PITTSBURG STATE UNIVERSITY
COLLEGE OF ARTS AND SCIENCES
DEPARTMENT OF PHYSICS

Instructor:	**Angelyn Hobson**
Email:	**ahobson@pittstate.edu**
Office:	**Yates Hall 305; (620) 235-4392**
Office Hours:	**MW 10:00am-12:00pm TR 12:00pm-2:00pm**
Course Title:	**PHYS 166-01: Introduction to Meteorology**
Term:	**Fall 2018**
Meeting Times and Locations:	TR 9:30-10:45, Yates 215
Textbook:	***Meteorology Today***, 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. PHYS 167 is a co-requisite. *The lecture class is required to take the lab.*

This course is intended for partial fulfillment of the Pitt State Pathway Curriculum.

PITT STATE PATHWAY MISSION STATEMENT
The Pitt State Pathway curriculum serves as the heart of the university education by fostering interdisciplinary competencies that typify the educated person. It is designed to facilitate the development of key proficiencies including communication and information literacy. The Pitt State Pathway curriculum provides a transformational experience that challenges students to think creatively and critically, and to immerse themselves in the productive examination of humans in their global setting. By encouraging the development of skills that promote life-long learning, the Pitt State Pathway fosters a sense of personal responsibility, an appreciation of diversity, and an understanding of interconnectedness in our truly global society.

ESSENTIAL STUDY: NATURAL WORLD IN A GLOBAL CONTEXT
Biological, physical, and chemical systems form the context for life. Students need to understand how these systems work, how these change naturally, and how these can change as a result of human activities. The implications of these changes are essential for long-term decision-making. Competency in this element means:

- *Analyzing* biological, physical, and/or chemical systems;
- *Evaluating* the implications of changes that result from interactions between natural and human systems.

COMPANION ELEMENT: SCIENTIFIC INQUIRY
The scientific method is the systematic approach to understanding the world around us. Through experimentation and hypothesis testing, students will apply analytical skills and appropriate methods of scientific inquiry (i.e. qualitative and quantitative) to solve a variety of research questions. Competency in this element means:

- *Composing* appropriate research questions and hypotheses, drawing from experts, reliable sources, or previously collected data;
- *Collecting, synthesizing*, and *analyzing* data from multiple sources;
- *Drawing* logical conclusions, assessing for gaps or weaknesses, and addressing potential consequences and implications;
- *Communicating* results using appropriate delivery methods or formats.

COURSE OBJECTIVES AND LEARNING OUTCOMES
Natural World within a Global Context: Students will explain biological, physical, and/or chemical processes and how human activities alter them.

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Scientific Inquiry: Students will apply the scientific methods to a problem.

Upon completion of this course, students should be able to:

- Describe the physics and forces controlling atmospheric motion and various weather phenomena
- Analyze meteorological charts, such as surface data, radar, and satellite
- Explain the mechanisms behind cloud development and precipitation
- Identify common features of severe and hazardous weather
- Examine human impacts on climate and identify potential climate change scenarios

METHODS OF ASSESSMENT

To assess the chosen level of student learning for Natural World within a Global Context (Milestone I), students will complete homework and exams to describe and explain biological, physical, and/or chemical processes and how human activities alter them. To assess the chosen level of student learning for Scientific Inquiry (Milestone I), students will complete homework and exams to identify and apply a problem by using scientific methods. Homework and exam dates are listed below. The final exam will be comprehensive.

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 - 89% B; 60 - 74% C; 50 - 59% D**. Grades will be determined from the following:

Homework: 30%
Tests: 50% (3 exams)
Final: 20% (1 exam)
Class Participation: up to 5% extra credit

COURSE OUTLINE

I reserve the right to modify course topics and the presentation as needed. 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.

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	
	HW 1 due on Canvas at 11:55pm	
Sept 4	4. Atmospheric Humidity	
Sept 6	5. Condensation: Dew, Fog, and Clouds	
Sept 11	Complete material and review for exam	
	HW 2 due on Canvas at 11:55pm	

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
	HW 3 due on Canvas at 11:55pm
Oct 2	9. Winds: Small Scale and Local
Oct 4	10. Wind: Global Systems
Oct 9	10. Wind: Global Systems (continued)
Oct 11	*Fall Break*
Oct 16	Complete material and review for exam
Oct 18 – Exam 2	

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

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

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.*

COURSE AND UNIVERSITY POLICIES

Please refer to the Syllabus Supplement link for more detailed information regarding university policy:
https://www.pittstate.edu/registrar/_files/documents/syllabus-supplement-spring- 2019-updated-1-3-19-.pdf