

Nassau Community College
Physical Sciences a division of the Math/IT/CS Department
MET 101 K1 - Introduction to Meteorology/Weather - CRN 43544
Spring 2024

Professor: Gregory Lehenbauer

Email Address: Gregory.Lehenbauer@ncc.edu

Meeting Times: **Lecture:** Tue and Thu 1:00-2:15PM Room C311

Lab: Tue and Thu 2:30-3:45PM Room C311

Office: Remote on Zoom Meeting ID: 972 0059 6070 On Campus: Life Sciences 248

Office Hours: Mon 9:30-10:45AM (Zoom) and Wed 12:00-1:15PM

Course Website: This document and other helpful lecture and lab information can be found on the instructors web site for MET 101:

<https://facultywebsites.ncc.edu/faculty/SCI/lehenbg/met101.html>

This web site will also be especially helpful for those experiencing difficulty with some of the labs as it provides a way for students to obtain additional practice in performing some of the concepts covered in lab. Those labs preceded with an asterisk (*) on the lab outline on page 7 have additional help available on the above website.

Textbook: Aguado, Edward and J. E. Burt, *Understanding Weather & Climate*, 7th Edition (6th, 5th, 4th also allowed)

It is mandatory to obtain the textbook and bring it to every class/lab. Do not buy the electronic version of the textbook /eBook. It is better to obtain a real hard copy version of the textbook. The newest edition is the 7th edition, but I highly recommend buying either the 4th, 5th or 6th edition for a much lower price on a textbook reselling website like Amazon.com. At the end of each chapter there is a list of **Key Terms**. These were the terms that were used and explained in the chapter. The first time the word was used in the chapter it was typed in **bold print**. Students who understand all of these terms tend to receive higher grades. One way to learn and understand these is to write out the terms and their definitions on a piece of paper or make flash cards.

Course Description:

To understand the daily and seasonal weather, students will be introduced to the basic weather elements such as temperature, atmospheric pressure, wind, humidity, precipitation and cloudiness. Real-time weather maps and forecast models from the internet are often used in class to enhance the study of particular topics. After a good foundation in the basic principles of meteorology, various atmospheric phenomena will be discussed, including the formation of rainbows, thunderstorms, lightning, tornadoes and hurricanes. Many of these phenomena are illustrated through video media. Laboratory exercises include the study of weather observations and radar images from the WSR-88D, analysis of surface maps, including the plotting the location of warm and cold fronts, upper-air maps, the analysis of soundings on Skew-T diagrams and weather forecasting.

Outcomes and Objectives

Educational Objectives:

Upon completion of this course:

1. The student will be able to apply basic concepts in meteorology and appraise their application to everyday situations.
2. The student will implement the scientific method through the concepts, observations, and physical laws as they apply to Meteorology.
3. The student will operate meteorological equipment in order to gather data and interpret results about meteorological phenomena.
4. The student will be able to evaluate variables (dependent and independent) in controlled experiments.
5. The student will be able to make viable, logical conclusions based upon experimental observations.

6. The students will be able to address, critique, and appraise misconceptions in Meteorology.
7. The student will be developing critical thinking skills in order to assess current developments in science

Student Learning Outcomes:

1. To instill a greater awareness of the complexity of the earth's atmosphere.
2. To develop an understanding of the effect of the atmosphere and its changes upon students' daily lives.
3. To understand the forces which cause or contribute to current weather conditions.
4. To develop a realization that observation of weather is a clue to future weather changes.
5. To develop an understanding of particular weather elements, e.g. temperature, pressure, humidity, state of sky, etc.
6. To understand the properties of water, and how water relates to weather.
7. To develop a visual skill in weather observation.
8. To develop skills in the use of various weather instruments for collection of weather data.
9. To develop skills in plotting and reading surface station model information.
10. To develop skills in analyzing observations and plotted data to include isotherms, isobars, high and low pressure centers, air masses, warm and cold fronts and areas of overcast skies, precipitation, thunderstorms and fog.
11. To develop a skill in preparing a simple weather map.
12. To develop a skill in preparing simple weather forecasts: A. without instruments and/or weather maps and using Buys' Ballot's Law and/or knowledge of cloud types. B. with instruments and/or weather maps.
13. To develop a skill in preparing upper level isobaric charts.
14. To develop an understanding of the development of severe weather phenomena.
15. To develop a skill in forecasting severe weather.
16. To develop an understanding of the precautions necessary for survival during severe storm events.

Attendance: Attendance is very important for the successful completion of any course. The attendance policies for the lab and lecture are slightly different:

Lecture: Attendance will be taken at the beginning of every lecture. A maximum of three absences will be allowed, after which two (2) percentage points will be deducted from the students final lecture average for each additional absence, up to six (6) absences. If a student is absent more than six (6) times, without making up the work, he/she will receive an automatic grade of "F" or "WU" unless a student requests a withdrawal via the NCC Portal. This request may or may not be granted in accordance with the withdrawal policies discussed in this document. Lateness is also penalized as two (2) latenesses are equal to one (1) absence. If a student is late it is his/her responsibility to remind the instructor after class to change the attendance record from absent to late.

Lab: Attendance is mandatory and will be taken at the beginning of every lab day. As there are only 12 labs covered over 15 weeks, you are only allowed to miss one lab, after which three (3) percentage points will be deducted from the students final lab average for each additional lab missed, up to two (2) labs missed. If a student misses more than two (2) labs, without making up the work, he/she will receive an automatic grade of "F" or "WU", unless a student requests a withdrawal via the NCC Portal. This request may or may not be granted in accordance with the withdrawal policies discussed in this document. Lateness is also penalized as two (2) lateness' are equal to one (1) absence. If a student is late it is his/her responsibility to remind the professor after lab to change the attendance record from absent to late. Check with the professor if you are uncertain as to whether or not you will lose points or receive an "F" because of excessive lateness' and/or absences. Do not expect the professor to remember at a future class who arrived late the previous day or week.

An absence or lateness in lecture/lab can be made up/excused by completing a five step process: 1) Send me an email specifically asking what material/slides were covered on the day of your absence, 2) Watch/listen to the PowerPoint presentation(s) posted on D2L/Brightspace, for the notes that you missed, 3) as you watch/listen take complete handwritten detailed notes (including sketching any figures/charts) in your own notebook, 4) send me an email with an attached scan (PDF file) of the detailed notes that you took, and 5) complete the HW/lab before the due date.

Attendance Extra Credit: A student who has perfect attendance during all lecture and lab sessions and is able to email me attached PDF scans of complete and thorough detailed notes they have taken for all lecture chapter and lab PowerPoint presentations, in separate lecture and lab notebooks, will have a five (5) percentage point bonus added to his/her overall final average. In order to get these 5 bonus points you will need to email me detailed scans of **hand-written** notes (that include sketches of all charts/drawings/diagrams presented) that you have taken on every lecture chapter and every lab prior to every major exam (3 exams in lecture and 2 exams in lab). **As a student you should be doing this anyway in every class you register for**, but in this case, in order to encourage your engagement in the course content, this extra credit is being offered. This may be very beneficial to those students who end up with for example a 84.5 average as the five additional points will raise the average to 89.5, which is then rounded up to a 90.0, which allows the student to get an A in MET 101.

Reviewing Lecture and Lab Presentations: Remember that I have posted PowerPoint presentations in D2L/Brightspace, for every lecture chapter and lab that we are covering in this course. These PowerPoint presentations include recordings of my voice teaching/explaining the material that was covered for that chapter or lab. In some cases I spend up to 3-4 minutes discussing/explaining/teaching a particular slide. You can also use these PowerPoint presentation recordings to review what we did in lab, to remind you of how to complete the labs if you forgot how to accomplish a task, before they are due in the future. Make sure that you have Microsoft Office 365 - PowerPoint installed on your PC.

Disruptive Behavior in Lecture/Lab: Anything that disturbs the learning of anyone else is considered harassment and will be dealt with accordingly. If you participate in any kind of distracting activity you will be asked to leave the class/lab room immediately and your behavior will also be reported to the Dean of Students. If you violate any aspect of the NCC Student Code of Conduct or the Classroom Disruption Policy you can expect to meet with the Dean about your behavior and will also be permanently removed from the class.

Computer Usage in the Lecture/Lab Room: The C-Cluster, where our class/lab room is located has recently finished a multi-million dollar renovation. This renovation included the modernization of the rooms, which included the installation of student computers for every student. The use of these computers must only be for MET 101 related items as directed by the professor. If you are found using these computers to browse the internet for other non-class related items or found using social media or found using them when the professor has said to make sure they are turned off you will be subject to the behavior policy above. Since our classroom is equipped with computers, students can not bring in their own laptop, tablet etc for note taking or taking exams/quizzes.

Smart Phone Usage in the Lecture/Lab Room: You will not need your Smart Phone during the lecture/lab sessions, therefore it should be turned off and/or put into airplane mode when class begins. All earbuds/air pods need to be removed from your ears. These devices are a major distraction and interfere with the learning process. Many students have unknowingly received low or even failing grades in their college courses because they spent too much time looking at their phone instead of paying attention to the course material being presented. Therefore, if you are found using your phone during the lecture/lab sessions, you will be subject to the behavior policy above. We will generally take a 15 minute break every day between lecture and lab. This break time is where you can then check in on your phone.

Calculator: A calculator is required for both lecture and laboratory. Make sure you have a calculator with you at all times.

Materials to Buy: In addition to the mandatory textbook, you should obtain a set of colored pencils, a mechanical pencil to analyze weather maps in the lab and two separate notebooks, one for lecture notes and one for lab notes.

Cheating/Plagiarism: Cheating will not be tolerated this includes group work. **Group work is not allowed.** A student who is caught cheating, including looking at another students computer screen during a exam or quiz, will be dropped from the course immediately and reported to the Dean of Students. This may result in a student being dismissed from Nassau Community College, which will make it very difficult to transfer into a four-year school.

There are no warnings or excuses. There are many ways for professors to detect that you worked together with another student on an assignment or project.

Grading: Students can and should track their grades on D2L/Brightspace. Your final grade will be an average calculated from your performance in the various aspects of the course. The lecture and laboratory* portions of the course are worth 50% each.

Lecture

Homework 15%
 Quizzes 15%
 Exams (3) 60%
 Class Participation 10%

Lab*

Lab Reports 40%
 Lab Quizzes 10%
 Lab Midterm 25%
 Lab Final 25%

* In theory would be possible to receive a failing grade in lab and a passing grade in lecture, and after the two grades are combined have a high enough grade to pass the course. However, since you are receiving laboratory science credit towards graduation for this course, in order to receive a passing grade for this course, a student must pass the laboratory portion of the class before a final overall average will be calculated.

Your final letter grade is based upon your overall average and is determined by NCC Policy:

| | | | | | |
|---------|---|----|-----------|---|----|
| 90-100% | = | A | 70-74% | = | C |
| 85-89% | = | B+ | 65-69% | = | D+ |
| 80-84% | = | B | 60-64% | = | D |
| 75-79% | = | C+ | Below 60% | = | F |

Lecture Grade Component Information:

Lecture Exams/Final Exam: There will be two lecture exams based upon material from lecture as well as a Lecture Final Exam scheduled for the last day of class. Exams are an important and very serious part of this course as they make up 60% of your lecture grade. In general make up exams are not given, but it is understood that occasionally an emergency happens that prevents you from taking the exam at its scheduled time. If an emergency does happen, you must inform the professor of the emergency either **before or during** the scheduled exam time via email. Failure to inform the professor before or during the exam is an indication that you did not consider the exam to be an important event in your life and therefore **no make-up will be given. Any emergencies require documented proof of the emergency.** However, there will be no make-up exam for the Final Exam. Once an exam date has been determined by the instructor individual students should not ask for special permission to take the exam on a different date. The instructor reserves the right to change previously announced exam dates due to school closure or other delays in covering course material. The exams will held F2F on campus and a time limit will be set. The exams will be open and you can use your hand written notes, textbook and D2L Brightspace. The only thing you are not allowed to use is another person. Software maybe deployed to insure that you are not communicating (texting, talking etc...) with another person while you take an exam.

Lecture Quizzes: There will be several lecture quizzes given at various times during the semester covering the lecture chapter PowerPoint presentations and the D2L Brightspace lecture homework questions. There will be no make-up quizzes. The quizzes will be on D2L Brightspace and a time limit will be set. The quizzes will be open and you can use your hand written notes, textbook and D2L Brightspace. The only thing you are not allowed to use is another person. Software maybe deployed to insure that you are not communicating (texting, talking etc...)with another person while you take a quiz.

Lecture Homework: Homework questions will be assigned in D2L Brightspace from the various assigned chapters as well as three additional written homework assignments that will be due at 1:00PM on the due date found on the "Lecture Outline" (page 8) of this document and the D2L Brightspace calendar. The D2L Brightspace homework assignments consist of questions pertaining to the material in the chapter.

The D2L Brightspace questions will be activated once we begin that chapter and then they will be deactivated by D2L Brightspace at 11:59PM on the due date. The D2L Brightspace questions will be set up so that you can keep redoing the questions over and over again until you receive a 100%. The professor will record the score of your last attempt in the grade book. This process should enable you to have close to a 100% average in the HW category (15% of your lecture grade) and more importantly help you do better on quizzes and tests as you may see very similar questions on exams and quizzes. The three written assignments will either be from the textbook or found on documents to complete.

Lab Grade Component Information:

Lab Exams: There will be a midterm and a final laboratory exam based upon material covered in the lab sessions. As we are learning lab F2F this semester, the exams will be a combination of questions found on D2L/Brightspace along with a show your skills portion which will be done on paper. A time limit will be set for the exams. The exams will be open and you can use your hand written notes, textbook and D2L/Brightspace. The only thing you are not allowed to use is another person. Software maybe deployed to insure that you are not communicating (texting, talking etc..) with another person while you take exams.

Lab Quizzes: There will two types of lab quizzes given this semester. Every week, when we start a new lab there will be a short quiz at 2:30PM to see if you are prepared. This quiz will contain 1-3 simple questions to see if you are familiar with the lab that we will be starting that day. There will be no make-up quizzes, so being late to lab will make it hard to do well on these quizzes. Additionally there will be three announced lab quizzes on topics from prior labs. The dates of these quizzes can be found on page 7 of this document. The lab quizzes will be open and you can use your hand written notes, textbook and D2L/Brightspace. The only thing you are not allowed to use is another person. Software maybe deployed to insure that you are not communicating (texting, talking etc...) with another person while you take a quiz.

Lab Exercises: Lab exercises are due one week after we finish going over the lab notes for that lab. Labs are to be completed in pencil (NOT PEN). **Labs done in pen will not be accepted.** Be sure that you answer all of the questions found inside each lab. Four of the labs (marked as D2L on the lab outline on page 7) have D2L Brightspace questions similar to the lecture HW questions online. The due date/time for the online completion of these questions is the same day/time, the lab, the questions are associated with is due. Each lab exercise, except for two of them, will be worth 20 points. Except for the two labs which are worth 40 points, students will be allowed to drop their lowest lab exercise score. A student who misses one lab will of course have a ZERO dropped instead.

Class Participation: In order to receive the maximum amount of these points students should be actively participating by paying attention, raising their hands when the professor asks a question, while taking notes on the current topic. At various random times during the semester students will be called upon randomly to answer a question regarding the current topic. This means no one should be asleep or attempting to do HW for another class. Please remember that class participation is a portion of your grade and you will want to make sure your earning these points, by participating, when questions are being asked.

Email Extra Credit: As per NCC policy, students should only use their NCC student email to communicate with their professors. Prior to February 1, 2024 @ 1159PM, you should send the professor an email from your NCC student email account. This email can be used to introduce yourself, explain what your major is and what your plans are for the future. Students who do this will receive extra credit as discussed on the first day of lab. It is strongly recommended that students set their smart phone to receive their NCC student email as instant notifications. This can be accomplished by using badges and banners in the notification settings on your phone.

Withdrawal: In order for there to be no record of this course on your transcript you must drop the class prior to 11:59PM on Wednesday, February 14, 2024. After this date, the last official day to receive an automatic “W” is Monday, April 8, 2024. Students who wish to withdraw from the course after this date must meet with the professor on Zoom to discuss why a withdrawal is necessary and to discuss any other alternative steps that may be taken. Students may do this up until 3:45PM on Thursday, May 16, 2024. After this time the student will receive the appropriate grade for the course work completed. It is noted that a student who has been absent 3 or more times, without making up the missed work as discussed prior, will receive an “F” or “WU” unless he/she officially withdraws from the course by requesting a withdrawal via the NCC Portal. A grade of “WU” is given out if a student disappears from the class and does not request a withdrawal by the proper date. Keep in mind that a “WU” may impact your ability to receive financial aid in the future. FYI at NCC students have the ability to retake any course for a higher grade to replace any “WU”, “F” or other low grades that were earned.

Statement for Students with Disabilities: If you have a physical, psychological, medical, or learning disability that may have an impact on your ability to carry out the assigned coursework, I urge you to contact the staff at the Center for Students with Disabilities (CSD), via email, CSDOffice@ncc.edu or by phone at 516-572-7241. The counselors at CSD will review your concerns and determine to what reasonable accommodations you are entitled as covered by the Americans with Disabilities Act and section 504 of the Rehabilitation Act of 1973. All information and documentation pertaining to personal disabilities will be kept confidential.

Office Hours/Extra Help: If for any reason you do not understand any of the material covered in class, do not hesitate to ask for extra help. I will be available for help during my office hours. If you can not meet during my scheduled office hours talk with me to arrange an appointment. Office hours can also be used to go over assignment or homework questions before or after they are due. Students who wish to inform the professor of learning disabilities or medical conditions may come to office hours to discuss the situation in private.

Other Important Notes:

- 1) The deadline to apply for a May 2024 graduation/degree is Monday, February 26, 2024. Students who miss this deadline will have to wait until August of 2024 to graduate.
- 2) Conversion Day: Thursday, April 25, Day and Eve classes follow a Tuesday schedule

MET 101 K1 - Spring 2024 - Laboratory Outline (Tentative)

At a minimum, students are required to read each lab/labs and any reading assignments from the textbook before coming to the laboratory session. There are PowerPoint presentations posted in D2L/Brightspace regarding the new concept(s) for the week and how to do the lab. You could watch these and get started on the lab before our lab start time. If you can show me your completed lab and complete notes in your notebook, you could leave the lab session early.

Note: Those labs below with the letters (D2L) after the title of the lab have required questions to complete online inside D2L/Brightspace. The due date/time for the online completion of these questions is the same day/time, the lab, the questions are associated with is due.

| <u>Date</u> | <u>Lab #</u> | <u>Lab(s) Covered</u> | <u>Lab Manual Pages</u> | <u>7th Edition Textbook Reading Assignment</u> |
|--------------|--------------|--|-------------------------|---|
| Jan 25 | 0 | Syllabus | | |
| Jan 30/Feb 1 | 1 | Using Doppler Radar: WSR-88D | 143-152 | 326-329 |
| Feb 6/8 | 2 | Isopleth Analysis * Isotherms (D2L) | 13-16 17-26 | 69-76 |
| Feb 13/15 | 3 | The Effect of Heat Capacity on Temperature (D2L) | 31-38 | 56-57, 64-67 |
| Feb 20/22/27 | 4 | * Isobars | 39-46 | 25, 98-100 |
| Feb 29/Mar 5 | 5 | ASOS and METAR | 7-12 | 401-402 |
| Mar 7/19 | 6 | Surface Station Models | 59-79 | 26-27, 401-402, 410-412, 530-533 |
| Mar 21/26 | 7 | Air Masses and the Stationary Front (D2L) Announced Lab Quiz 1: Surface Station Models ^(See Note 2) | 115-118 | 262-268, 277, 288-292 |
| Mar 28 | | Lab Midterm Exam | | |
| Apr 2/4 | 8 | * Warm and Cold Fronts (D2L) | 119-130 | 268, 270-279, 288-292 |
| Apr 9/11 | 9 | * Skew-T Diagram ^(See Note 1) | 80-96 | 401-402, 416-417 418, 165-169, 173-174 |
| Apr 16/18 | 10 | Precipitation Processes | 97-106 | 141, 190-196 |
| | 11 | Upper Air Station Models | 107-112 | 401-402, 412-415 |
| Apr 25/30 | 12 | * Severe Weather Analysis ^(See Notes 1 and 3) Announced Lab Quiz 2: Warm and Cold Fronts ^(See Note 2) | 131-142 | 345-348, 412-415 |
| May 2/7/9 | 12 | * Severe Weather Analysis ^(See Notes 1 and 4) Announced Lab Quiz 3: Air Masses and Analysis of Warm and Cold Fronts ^(See Note 2) | 131-142 | |
| May 14/16 | | Lab Final Exam | | |
| May 21/22/23 | | Make-Up Days if Necessary | | |

Note 1: This lab will be worth double the normal points (40 Points).

Note 2: This quiz will occur at the beginning of the day at 1:00 PM. Make sure that you are not late.

Note 3: Begin this lab at home. That is finish maps 1, 2 and 3 ahead of time. The professor will have you individually show maps 1, 2 and 3 at the beginning of lab that day.

Note 4: This lab will be due and must be turned in before 3:45PM on May 9, 2024.

MET 101 K1 - Meteorology - Spring 2024 - Lecture Outline (Tentative)

Since you have been given this tentative course outline it is your responsibility to know when assignments are due and when quizzes or tests will be given. Students should not return to campus after an absence claiming that they did not know homework was due or that a test or quiz was going to be given that day. Reminders of due dates for Lecture HW, Quizzes and Exams can also be found in the D2L/Brightspace calendar.

| <u>Day #</u> | <u>Date</u> | <u>Chapter</u> | <u>Topic/Important Notes</u> |
|--------------|--------------|----------------|---|
| 1 | Jan 25 | 1 | Outline/Syllabus, Chapter 1: What is Meteorology? Definition of Weather |
| 2 | Jan 30 | 1 | Internet Map Discussion, Where can we obtain weather info?, Who uses weather info? Jobs available in the field of meteorology, Weather and Basic Commodity Prices, The Atmosphere, Permanent Gases, Variable Gases: 1) Water Vapor, 2) Carbon Dioxide, 3) Ozone, 4) Methane |
| 3 | Feb 1 | 1 | 5) Aerosols/Particulate Matter; Density and Air Pressure, Air Pressure Rule of Thumb, Layers of Atmosphere Based on Temperature |
| 4 | Feb 6 | 1 | Internet Map Discussion, Ionosphere, Ozone Dilemma |
| 5 | Feb 8 | 1 | HW # 1 Due, Ozone Dilemma cont., Weather vs. Climate, History of Meteorology |
| 6 | Feb 13 | 2 | History of Meteorology cont., Chapter 2: Energy and Energy Types (Kinetic Energy, heat energy and electromagnetic radiation), Heat |
| 7 | Feb 15 | 2 | Quiz Chapter 1, Electromagnetic Radiation, Conduction, Convection, Radiation Laws, |
| 8 | Feb 20 | 2 | Stefan Boltzmann Law, Wien's Law, Radiation of the Sun and the Earth, Why the Earth has Seasons, Milankovitch Cycles, Perihelion, Aphelion, Rotation/Revolution Website, Length of the Day, Arctic Circle, Antarctic Circle, Solar Elevation Angle, Solar Declination, Annual Migration of Direct Rays of the Sun |
| 9 | Feb 22 | 2 | HW # 2 Due, Summer/Winter Solstice and Autumnal/Vernal Equinox, Tropic of Cancer, Tropic of Capricorn, Why the times and/or dates of the solstices and equinoxes differ each year?, Atmospheric Beam Depletion, Changes in Energy Receipt with Latitude, Winnipeg vs Austin |
| 10 | Feb 27 | 3 | Review for Exam I, Chapter 3: Insolation, Absorption, Reflection, Scattering, Rayleigh Scattering, Blue Sky, Mie Scattering, Haze, Red Sunrise/Sunset, Non-Selective Scattering |
| 11 | Feb 29 | | Exam I (Chapters 1 & 2) |
| 12 | Mar 5 | 3 & 17 | Chapter 17: Rainbows, Rainbows and Weather Forecasting (Not in text), Primary Rainbow, Secondary Rainbow, Chapter 3(cont): White Clouds, Scattered Light and Colored Clouds (Not in text) |
| 13 | Mar 7 | 3 | HW # 3 Due, Pass back Exam I, Solar Energy Distribution (The Fate of Solar Radiation), Greenhouse Effect, Sensible and Latent Heat: Human Perspiration and Air Cooled Rain, Atmospheric Window |
| 14 | Mar 19 | 3 | Earth's Annual Energy Balance, Latitudinal Variations and the Energy Balance, Advection, Ocean Currents, Geographical Influences on Temperature |
| 15 | Mar 21 | 3, 4 & 5 | HW # 4 Due, Air Temperature and Human Comfort: Wind Chill Factor, Heat Index, Chapter 4: Air Pressure, Dalton's Law, Surface Pressure vs Sea Level Pressure |
| 16 | Mar 26 | 4 | The Equation of State (Ideal Gas Law), Pressure Gradients: 1) Horizontal and 2) Vertical, Hydrostatic Equilibrium, Microburst, Coriolis Force, Friction, Convergence vs Divergence, High and Low Pressure Systems |
| 17 | Mar 26 | 4 & 5 | Quiz Chapter 3, Surface Wind Directions around High and Low Pressure Systems in the N. and S. Hemispheres, Buys-Ballot's Law, Buys-Ballot's Law and Weather Forecasting, Chapter 5: Introduction to Atmospheric Moisture, Phase Changes of Water, Saturation |
| 18 | Apr 2 | 5 | HW # 5 Due, Hydrologic Cycle, Wx. Channel Video "Water Oceans to Air", Transpiration, PWAT, Indices of Water Vapor Content, Vapor Pressure, Saturation Vapor Pressure, Relative Humidity, Dew-Point Temperature (Td), Sling Psychrometer Demo Video |
| 19 | Apr 4 | 4, 5 & 17 | HW # 6 Due, Dew-Point Temperature and RH, 3 Methods of Achieving Saturation, Dew, Frost, Frozen Dew, Black Frost |
| 20 | Apr 9 | 5 | Quiz Chapter 4 & 17, HW # 7 Due, Condensation Nuclei, Hygroscopic Nuclei, Haze, Types of Fog (Handout), Distribution of Fog, Positive and Negative Aspects of Fog |
| 21 | Apr 11 | 5 & 6 | HW # 8 Due, Review HW # 6 and 8, Review for Exam II, Chapter 6: Formation and Dissipation of Cloud Droplets, Cloud Classification System: 4 Groups of Clouds |
| 22 | Apr 16 | | Exam II (Chapters 3, 4, 5 and 17) |
| 23 | Apr 18 | 6 | Cirrus, Cirrostratus, Cirrocumulus, Altostratus, Alto cumulus, Stratus, Nimbostratus, Stratus-fractus or Scud, Stratocumulus, Cumulus humilis, Cumulonimbus, Mammatus, Lenticular, Banner, Cloud Pictures, USPS Cloud Stamps |
| 24 | Apr 25 | 6 & 13 | Conditions one would Experience as a cB Cloud Passed Overhead, Clear Air Lightning, Storm Chasing, The Four (4) Mechanisms that Lift Air, Chapter 13: Three (3) Satellite Image Types: 1) Visible 2) Infrared and 3) Water Vapor |
| 25 | Apr 30 | 6 | HW # 9 Due, Orographic Uplift Effect, DALR, MALR, California Central Valley, Deserts, Discuss Orographic Uplift HW Problem |
| 26 | May 2 | 7 | HW # 10 Due, Chapter 7: Distribution of Precipitation, Precipitation Types (Handout), Rain, Drizzle, Differences in the Formation of Sleet, Snow, Freezing Rain and Rain, Hail, Largest Hailstones, Annual Average Number of Hailstorms in the US |
| 27 | May 7 | 7 & 11 | HW # 11 Due, Chapters 11 and 12: Air Mass Thunderstorms, Severe Thunderstorms, Derecho |
| 28 | May 9 | 11 & 12 | Quiz Chapter 6 (Clouds) & 13 (Satellites): Discuss Video Questions Handout, Thunderstorms Video, Formation of Lightning (Handout), Electrification of Clouds-Charge Separation (Handout), Tornado Formation, Enhanced Fujita Scale Downtown Miami Tornado Video |
| 29 | May 14 | | Hurricanes, Development (Tropical Disturbance, Tropical Depression, Tropical Storm, Hurricane) Weather Channel - Weather in the Classroom Videos: Hurricanes - Episode 7a (Formation, Structure and Storm Surge) and Episode 7b (Hurricane Season, Names, Saffir-Simpson Scale), Dangers Edge Video |
| 30 | May 16 | | HW # 12 Video Questions Due, Lecture Final Exam |
| MD | May 21/22/23 | | Possible Make-Up Days |

HW Assignments (Due dates are listed above)

HW # 1: Chapter 1: D2L Brightspace

HW # 2: Chapter 2: D2L Brightspace

HW # 3: Chapter 17 (Rainbows): D2L Brightspace

HW # 4: Chapter 3: D2L Brightspace

HW # 5: Chapter 4: D2L Brightspace

HW # 6: Chapter 5: Problems & Exercises 3, 4a and 4b ^{Note 1}

Note 1: Use the Fahrenheit data and tables to determine your answers.

HW # 7: Chapter 5: D2L Brightspace

HW # 8: Dew/Frost/Frozen Dew/Black Frost HW Problem

HW # 9: Chapter 6 & 13 - Clouds & Satellites: D2L Bright..

HW # 10: Orographic Uplift HW Sheet

HW # 11: Chapter 6 - Stability: D2L Brightspace

HW # 12: Video Questions