

# Meteorology Class

## Roland-Story High School

This class is based upon the science concepts that "Meteorology" is the scientific study of the atmosphere.

In addition to learning about the science concepts of meteorology, we will focus on various 'soft skills' that employers believe makes a difference in the workforce. Some of these are:

- a. communication skills \*
- b. decision making
- c. problem solving
- d. proper etiquette \*
- e. leadership
- f. promptness \*
- g. responsible \*
- h. work ethics \*
- i. respectful \*

85% of the success that most individuals and businesses have comes from the ability to utilize 'soft skills' as opposed to the 'hard skills' of technical knowledge.

## Meteorology Class Course Syllabus and Outline

### Chapter 1 – Introduction to Meteorology

1. Learn between weather and climate.
2. List the basic elements of weather and climate.
3. List and briefly describe the four major 'spheres' that make up the natural environment.
4. Describe how a scientific theory is developed.

Day 1 – introduction to class – class syllabus – class guidelines – handout of books –

Chapter 1 reading and study guide pages 1 and 2. Discussion over reading.

Day 2 – Review – Notes part 1 – study guide pages 3 and 4 – Rags to Riches #1

Day 3 – Review – Notes part 2 – study guide pages 5 and 6 – Hangman -- crossword

Day 4 – Review – Notes part 3 – finish study guide – Quizlet vocabulary

Day 5 – Review – Poster assignment – Rags to Riches #2

Day 6 – Review – Chapter 1 Test

## **Chapter 2 – Heating Earth's Surface and Atmosphere**

1. Describe the basic motions of earth. (rotation and revolution)
2. Discuss the causes of the seasons.

Day 7 – intro to chapter 2 TM – chapter 2 reading and study guide pages 1 and 2 – discussion over reading.

Day 8 – review – notes part 1 – study guide pages 3 and 4 – Rags to Riches #1 -- lab

Day 9 – review – notes – part 2 – study guide pages 5 to 7 – crossword puzzle

Day 10 – review – notes final part – presentation assignment

Day 11 – review – Rags to riches #2 – poster assignment

Day 12 – review – Chapter 2 test

## **Chapter 3 – Temperature**

1. List and discuss the five major controls of temperature.
2. Contrast Fahrenheit, Celsius and Kelvin temperature scales.
3. Understand how to calculate heating, cooling and growing degree days.

Day 13 – Introduction to chapter – reading and study guide work pages 1 and 2 – discussion over reading.

Day 14 – Review – notes part 1 – finish study guide – quizlet -- crossword puzzle --

Day 15 – Review– finish notes – Rags to Riches #1 – Lab 1 melting ice

Day 16 – Review – Lab on Isotherms – Temperature conversion assignment

Day 17 – Review – Rags to Riches #2 – Lab Design activity

Day 18 – Review – Jeopardy assignment – Poster assignment

Day 19 – Review -- Chapter 3 test

## **Chapter 4 – Moisture and Atmospheric Stability**

1. Describe the movement of water through the hydrologic cycle.
2. Describe two methods of measuring relative humidity.
3. Describe the four mechanisms that cause air to rise.
4. List and describe the factors that modify the stability of air.

Day 20 – Introduction to chapter 4 – reading and study guide pages 1 and 2 – discussion over reading.

Day 21 – Review – notes part 1 – finish study guide – quizlet -- vocabulary assignment

Day 22 – Review – finish notes – crossword puzzle – poster assignment

Day 23 – Review – Rags to Riches #1 – super-cooled water lab

Day 24 – Review – Rags to Riches #2 – helium balloon lab – quizlet quiz of vocabulary

Day 25 – Review – Make a game activity

Day 26 – Review – Chapter 4 test

## **Chapter 5 – Forms of Condensation and Precipitation**

1. Discuss the role of condensation nuclei in the formation of clouds.
2. Discuss the basis for the classification of clouds.
3. Identify major cloud types on the basis of their form and height.
4. Identify the differences between rain, snow, sleet, hail, and glaze and describe the circumstances under which each of them forms.

Day 27 – Introduction to chapter – reading and study guide pages 1 and 2 – discussion over reading.

Day 28 – Review – notes part 1 – finish study guide – quizlet and vocabulary assignment

Day 29 – Review – Crossword puzzle – Rags to Riches #1 -- Poster assignment --

Day 30 – Review – iMovie assignment

Day 31 – Review – Rags to Riches #2 – Presentation assignment

Day 32 – Review – Scavenger Hunt assignment

Day 33 – Review – Chapter 5 test

## **Chapter 6 – Air Pressures and Wind**

1. Define air pressure and the units of force used to measure it.
2. List three factors that control wind.
3. Define gradient winds.
4. Discuss what troughs and ridges are.

Day 34 – Introduction to chapter – reading and study guide pages 1 and 2 – discussion over reading.

Day 35 – Review – Notes part 1 – finish study guide – hangman activity

Day 36 – Review – Finish notes – quizlet activity – vocabulary assignment

Day 37 – Review – Rags to Riches #1 – poster assignment

Day 38 – Review – Crossword puzzle – Presentation assignment

Day 39 – Review – Rags to Riches #2 – Hot air balloon lab

Day 40 – Review – Video construction

Day 41 – Review – Chapter 6 Test

## **Chapter 7 – Circulation of the Atmosphere**

1. Explain the differences between macroscale, microscale and mesoscale atmospheric motions.
2. Discuss how the location of continents and oceans influence the global pressure distributions.
3. Discuss how ocean currents influence climatic conditions of adjacent land areas.

Day 42 – Introduction to chapter – reading and chapter study guide pages 1 and 2 – discussion over reading.

Day 43 – Review – Notes part 1 – finish study guide – quizlet activity

Day 44 – Review – finish notes – hangman -- vocabulary assignment

Day 45 – Review – crossword puzzle – Rags to Riches #1 and #2 -- Battleship

Day 46 – Review – Bulletin Board assignment – Rags to Riches #3

Day 47 – Review – Presentation assignment – Rags to Riches #4

Day 48 – Review – Scavenger Hunt activity

Day 49 – Review – Chapter 7 Test

## **Chapter 8 – Air Masses**

1. Describe what an air mass is and describe the concept of air-mass weather.
2. List two criteria that an air-mass source region must meet.
3. Discuss the basis of air-mass classifications.

Day 50 – Introduction to chapter 8 – reading and study guide pages 1 and 2 – discussion over reading.

Day 51 – Review – Notes part 1 – finish study guide – Quizlet activity – vocabulary assignment

Day 52 – Review – Hangman – crossword puzzle – Rags to Riches #1 – questions from a brown paper bag.

Day 53 – Review – Booklet assignment/report on air masses

Day 54 – Review – Chapter review activity

Day 55 – Review – Chapter 8 Test

## **Chapter 9 – Weather Patterns**

1. Compare and contrast warm fronts and cold fronts in terms of their structure and associated weather.
2. Describe stationary fronts, occluded fronts and drylines.
3. List the areas where most cyclones influence North America form and what types of air masses are associated with each.

Day 56 – Introduction to chapter 9 – reading and study guide pages 1 and 2 – discussion over reading.

Day 57 – Review – Notes part 1 – finish study guide – quizlet activity

Day 58 – Review – finish notes – hangman – vocabulary exercise

Day 59 – Review – crossword puzzle – poster assignment

Day 60 – Review – video assignment – Rags to Riches #1

Day 61 – Review – Presentation assignment – Rags to Riches #2

Day 62 – Review – bingo activity – battleship -- quizlet quiz of vocabulary

Day 63 – Review – Chapter 9 Test

## **Chapter 10 – Thunderstorms and Tornadoes**

1. Outline and describe the stages in the development of a thunderstorm.
2. List and briefly contrast two or more types of thunderstorms.
3. Summarize the events that lead to lightning and thunder.

Day 64 – Introduction to Chapter 10 – reading and study guide pages 1 and 2 – discussion over reading.

Day 65 – Review – notes part 1 – finish study guide – quizlet activity

Day 66 – Review – finish notes – hangman – vocabulary assignment

Day 67 – Review – crossword puzzle – poster assignment – Rags to Riches #1

Day 68 – Review – make a game activity

Day 69 – Review – Rags to Riches #2 – Research assignment

Day 70 – Review – Battleship – presentation assignment

Day 71 – Review – Chapter 10 Test

## **Chapter 11 -- Hurricanes**

1. Describe the strengths and frequency of hurricanes that cause the vast majority of deaths and damage.
2. Discuss where hurricanes form and what they are called in different parts of the world.
3. Describe the life cycle of a hurricane from the formation of a tropical disturbance to the time the hurricane diminishes.

Day 72 – Introduction to unit – reading and study guide pages 1 and 2 – discussion over reading.

Day 73 – Review – notes part 1 – finish study guide – quizlet activity

Day 74 – Review – finish notes – hangman – vocabulary assignment

Day 75 – Review – Crossword puzzle -- Rags to Riches #1 – Poster Assignment

Day 76 – Review – Rags to Riches #2 – Presentation assignment

Day 77 – Review – Research report assignment – Battleship

Day 78 – Review – Video assignment

Day 79 – Review – Make a game activity

Day 80 – Review – Chapter 11 Test

## Chapter 12 – Weather Analysis

1. Discuss the role of the National Weather Service.
2. Read synoptic weather maps and identify variables of them.
3. List and briefly describe different approaches to weather forecasting.
4. Summarize the role of satellites in modern weather forecasting.

Day 81 – Introduction to unit – reading and study guide pages 1 and 2 – discussion over reading.

Day 82 – Review – notes part 1 – finish study guide – quizlet activity.

Day 83 – Review – finish notes – hangman – vocabulary assignment

Day 84 -- Review – Crossword puzzle -- Rags to Riches #1 – Poster Assignment

Day 85 – Review – Presentation assignment

Day 86 – Review – Chapter 12 Test

### Semester Test Project

### Grading of Class

Grading is based on quality of work done in a timely fashion.

97% and above = A+

93 to 97% = A

90 to 92% = A-

87 to 90% = B+

83 to 87% = B

80 to 83% = B-

77 to 80% = C+

73 to 77% = C

70 to 73% = C-

67 to 70% = D+

63 to 67% = D

60 to 63% = D-

< 60% = F

Graded Items include: daily work, class participation, quizzes, labs, tests, reports, projects, educational trip activities, reflective statements, etc.

### Unit assignments include:

- Reading and study guides
- Vocabulary exercises – crossword puzzles, flash cards, bingo
- Presentations – evaluation of presentation skills and subject matter
- Research
- Design of projects
- Educational trips
- Guest Speakers
- Quizzes and tests