SYLLABUS

Atmospheric Sciences (ATSC) 2000

Lecture: 3hrs, 3 cr. Lab: 2 hrs, 1 cr. Total Credit Hours: 4

Class Time: Online Days: Online

Instructor's Name: Melissa Connely

Office TM 125

Office Phone: 307-268-2017 Email: mconnely@caspercollege.edu

Course Description: First course in meteorology for students with minimal background in math and science. Provides general and practical understanding of weather phenomena. Emphasizes observational aspects of the science, meteorological view of the physical world and the impact the science has on life and society. Includes atmospheric composition and structure, radiation, winds and horizontal forces, stability and vertical motions, general circulation, synoptic meteorology, clouds and precipitation, severe storms and climate and climate change.

Statement of Prerequisites: None

Goal: This Introduction to Meteorology course is designed to provide comprehensive knowledge of the atmosphere and its changing behavior as it relates to human activities and influence our daily lives.

Outcomes: After having completed all the units of study, passing students should be able to:

1. Know and use the scientific method to critically examine and solve realistic problems.
2. Have a basic understanding of the atmosphere and its processes, such as energy transfer, balance and distribution.
3. Describe and explain the origin, composition, structure, short-term and long-term behaviors of the earth's atmosphere.
4. Understand and analyze important environmental problems related to the earth's atmosphere.
5. Understand and explain the factors that determine the distribution of solar energy over the Earth's surface and describe global patterns of temperature.
6. Understand and critically examine the atmospheric phenomena of temperature, moisture conditions, atmospheric stability, forms of condensation.
and precipitation, air pressure and winds, circulation of the atmosphere, role of air masses, and weather patterns.

7. Describe the major cloud types and explain the phenomena of rainfall, fog, snow, sleet, and frost.

8. Define a cold, warm, stationary and occluded fronts and explain the processes leading to the formation of each.

9. Explain the formation of cyclones and anticyclones, tornadoes, hurricanes and typhoons.

10. Understand the mechanism of weather analysis and forecasting.

11. Describe and analyze the changing climate and have an understanding of the world climates.

12. Understand the impact that people have on the atmospheric environment.

Methodology: Combination of reading, guided online discussion, and online lab projects.

Point Distribution:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 quizzes @50 points</td>
<td>400</td>
</tr>
<tr>
<td>Midterm and Final Exams @200 points</td>
<td>400</td>
</tr>
<tr>
<td>8 Guided Discussions @50 points</td>
<td>400</td>
</tr>
<tr>
<td>7 online lab projects @ about 57 points</td>
<td>400</td>
</tr>
<tr>
<td>Total</td>
<td>1,600</td>
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</tbody>
</table>

Evaluation Criteria: Students will be evaluated on a regular basis through scores on quizzes covering the readings, exams, lab projects, and participation in class. Quizzes, exams, and discussions will account for 75% of your grade, and lab projects will account for 25% of your grade. Grading scale: The grading scale is: A = 90-100% B = 80-89% C = 70-79% D = 60-69% F = 59% or below.

You will be responsible for 7 projects - be sure to look these over as early as possible so that you have time to ask questions where needed.

These projects are an important and integral part of this class. Although some of the projects you are asked to do are straightforward and easy, you will find many of them difficult to very difficult. This is by design - all of these projects represent real world, hands on tasks. All of the projects require you to solve problems and communicate the results of your solution in a professional manner. Many of the projects require simple calculations and graphing, all of them involve writing and communications. Numerous surveys and studies report that employers are asking for people who can work as effective members of a group, solve problems, and communicate. This is your opportunity to practice in a safe setting what will be required of you for the rest of your life!

Required Text, Readings, and Materials: Meteorology Today: An Introduction to
Weather, Climate, and the Environment, 9th edition by Ahrens. Publisher: Thompson/Brooks-Cole. Use an older edition at your risk, but be aware that the chapter numbers may not match and some information may not be up to date.

Class Policies: Last Date to Change to Audit Status or to Withdraw with a W Grade: Participation in this class is required and evaluated. Late work (lab activities) will be accepted with a penalty of 50%. Quizzes and Exams will remain available up to the last day of class.

Student Rights and Responsibilities: Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

Chain of Command: If you have any problems with this class, you should first contact the instructor in order to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take your problem through the appropriate chain of command starting with the department head (Jerry Nelson), then the division chair, and lastly the vice president for academic affairs.

Academic Dishonesty - Cheating & Plagiarism: Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct.

ADA Accommodations Policy: It is the policy of Casper College to provide appropriate accommodations to any student with a documented disability. If you have a need for accommodation in this course, please make an appointment to see me at your earliest convenience.

**Tentative Schedule of Topics and Exams**

<table>
<thead>
<tr>
<th>DATE</th>
<th>Summary of Assignments: All unit assignments due by midnight prior to the start of the next unit, unless otherwise noted.</th>
</tr>
</thead>
</table>
| Unit 1 | Chapter 1. The Earth and its Atmosphere.  
Quiz 1  
Discussion 1: Post your brief biography. |
| Unit 2   | Chapter 2. Warming the Earth and Atmosphere.  
          | Chapter 3. Seasonal and Daily Temperature.  
          | Quiz 2                                       
          | Discussion 2                                
          | Unit 2 Project                             |
|---------|---------------------------------------------|
| Unit 3  | Chapter 4. Atmospheric Moisture.            
          | Quiz 3                                       
          | Discussion 3                                
          | Unit 3 Project                             |
| Unit 4  | Chapter 7. Precipitation.                   
          | Chapter 8. Air Pressure and Winds.          
          | Quiz 4                                       
          | Discussion 4                                
          | Unit 4 Project                             |
| Unit 5  | Chapter 10. Wind: Global Systems.           
          | Chapter 11. Air Masses and Fronts.          
          | Chapter 12. Middle-latitude Cyclones.        
          | Quiz 5                                       
          | Discussion 5                                
          | Unit 5 Project                             |
| Midterm Unit | Catch-up and **Midterm Exam.**             |

<table>
<thead>
<tr>
<th>Midterm Unit</th>
<th>Catch-up and Midterm Exam.</th>
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| Unit 5 | Chapter 10. Wind: Global Systems.  
          | Chapter 11. Air Masses and Fronts. 
          | Chapter 12. Middle-latitude Cyclones. 
          | Quiz 5                                     
          | Discussion 5                              
          | Unit 5 Project                           |
| Unit 6 | Chapter 13. Weather Forecasting.  
|        | Chapter 14. Thunderstorms and Tornadoes.  
|        | Chapter 15: Hurricanes  
|        | Quiz 6  
|        | Discussion 6  
|        | Unit 6 Project  |
| Unit 7 | Chapter 18. Air Pollution.  
|        | Quiz 7  
|        | Discussion 7  
|        | Unit 7 Project  |
| Unit 8 | Chapter 16. Climate Change.  
|        | Chapter 17. Global Climate.  
|        | Read for fun (not included on quiz) Chapter 19, Light, color, and atmospheric optics.  
|        | Quiz 8  
|        | Unit 8 Project  |
| Final Unit | Final Exam.  |