ATMO 101 – Weather and Climate Midterm 1 Study Sheet

Chapters 1 through 5 – Exam Thursday 2/20/2019

Worth 100 points Multiple Choice & True/False Questions

You are responsible for the following words:

Chapter 1	**Chapter 2**	**Chapter 3**
troposphere	albedo	radiation cooling
stratosphere	thermals	isotherm
mesosphere	Kelvin Scale	daily range of temperature
thermosphere	Fahrenheit Scale	annual range of temperature
ionosphere	Celsius Scale	mean daily temperature
temperature inversion	ultraviolet radiation	mean annual temperature
ozone	Infrared radiation	heating degree-day
aerosols	black body	cooling degree-day
carbon dioxide	aurora borealis	growing degree-day
radiosonde	aurora australis	wind-chill index
weather	summer solstice	
climate	winter solstice	
air pressure	vernal equinox	
air density	autumnal equinox	
	greenhouse effect	
Chapter 4	**Chapter 5**	**Chapter 5 (con't)**
advection fog	adiabatic process	ice nuclei
radiation fog	dry adiabatic rate	sleet
upslope fog	moist adiabatic rate	drizzle
evaporation fog	environmental lapse rate	freezing rain (glaze)
dew-point temperature	absolutely stable	rime
relative humidity	absolutely unstable	virga
hydrologic cycle	conditionally stable	
saturated air	orographic uplift	
condensation	rain shadow	
evaporation	cloud seeding	
precipitation	collision-coalescence	
transpiration	ice-crystal (Bergeron) Process	
frost	supercooled droplet	
dew		
virga		

Make flash cards, re-write your notes, have friends quiz you… do whatever you need to do to know these words!

TOP 20 TOPICS YOU NEED TO KNOW (Ch 1 and Ch 2)

1) Composition of the First Atmosphere of the Earth
2) Composition of the Primeval Atmosphere
3) Composition of the Modern (current) Atmosphere (Gases and Particles)
4) Layers and Boundaries of the Atmosphere (names), how and why temperature changes with height
5) How and Why Pressure changes with increasing height, know standard surface pressure value
6) The difference between weather and climate
7) Definition of Temperature and Heat, know the different temperature scales (boiling & freezing)
8) Know when energy is absorbed or released during changes of state (e.g. solid→liquid→gas)
9) Methods of Heat Transfer (Conduction, Convection, Radiation)
10) Types of Electromagnetic Radiation
11) Know what wavelength the Sun and Earth predominately emit
12) Know the THREE Laws of Radiation
13) Know what the "Atmospheric Window" is all about
14) Be able to explain/describe the Greenhouse Effect and which Gases are responsible
15) Know the difference between reflection, scattering, absorption and emission.
16) Know what "Albedo" means, and what the Earth's albedo is
17) Be able to describe how clouds interact with radiation (warming and/or cooling the Earth)
18) Be able to describe Earth-Sun relationships (rotation, revolution, eccentricity, tilt
19) Know why we have seasons (and what would change them – stronger or weaker)
20) Understand the Seasons, Equinoxes, Solstices and Length of Daylight

TOP 25 TOPICS YOU NEED TO KNOW (Ch 3, Ch 4 and Ch 5)

1) Explain why at the surface during the day the air heats up and at night the air cools down.
2) Be able to explain what a temperature inversion is.
3) Be able to describe the different timescales we average temperature over and why.
4) Be able to list and briefly describe the various controls of temperature.
5) Be able to identify the effects of solar heating and ocean currents on global temperature.
6) Be able to draw a sketch showing changes in temperature over 24 hours with and without clouds.
7) Be able to describe the use of and how to calculate: heating, cooling and growing degree-days
8) Explain what the wind-chill index is and how it is used.
9) Be able to draw a simple sketch of "the hydrologic cycle" and explain each part
10) Know if energy is released or required for the various aspects of the hydrologic cycle.
11) Be able to differentiate between the different measurements of humidity.
12) Know what the term "saturated" means and how it is connected to humidity and the water cycle.
13) Be able to describe what the term dew-point temperature means and how it is related to clouds.
14) Be able to differentiate between dew and frost and explain how each is formed.
15) Be able to identify, describe and sketch the different types of fog.
16) Be able to identify the different cloud types in photographs and know their approximate heights.
17) Know the difference between the dry, moist and environmental lapse rates.
18) Describe differences between conditionally stable, absolutely stable and absolutely unstable air.
19) Know the "recipe" for making a cloud.
20) Be able to identify and draw the four primary ways for causing air to rise.
21) Be able to describe and sketch a diagram for the collision-coalescence process.
22) Be able to describe and sketch a diagram for the ice-crystal (Bergeron) process.
23) Where on earth does the collision-coalescence process dominate? The Bergeron process?
24) Describe the vertical atmospheric conditions require for the different types of precipitation.
25) Be able to describe the process and draw a diagram for hail stone formation.