ES202 Quiz 1 Study Guide
(updated Winter 2022)

Quiz Logistics: Quiz 1 will occur on Wednesday Jan. 26, 2022, worth a total of 25 points, 1 point per question x 25 questions. Quiz questions will be comprised of multiple choice, true/false and short answer-fill in blank.

Recommended Study Techniques

(1) review pre-lab questions and video review exercises: study the questions and answers
(2) review the "How to Study" Physical Science Guide
(3) use the key words / concepts as a checklist below as a guide to help you focus on the class notes
(4) memorize terms and concepts
(5) go over your on-line practice quiz questions / answers, make sure you know the answers
(6) go back over the labs and make sure you can do the tricks / skills
(7) review the important figures in your lab manual and text

NOTE: I would spend a minimum of 3 hours studying for this quiz if I wanted to do well.

Review Questions from Homework Assignments:

- Chapter 1 Introduction Reading Review Questions
  https://people.wou.edu/~taylors/g202/Reading_Review_Questions_Chapter1_Introduction.docx
- Earth Revealed Down to Earth Video Review Questions
  https://people.wou.edu/~taylors/g202/Video_Exercise_Earth_Revealed_Down_to_Earth.docx
- Earth Revealed Plate Dynamics Video Review Questions
  https://people.wou.edu/~taylors/g202/plate_dynamics_review_questions.pdf
- Earth Revealed Minerals Video Review Questions
  https://people.wou.edu/~taylors/g202/mineral_video_ex.pdf
- Intro to Rocks and Minerals Video Review Questions
  https://people.wou.edu/~taylors/g202/video_exercise_rock_cycle.docx
- Pre-Lab Concept Review Questions: Minerals-Rocks-Plate Tectonics
  https://people.wou.edu/~taylors/g202/Pre-Lab2_tectonics-minerals-rocks.pdf
- Earth Revealed Sedimentary Rock Video Review Questions
  https://people.wou.edu/~taylors/g202/sed_videx.pdf
- AGI Building the Planet Video Review Questions
  https://people.wou.edu/~taylors/g202/Shaping_Planet_Earth_Questions_ver2.docx
- Pre-Lab Review Questions: Sedimentary Rocks
  https://people.wou.edu/~taylors/g202/Pre-Lab3_sedimentary_rocks.pdf

Canvas Online Practice Quizzes

- Task 2-1 Practice Quiz: Plate Tectonics, Minerals, Rocks
- Task 3-1 Practice Quiz: Sedimentary Rocks

Lab Exercises

- Task 1-3 Working with Numbers
- Task 2-6 Overview of Minerals and Rocks
- Task 3-5 Sedimentary Rocks

Part 1. Class Notes / Lecture Concepts **Key Words**

Fundamentals/ Intro
http://www.wou.edu/las/physci/taylor/g202/202intro.pdf
https://people.wou.edu/~taylors/g202/Intro_Earth_System_Sci_Method.pdf

Environmental Spheres
Lithosphere
Biosphere
Hydrosphere
Age of the Earth
Ultimate Driving Forces
- Climate
- Gravity
- Tectonics

Crustal Composition
Core
Mantle
Crust
Oceanic Crust
Continental Crust
Asthenosphere
Lithosphere
"Plates"
Scientific Method
Hypothesis
Experimental Design
Unit Algebra

Unit Conversion
Graphing
~~Equation of Line~~
~~Slope of Line~~
~~y=mx + B~~
~~map view~~
~~cross-section view~~
~~3-D view~~
metric / English units
mass
temperature
density

Mineral/Rock Overview
https://people.wou.edu/~taylors/g202/202rkmin.pdf
rock
mineral
element
compound
atom
nucleus
electron
proton
neutron
mineral properties
crystal form
luster
color

granite
basalt
~~obsidean~~
sandstone
shale

streak
hardness
cleavage
fracture
specific gravity
rock forming minerals
silicates
carbonates
oxides
sulfates
halides
rock cycle
igneous
metamorphic
sedimentary
magma / lava
limestone
siltstone
~~gneiss~~
~~slate~~
~~marble~~

fast-cooling lava
slow-cooling magma
two-phase cooling
extrusive / lava
intrusive / magma
weathering
sediment
sediment transport
sediment burial
lithification
fossil
metamorphic
foliation
non-foliated
heat-pressure-chemical

quartz
feldspar
muscovite
biotite

Plate Tectonics Overview
https://people.wou.edu/~taylors/g202/202tect.pdf

Continental Drift
Plate Boundaries
- Convergent
- Divergent
- Transform

Spreading Center
Subduction Zone
Transform Fault

Volcanic Arc
Mountain Building
Mid-oceanic ridge
Basaltic Oceanic Crust
Granitic Continental Crust

Weathering /Sediment
https://people.wou.edu/~taylors/g202/202sedrk.pdf
Weathering
Erosion
Sediment
Agents of Transport
- Wind
- Water
- Ice
- Gravity

Physical Weathering
- rk fragmentation
- frost wedging
- unloading/release
- Thermal Expansion
- Root Wedging
- Animal Burrowing

Chemical Weathering
- carbon dioxide
- carbonic acid
- water

Clay (size / mineral)
bedrock
soil
regolith
colluvium
alluvium
drift
lacustrine
anthropogenic
aeolian
clay
mass wasting

Sedimentary Rocks
https://people.wou.edu/~taylors/g202/202sedrk.pdf

weathering
sediment
erosion
lithification
- compaction
- cementation

Sed. Rock types
- Detrital
- Biochemical
- chemical

sediment size fractions
- gravel
- sand
- silt
- clay

grain shape
grain sorting
rock types
- sandstone
- conglomerate
- shale
- limestone
- evaporites
- mudstone
- rock salt

crystalline vs. microcrystalline
coal
clastic / nonclastic
marine
nonmarine
fluvial
lacustrine
glacial

Questions for Thought

How do the three ultimate driving forces relate to anything that we've covered since the beginning of the term?

What is the elemental composition of the Earth's crust? atmopshere?

What is the difference between a rock and mineral? Can you sketch the rock cycle yet?

What is the controlling factor of mineral properties? Why are they different?

What is the crust anyhow? Can you draw a diagram of the interior of the Earth (core, mantle, asthenosphere, crust)?

What factors influence how fast a rock will weather? Do all rocks weather at the same rate?

What is the difference between weathering and erosion?

What are the two meanings of the word "clay"?

What do rocks inherently decompose? Why are clay minerals stable at the Earth's surface?

What is the sedimentary process from start to finish?

How does transport energy relate to grain size of deposits? (e.g. would you find boulders in the deep ocean?)

What are the basic marine and nonmarine sedimentary environments?

What are sedimentary structures and how are they used to reconstruct sedimentary environments?

What type of environment do the various sed. rock types form? e.g. sandstone, conglomerate, evaporites, coal, mudcracks, limestone, etc. where would these rocks form at the earth's surface?

How do rocks physically and chemically weather? What are some of the specific processes?

How do sediments accumulate over time? How is time recorded in the rock record?

2. Lab Skills to Work On

Review Pre-Lab Questions and Key Words

Applying the scientific method
basic metric / english unit conversion
graphing
drawing sketch maps and cross-sections
Identifying basic mineral properties
    which minerals / rocks fizz?
    metallic vs. nonmetallic
    light vs. dark colored
    1 or 3 directions of cleavage
can you do a basic mineral hardness test?
Could you identify an igneous, sedimentary vs. metamorphic rock?
what about the three diff. types of sed. rocks?
Can you estimate: grainsize? sorting? grading? angularity?
Associating a specific rock type to a possible sedimentary environment?
How does transport energy relate to grain size of deposits? (e.g. would you find boulders in the deep ocean?)
What are the basic marine and nonmarine sedimentary environments?
What are sedimentary structures and how are they used to reconstruct sedimentary environments?
What type of environment do the various sed. rock types form? e.g. sandstone, conglomerate, evaporites, coal, mudcracks, limestone, etc. where would these rocks form at the earth's surface?