ES106 Lab Quiz 1 Study Guide (Spring 2023)
(Week 2 Properties of Water, Week 3 Heat, Week 4 Lab Intro to Oceans, Week 5 Lab Seafloor)

Midterm Lab Online Quiz 1: Thursday May 11, 2023; Canvas drop-in between 8 AM and 11 PM; 45-minute time limit once quiz is started, quiz answers may only be submitted once.

RECOMMENDED STUDY TECHNIQUES

1) Use lab manual, text book and internet resources to define key terms below
2) use the concepts presented below as a guide to help you focus on key terms
3) memorize terms and concepts
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 lab key answer sheets
7) Visit the ES106 Lab class web site, review Youtube instructional videos, go over answer keys to labs and problem sets

LAB QUIZ 1 STUDY RESOURCES

Class Notes:

Introduction https://people.wou.edu/~taylors/gs106/ES106_intro.pdf
Introduction to Water https://people.wou.edu/~taylors/gs106/water.pdf
Heat and Temperature https://people.wou.edu/~taylors/gs106/heat.pdf
Introduction to Oceanography https://people.wou.edu/~taylors/gs106/class_notes_ocean1.pdf
Ocean Chemistry and Physical Processes https://people.wou.edu/~taylors/gs106/class_notes_ocean2.pdf
Dynamic Seafloor / Plate Tectonics https://people.wou.edu/~taylors/gs106/class_notes_intro_plate_tectonics.pdf

Chapter Readings:

Introduction to Earth Science https://people.wou.edu/~taylors/gs106/Ch01_Introduction.pdf
Hydrologic Cycle https://people.wou.edu/~taylors/gs106/text_chap2_hydro_cycle.pdf
Heat and Temperature https://people.wou.edu/~taylors/gs106/Heat_Temperature_Reading.pdf
Ocean Water https://people.wou.edu/~taylors/gs106/Reading_Ch14_Ocean_Water.pdf
Ocean Processes https://people.wou.edu/~taylors/gs106/Reading_Ch15_Ocean_Processes.pdf
Seafloor Tectonics https://people.wou.edu/~taylors/gs106/Reading_Ch13_Ocean_Floor.pdf

PowerPoint Slide Shows:

Introduction https://people.wou.edu/~taylors/gs106/intro_ES106.pptx
Water Basics https://people.wou.edu/~taylors/gs106/water_chem.pptx
Heat and Temp https://people.wou.edu/~taylors/gs106/matter_heat.ppt
Intro Oceans https://people.wou.edu/~taylors/gs106/ocean_intro.pptx
Ocean Water / Chemistry https://people.wou.edu/~taylors/gs106/ocean_chem.pptx
Waves-Tides-Currents https://people.wou.edu/~taylors/gs106/ocean_wave_curr_tide.pptx
Seafloor https://people.wou.edu/~taylors/gs106/ocean_seafloor.pptx

Video Resources:

Introduction to Earth System https://www.youtube.com/watch?v=N3EqcUNdIl8
Hydrologic Cycle https://www.youtube.com/watch?v=al-do-HGuIk
Water Properties https://www.youtube.com/watch?v=0eNSnj4ZfZ8
Heat Transfer https://www.youtube.com/watch?v=1fbG4zt9xn4

Water Phase Change https://www.youtube.com/watch?v=tuE1LePDZ4Y
Density Facts https://www.youtube.com/watch?v=zlkpZZW29b0
The Water Planet https://people.wou.edu/~taylors/gs106/Water_Planet/Water_Planet_player.html
Intro to Thermohaline Circulation https://www.youtube.com/watch?v=FuOX23yXhZ8
Ocean Salinity https://www.youtube.com/watch?v=EqpJZGyS4Bw
Global Ocean Currents https://www.youtube.com/watch?v=yhwkhAvRI9I
Basics of Plate Tectonics https://www.youtube.com/watch?v=ryrXAGY1dmE
Mid-Ocean Ridges https://www.youtube.com/watch?v=ZzvDlP6xd9o
Seafloor Spreading and Magnetic Reversals https://www.youtube.com/watch?v=BCzCmldiaWQ

Lab Answer Keys:
Lab 1 – Properties of Water https://people.wou.edu/~taylors/gs106/Lab1_Key_Water.pdf
Lab 2 – Heat and Temperature https://people.wou.edu/~taylors/gs106/Lab2_Key_Heat.pdf
Lab 3 – Intro Oceanography https://people.wou.edu/~taylors/gs106/Lab3_Key_Oceanography.pdf
Lab 4 – Dynamic Oceans https://people.wou.edu/~taylors/gs106/Lab4_Key_Seafloor.pdf

Practice Quiz Questions Posted on ES106 Lab Web Site:
https://people.wou.edu/~taylors/ES106_Lab/ES106_Lab1_2_3_Practice_Quiz_Questions.docx
https://people.wou.edu/~taylors/ES106_Lab/ES106_Lab4_Practice_Quiz_Seafloor_Dynamics.docx

ES106 Lab Canvas Practice Quizzes:

Task 2-3. Practice Quiz - Properties of Water
Task 3-3. Practice Quiz - Heat and Temperature
Task 4-5. Lab Practice Quiz - Intro to Oceanography
Task 5-4. Lab Practice Quiz - Dynamic Ocean Floor

RECOMMENDED: STUDY A MINIMUM OF 2 to 3 HOURS TO DO WELL ON LAB QUIZ 1!

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."