MET 101: Meteorology
LAB FINAL REVIEW SHEET

LAB FINAL:

The Lab Final will cover each of the labs listed below. Under each lab is a listing of the concepts, ideas, plots, or material covered within that lab. **This however is not a complete listing as it would be impossible to list all of the ideas covered on one sheet of paper.** You must bring a calculator, pencil, eraser, and colored pencils to your lab final.

Air Masses and the Stationary Front (Lab 7) - know:

- the humidity and temperature characteristics of the five different air masses that effect the United States
- the source regions of the five different air masses: Fig 9-1 (6^{th} / 7th Editions of textbook)
- how to find and draw a stationary front (use proper colors and symbols) if given a US map of station models
- the process of cyclogenesis / frontogenesis
- where in the process of cyclogenesis a stationary front can be found: Fig 10-1 (6^{th} / 7th Editions of textbook)
- the definition of a front

Warm and Cold Fronts (Lab 8) - know:

- how to contour isobars
- how to find areas of high and low pressure (use proper colors and symbols)
- how to find and draw cold and warm fronts (use proper colors and symbols)
- the proper colors and symbols associated with an occluded front
- the differences in weather variables, in other words the weather conditions within the different sectors of a wave cyclone (Cold Sector I, Warm Sector and Cold Sector II)
- how weather changes if a storm (low pressure system) passes either North or South of a location
- how a cold or warm front is drawn in relation to a low pressure system
- why an occluded front forms and the two types of occlusion
- where in the process of cyclogenesis an occluded front can be found: Fig 10-1 (6^{th} / 7th Editions of textbook)
- the weather conditions as a cold or warm front is approaching/passing (handout)
- which sector the <u>modified</u> cP air is found
- which sector mT air is found
- which sector cP air is found
- how to predict basic changes in the weather (temperature, dew point, wind direction, precipitation intensity and pressure) depending upon where a low pressure system with its associated warm and cold fronts tracks.

Skew-T Diagram (Lab 9):

- during the test you will be given a laminated skew-t chart, ruler and erasable markers
- you will also be given a blank copy of the Skew-T Diagram Lab
- be able to follow the instructions/procedures in the given Skew-T Lab so that you can plot/calculate the different variables/parameters as discussed in the lab
- be able to plot temperature and dew point data (A Sounding) on a skew-t chart
- know which line is which on the skew-t (see figures and descriptions on page 80/81and 96 of lab book)
- know how to follow instructions (the procedure) to calculate the variables/parameters
- know the units associated with each of the variables

Precipitation Processes (Lab 10):

- know the details of how the two precipitation processes work
- know **why and what** happened to the distilled water when we dropped its temperature below freezing and then tapped or stirred the test tube
- be prepared to answer short answer questions regarding "HOW" a cloud drop can grow into a rain drop so it can become heavy enough to fall to the Earth as precipitation
- know why most raindrops are much colder than the air
- understand the table regarding the terminal velocities of different sized drops
- understand the table regarding the maximum fall distance of a drop
- know how to calculate various drop fall velocities given various upward flowing wind velocities
- using a table know how to calculate how far a drop will fall from a cloud before evaporating

Upper Air Station Models (Lab 11) - know:

- how to plot upper-air data onto a station model
- how to decode/interpret an upper air station model
- how to code/decode height and height change
- that the variables covered will be temperature (T), wind direction, wind speed, dew point depression (T_{dd}), height of the pressure level measured in meters and 12 hour height change also measured in meters
- all of the units (Note: Temp is given in °C and T_{dd} is in C°) associated with the upper air station model

- how to calculate and where to plot the dew point depression
- what one should do to the upper air station model circle when the T_{dd} is less than or equal to 5 C°
- the differences between the upper air and the surface station models - do not confuse the two

Severe Weather Analysis (Lab 12) - know:

- the four general conditions described on the first two pages of the lab needed to bring severe weather to an area
- the five specific variables analyzed (For example: the Temp must be equal to or greater than 60°F) that need to **ALL** come together to bring severe weather to an area
- what a convective outlook map is
- the method for interpreting the various weather variables associated with severe weather so that you could locate an area where severe weather **may** develop (Part C - Page 134 of lab manual)
- how to create a convective outlook map if given the 5 maps that contain the needed variables
- how to find and then draw trough and ridge lines on a 500 mb map
- that one would find a high pressure system, on the surface, underneath a 500 mb ridge
- that one would find a low pressure system, on the surface, underneath a 500 mb trough
- what vertical wind speed and vertical wind direction shear are
- the difference between a severe thunderstorm or tornado **watch** and **warning**
- how to convert from Z time to EST or EDT

Since we analyzed surface station models in the **Air Masses and the Stationary Front Lab,** the **Warm and Cold Fronts Lab** and the **Severe Weather Analysis** labs:
from the **Surface Station Models lab - know:**

- how to plot weather data on a surface station model
- how to decode/interpret a surface station model
- how to code/decode pressure on a surface station model
- that the variables covered will be temperature, dew point, sky coverage, pressure, pressure change, pressure tendency, wind direction, visibility, wind speed and present weather (including rain, snow, drizzle, thunderstorm and fog)
- the purpose of a surface station model
- all of the units associated with the surface station model
- the differences between the surface and the upper air station models - do not confuse the two