

**ES106 Lab Quiz 1 Study Guide (Spring 2022)**  
**(Week 2 Properties of Water, Week 3 Heat, Week 4 Lab Intro to Oceans, Week 5 Lab Seafloor)**

**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
- 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 calculate concentrations in mass percent, ppt

Do you know the types of heat transfer mechanisms?

Can you list 4 or 5 unique properties of water?

Do you know the basic composition of seawater?

Can you list the 4 most abundant ions contained in seawater?

do you know the approximate concentration of salts in the ocean?

Do you know the mechanisms by which ocean currents are formed?

Can you determine the depth to the seafloor if given the velocity of sound and travel time?

Can you draw a profile sketch of the seafloor from on the continent to offshore in the abyssal plain?

Can you draw a sketch of a mid-ocean ridge?

Do you understand magnetic reversals and seafloor stripes?

## Key Words

### *Fundamental Concepts*

Density  
Temperature  
Fahrenheit  
Celsius  
Unit conversion  
Unit algebra  
solid-liquid-gas  
dissolution  
evaporation  
boiling  
condensation  
scientific notation  
metric system  
metric unit conversion  
Temperature  
Heat  
Thermal Energy  
Conduction  
Convection  
Radiation  
heat gain  
heat loss  
Celsius  
Fahrenheit  
Kelvin  
degree F  
degree C  
Phase Changes  
Solid-Liquid-Gas  
Melting  
Evaporation  
Condensation  
Boiling  
Density-mass-volume  
Density calculation  
Unit algebra  
Thermal expansion  
heat - volume expansion  
cooling-volume contraction  
volume-density relationships

### *Week 2 Properties of Water*

Density  
Dipolar Molecule  
Surface Tension  
Specific Heat

Temperature  
Fahrenheit  
Celsius  
Unit conversion  
Unit algebra  
pH-acid-base  
solid-liquid-gas  
dissolution  
evaporation  
boiling  
condensation  
scientific notation  
metric system  
metric unit conversion  
hydrogen bonds  
polar covalent bonds

### *Week 3 Heat and Temperature*

Temperature  
Heat  
Thermal Energy  
Conduction  
Convection  
Radiation  
heat gain  
heat loss  
Celsius  
Fahrenheit  
Kelvin  
degree F  
degree C  
degree K  
Phase Changes  
Solid-Liquid-Gas  
Melting  
Evaporation  
Condensation  
Boiling  
Absolute "0"  
Absorption  
Reflection  
Heat conductor  
Density-mass-volume  
Gram – cubic cm  
Density calculation  
Unit algebra  
Thermal expansion  
Heat of vaporation  
heat - volume expansion  
cooling-volume contraction

volume-density relationships

### *Week 4 Intro to Oceans*

Salinity  
Thermohaline circulation  
Density currents  
Latitude  
Longitude  
%  
o/oo  
pph vs. ppt  
concentration  
solute  
solvent  
oceans-seas-bays  
land area vs. ocean area  
global ocean geography  
percent land cover  
NaCl sodium chloride  
Ocean temperature  
Rising water  
Sinking water  
Cold + High Saline = sink  
Warm + Low Saline = rise  
Ocean circulation  
Temperature-Density Relations  
Salinity-Density Relations  
Ocean conveyor belt  
Polar vs. tropical vs. subtropical  
Equatorial

### *Week 5 Dynamic Ocean Floor*

lithosphere  
inner core  
outer core  
mantle  
crust  
plate tectonics  
seafloor  
seafloor volcanism  
seafloor basalt  
seafloor spreading  
ocean crust  
mid-ocean ridge system  
divergent plate boundary  
paleomagnetism  
magnetic anomalies  
normal polarity  
reverse polarity  
seafloor stripes

deep ocean trench  
magnetic reversals  
magnetic minerals  
bathymetry  
continental shelf  
continental slope  
continental rise  
abyssal plain  
seamount  
deep sea canyons  
submarine fans  
hydrothermal vent  
hotspot tracks  
pillow lavas  
guoyots  
passive margins  
active margins  
plate spreading rates

map scale  
fractional scale  
bar scale  
unit conversions  
unit algebra  
longitude-latitude  
geologic time "M.Y."