

DeAnza College

Physical Sciences, Mathematics & Engineering Division

Winter Quarter 2015

Meteorology 10L "Meteorology Laboratory"

Class times

& Location: Section 4 Call # 33131 11:30 a.m.-12:45 p.m. Mon & Wed

Instructor: Paul J. Olejniczak (Oles)

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Office Hours: 9:30-10:15 a.m. MTWThF

Textbook: "Online Weather Studies Investigations Manual" Ebook- American
Meteorological Society, 2014-15 Edition

Web Page: olespaul.com

Course Description:

Meteorology 10L is an introductory laboratory course in which students work with observational data, graphics products and weather instruments used by synoptic meteorologists to forecast weather. Students will observe the workings of the dynamic atmosphere seeing the scientific principles of meteorology in action and practice the analysis and decision-making skills employed by meteorologists to diagnose weather patterns, understand air motions and predict future atmospheric conditions.

Laboratory sessions will include current weather data and graphics products downloaded from the American Meteorological Society's "Online Weather Studies" homepage on the Internet which has been specifically designed for this course and from the DeAnza Campus's automated Weather Station.

Evaluation:

A student's grade will be based on the submission of completed weekly laboratory exercises.

Letter Grades:

A = 89% + B = 79-88%
C = 69-78%% D = 59-68%
F = 0-58%

Lab Schedule: (Date below indicates ... "The Week of Monday, Jan 05 etc)

Jan 05 Mon

Orientation and Review of Class Syllabus

A Review of Online Class Resources

A Look at DeAnza Campus's Weather Stations & Instrumentation

Lab Exercise 1A: "Surface Air Pressure Patterns"

Draw isobars on a surface weather map and interpret air pressure patterns.

Jan 12 Mon

Lab Exercide 1B: "Air Pressure & Wind"

Apply the hand-twist model to surface winds in high and low pressure systems

Lab Exercise 2A: "Surface Weather Maps"

Decode symbols on a surface weather map and interpret weather conditions.

Jan 19 Mon

Lab Exercise 2B: "The Atmosphere in the Vertical"

Plot a sounding on a Stuve diagram and compare it to U.S. Standard Atmosphere.

Lab Exercise 3A: “Weather Satellite Imagery”

Compare visible and infrared satellite images for weather interpretation.

Jan 26 Mon

Lab Exercise 3B: “Sunlight throughout the Year”

Describe variations in solar radiation throughout the year by latitude.

Lab Exercise 4A: “Temperature & Air Mass Advection”

Draw isotherms on a surface map and determine areas of warm and cold air advection.

Feb 02 Mon

Lab Exercise 4B: “Heating-Degree-Days & Wind Chill”

Calculate heating and cooling degree-days and determine wind chill.

Lab Exercise 5A: “Air Pressure Change”

Use a meteogram to describe changes in air pressure and other weather conditions with the passage of a cold front.

Feb 09 Mon

Lab Exercise 5B: “Air Pressure in the Vertical”

Use the pressure block concept to demonstrate the influence of air density and air temperature on changes in air pressure with altitude.

Lab Exercise 6A: “Clouds, Temperature & Air Pressure”

Use cloud-in-a-bottle demonstration to illustrate how temperature changes are related to pressure changes.

Feb 16 Mon

Lab Exercise 6B: "Rising & Sinking Air"

Use a Stüve diagram to illustrate dry and saturated adiabatic processes as air parcels ascend and descend in the atmosphere.

Lab Exercise 7A: "Precipitation Patterns"

Locate and track areas of precipitation using weather radar operating in the reflectivity mode

Feb 23 Mon

Lab Exercise 7B: "Doppler Radar"

Describe the wind pattern detected by Doppler radar for a severe weather situation.

Lab Exercise 8A: "Surface Weather Maps & Force"

Examine the influences of forces on horizontal air motion near the Earth's surface.

Mar 02 Mon

Lab Exercise 8B: "Upper-Air Weather Maps"

Describe the properties of a 500 millibar map analysis and identify highs, lows, ridges and troughs.

Mar 09 Mon

Lab Exercise 9A: "Westerlies and the Jet Stream"

Examine upper-air westerly wave patterns, the jet stream and how these features influence midlatitude surface weather.

Mar 16 Mon

Lab Exercise 10A: “The Mid-Latitude Cyclone”

Describe weather conditions surrounding the center of a typical midlatitude cyclone.

Lab Exercise 10B: “Cyclone Track Weather”

Compare weather conditions on either side of a mature midlatitude cyclone.

Mar 23 Mon

Open Date – Makeup Lab

Rules & Regulations:

Students must purchase the 2012-2013 Edition of the Investigations Manual Weather

Studies.. The Lab cannot be taken without the Investigations Manual.

Regular class attendance is required. Class attendance will be recorded each class period. Students missing three (3) consecutive labs will be dropped from the class.

The use of cell phones or pagers is strictly forbidden during class unless prior arrangements have been made with the instructor.