**ES106 Lab Quiz 2 Study Guide**
**(Lab 5 Earth-Sun-Seasons, Lab 6 Moisture in Atmosphere, Lab 7 Weather & Oregon Climate)**

**RECOMMENDED STUDY TECHNIQUES**

1) Use lab manual, text book and internet resources to define key terms below
2) use the concepts below as a guide to help you focus on key terms
3) memorize terms and concepts (make flash cards, rewrite definitions 100 times, etc.)
4) go back over the labs and make sure you can do the math tricks / skills
5) review some of the important figures in your lab manual and text
6) review your lab questions and answer sheets
7) Visit the ES106 Lab Resources Section of class web site, review Youtube instructional videos, go over answer keys to labs and problem sets
8) study until you're sick of it, then study some more until you pass out
9) drink plenty of water; **STUDY A MINIMUM OF 2-3 HOURS to ensure success…**

**Key Concepts and Problem Solving Skills**

Can you convert from English to metric system units?
Can you do unit algebra?
Do you know the difference between mass, volume, length, time, velocity, density?
Can you re-arrange an equation to solve for the unknown variable?
Can you measure angles of solar insolation using a protractor and diagrammatic sketch?
Can you identify the seasons in relation to the Earth rotation-revolution-angle of tilt relative to the sun?
Do you know seasonal changes in atmospheric heat according to latitude?
Can you measure and identify locations of latitude and longitude on the Earth's surface?
Can you plot meteorological data on an X-Y graph?
Can you calculate relative and specific humidity?
Can you calculate the temperature of air using a gradient function?
Can you read a map and measure distances using a scale?
Can you convert between temperature units of Celsius and Fahrenheit?
Do you know the basic characteristics of the troposphere?
Do you know how the seasons work and why? Daily temperature fluctuations and why?
Do you know about solar influx vs. latitude vs. angle of incidence?
Do you understand relative vs. specific humidity?
Do you know the mechanisms for lifting of air? Can you sketch them from memory?
Do you know the mechanisms of cyclones and anticyclones?
Can you make an interpretation from an isobaric pressure map?
Can you sketch / label the global atmospheric circulation model?
Can you sketch / label warm fronts, cold fronts, and occluded fronts?

**KEY WORDS**

***Heat Energy (Review from Quiz 1)***
phase changes
states of matter
solid
liquid
gas
heat energy
floaters
sinker
gravity-driven density contrast
temperature
    degree C/F
heat flow
high temp to low temp
heat - volume expansion
cooling-volume contraction
volume-density relationships
heat loss
heat gain
heat transfer
conduction
convection
radiation
heat absorber
heat reflector
convection cells
evaporation
condensation
melting
freezing

***Structure  Atmosphere (Lab 5)***
meteorology
weather
climate
temperature
humidity
precipitation
cloudiness
air pressure
wind speed
atmosphere composition
nitrogen
oxygen
argon
carbon dioxide
water vapor
dust
condensating nucleii
atmospheric structure
    troposphere
    tropopause
    stratosphere
    stratopause
altitude vs. temp variation
altitude vs. press. variation
Earth-Sun Relation
Rotation / revolution
speed of rotation
earth day / earth year
rotational axis
    north pole
    south pole
equator
axial tilt (23.5 deg.)
insolation
angle of incidence
summer solstice
winter solstice
spring equinox
fall equinox
circle of illumination
tropic of cancer (23.5 deg north)
tropic of Capricorn (23.5 deg. South)
absorption
reflection
continental heating
ocean heating
latitudinal heating
general circulation

***Moisture (Lab 6)***
water vapor
precipitation
solid, liquid, gas
heat energy
evaporation
condensation
freezing
heat
humidity
specific humidity
relative humidity
vapor saturation
dew point temperature
saturation capacity
temperature vs. humidity
temperature vs. air volume
hot air balloon model
dew point
fog / clouds / rain
condensating nucleii
cloud droplets
rising air mass
sinking air mass
Lifting Mechanisms
    forceful lifting
    covergent lifting
    orographic lifting
    frontal wedging
cloud form
    cirrus
    cumulus
    stratus
nimbostratus
rain-hail-snow

***Weather Patterns/Climate (Lab 6-7)***
air mass
weather fronts
source regions
weather vs. frontal position
westerly airflow
orographic lifting
Coast Range, Cascade Range
Rain Shadow Effect
Oregon desert / rain forest

**Big Chill / Climate Change Video**
Greenland Ice Sheet
Antartica Ice Sheet
Global climate change
Paleoclimate record
Gulf Stream / Conveyor Belt
Ocean-atmosphere interaction
Global warming/sea level rise
Gulf Stream
Oxygen isotopes
Ice ages
Last Ice Age 20,000 years Ago
Glacial (cold)/interglacial (warm)
Sea Level Rise / Fall