

PITTSBURG STATE UNIVERSITY, DEPARTMENT OF PHYSICS

| | | |
|-------------------------------------|---|--|
| Course Title: | PHYS 167- ____ Introduction to Meteorology Lab | |
| Term: | Fall 2018 | |
| Meeting Times and Locations: | ____ Yates Room 400 | |
| Text: | <i>Exercises for Weather and Climate</i> , Greg Carbone, 9 th Edition, Prentice Hall 2010 | |
| Instructor: | Angelyn Hobson | Office Location: 305 Yates |
| Instructor Email: | ahobson@pittstate.edu | Office Hours: MW 10am-12pm; TR 12pm-2pm |

COURSE DESCRIPTION AND PREREQUISITES

Catalog Description: Exercises, activities, and experiments to accompany the PHYS 166 Meteorology lecture. A brief lecture will introduce the laboratory. This lab class is a co-requisite and independent of the lecture, PHYS 166-01.

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.

Scientific Inquiry: Students will apply the scientific method 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 lab exercises 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 lab exercises and exams to identify and apply a problem by using scientific methods. Lab and exam dates are listed below.

INSTRUCTIONAL RESOURCES

You will need a **pencil** and a **calculator** (not a cell phone calculator) for this class. The labs will be directly out of the lab manual. **You must wear closed-toe shoes that entirely cover the sides, top, and back of your feet while in the lab. No sandals, clogs, flats, bedroom slippers, or flip-flops are allowed. You will be sent home if you are not wearing appropriate footwear.** No food is allowed in the lab. No cell phone texting is allowed in the lab.

MAKE-UP LABS

There will be **no** make-up labs. **You must attend the lab section in which you are enrolled to earn attendance points. You will not be awarded attendance points for a lab that you do not attend.**

GRADES

Grades will be based on exams, quizzes, and attendance. Points will be deducted if you arrive late to the lab or leave the lab early. Grades will be determined from the following:

| | |
|--------------------|----------------------------|
| Attendance: | 12 @ 10 points each |
| Lab Tests: | 2 @ 30 points each |
| Quizzes: | 2 @ 10 points each |

GRADING SCALE

| | |
|------------------|----------|
| 180-200 | A |
| 160-179 | B |
| 140-159 | C |
| 120-139 | D |
| Below 120 | F |

TENTATIVE DATES

| | |
|------------------|--|
| 8/21-8/23 | WE WILL NOT MEET THIS FIRST WEEK |
| 8/28-8/30 | Lab 1: Vertical Structure of the Atmosphere |
| 9/4-9/6 | Lab 2: Earth-Sun Geometry |
| 9/11-9/13 | Lab 3: The Surface Energy Budget and Lab 4: The Global Energy Budget |
| 9/18-9/20 | Lab 5: Atmospheric Moisture, QUIZ 1 |
| 9/25-9/27 | Lab 6: Saturation and Atmospheric Stability |
| 10/2-10/4 | EXAM 1 |

NO LABS DURING WEEK OF OCTOBER 8 DUE TO FALL BREAK

| | |
|--------------------|--|
| 10/16-10/18 | Lab 7: Cloud Droplets and Raindrops |
| 10/23-10/25 | Lab 8: Atmospheric Motion |
| 10/30-11/1 | Lab 9: Weather Map Analysis |
| 11/6-11/8 | Lab 10: Mid-Latitude Cyclones |
| 11/13-11/15 | Lab 12: Thunderstorms and Tornadoes, QUIZ 2 |

NO LABS DURING WEEK OF NOVEMBER 19 DUE TO THANKSGIVING BREAK

| | |
|------------------|--|
| 11/27-11/29 | Lab 13: Hurricanes |
| 12/4-12/6 | EXAM 2 *NOTE: THIS IS DURING DEAD WEEK – NO LAB DURING FINALS WEEK |

Link for Syllabus Supplement:

https://www.pittstate.edu/registrar/_files/documents/syllabus-supplement-fall-2018