

ES106 Lab Quiz 2 Study Guide (Spring 2022)
(Week 6 Lab Earth-Sun-Seasons, Week 7 Lab Moisture in Atmosphere, Week 8 Lab 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 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

Week 6 Earth-Sun Relations

meteorology
weather
climate
temperature
humidity
precipitation
cloudiness
air pressure
wind speed
atmosphere composition

nitrogen
oxygen
argon
carbon dioxide
water vapor
dust
condensating nuclei
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

Week 7 Moisture in Atmosphere

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 nuclei
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

Week 8 Oregon Climate 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