate an understanding of how the natural sciences contribute to the general welfare of civilization.

(ii) Social:

2. Evaluate the impact of scientific, technological, economic, and intellectual change on social and political institutions.