

ES202 Final Exam Logistics / Updated Study Guide

(updated Winter 2024)

Quiz Logistics: Quiz 2 will occur on **Wednesday March 20, 2023**, Exam Logistics: The midterm exam will occur on Wednesday March 20, 2024, worth a total of 120 points, 1 point per question x 120 questions. Exam question styles will include multiple choice, true/false, completion, short list, short definition, lab-style problems, essay / sketching / drawing, map calculations / identification, identification of surface landforms from images. The exam will focus on new material from mid-term, but with basic fundamental questions related to theme concepts covered early in the class. The exam will be in-person, **NS218 from 2:00 noon to 4:00 PM**. Additional testing accommodations are possible by prior arrangement with the professor.

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.

Class Notes

- Class Notes - Overview of Topographic Maps
<https://people.wou.edu/~taylors/g202/topomaps.pdf>
- Class Notes - Introduction to Landscape Analysis
https://people.wou.edu/~taylors/g202/landscape_analysis.pdf
- Class Notes - Soils and Mass Wasting
<https://people.wou.edu/~taylors/g202/soilmass.pdf>
- Class Notes - Hydrologic Cycle
<https://people.wou.edu/~taylors/g202/hydro.pdf>
- Class Notes - Rivers and Fluvial Systems
<https://people.wou.edu/~taylors/g202/rivers.pdf>
- Class Notes - Groundwater / Karst Processes
<https://people.wou.edu/~taylors/g202/gwkrst.pdf>
- Class Notes - Glacial Processes and Climate Change
<https://people.wou.edu/~taylors/g202/glacier.pdf>
- Class Notes - Desert Processes and Landforms
<https://people.wou.edu/~taylors/g202/desert.pdf>
- ~~Class Notes - Coastal Processes and Landform~~
~~<https://people.wou.edu/~taylors/g202/coast.pdf>~~

Review Questions from Homework Assignments:

- 5-2. Weathering and Mass Wasting Video Review Exercise (Earth Revealed ~50 min)
https://people.wou.edu/~taylors/g202/video_ex_masswaste.pdf
- Task 5-3. Pre-Lab Key Word Exercise: Topographic Maps (Estimated Time for Completion ~20 min)
https://people.wou.edu/~taylors/g202/Pre-Lab5_topo_maps.pdf

- Task 5-4. Pre-Lab Video Exercise: Topographic Maps (Estimated Time for Completion ~30 min)
https://people.wou.edu/~taylors/g202/ES202_Topo_Map_Reading_Video_Questions_Youtube_ver2.docx
- Task 5-5. Topographic Maps Lab Exercise (Complete Part 1 Only) (Estimated Time for Completion ~80 min)
https://people.wou.edu/~taylors/g202/LAB5_Instructions_AGI10th_Ed_Feb2016.pdf
- 6-2. Rivers Part 1 Video Review Exercise: Erosion and Depositions (Earth Revealed ~25 min)
https://people.wou.edu/~taylors/g202/Video_Exercise_Earth_Revealed_River_Processes_Fluvial_Part1.pdf
- ~~6-3. Rivers Part 2 Video Review Exercise: Landscape Evolution (Earth Revealed ~25 min)~~
~~https://people.wou.edu/~taylors/g202/video_ex_rivers_running_water.pdf~~
- Task 6-4. Additional Topographic Map Lab Exercise (stream gradient) (Estimated Time for Completion ~60 min)
https://people.wou.edu/~taylors/g202/topo_map_exercise_additional_ver2.pdf
- 7-2. Groundwater Video Review Exercise (Earth Revealed)
https://people.wou.edu/~taylors/g202/groundwater_video_exercise.pdf
- ~~7-3. Pre-Lab Rivers and Fluvial Processes~~
~~https://people.wou.edu/~taylors/g202/Pre-Lab6_rivers.pdf~~
- 8-2. Glaciers Video Review Exercise (Earth Revealed ~25 min)
https://people.wou.edu/~taylors/g202/video_ex_glaciers_earth_revealed.pdf
- 8-3. Reading Review Questions - Global Climate Change
https://people.wou.edu/~taylors/g202/Climate_Change_Review_Questions.docx
- 9-2. Deserts and Wind Video Review Exercise (Earth Revealed ~25 min)
https://people.wou.edu/~taylors/g202/desert_video_ex.pdf
- ~~9-3. Pre-Lab Deserts Key Word Review Exercise~~
~~https://people.wou.edu/~taylors/g202/Pre-Lab9_deserts.pdf~~
- Task 10-2. Coasts Video Review Exercise
https://people.wou.edu/~taylors/g202/coast_video_ex.pdf
- Task 10-4. Final Exam Landform Practice Quiz
https://people.wou.edu/~taylors/g202/landform_practice_quiz.pdf

Canvas Online Practice Quizzes

- Task 5-1. Canvas Online Practice Quiz Mass Wasting
- Task 6-1. Canvas Online Practice Quiz Rivers
- Task 7-1. Canvas Online Practice Quiz Groundwater
- Task 8-1. Canvas Online Practice Quiz Glaciers
- Task 9-1. Canvas Online Practice Quiz Deserts
- Task 10-1. Canvas Online Practice Quiz Coasts

Lab Exercises

- 5-5 Lab Exercise: Introduction to Topographic Maps (Complete Part 1 Only)
- 6-4. Additional Topographic Map Exercise (stream gradient analysis)
- ~~7-4. Rivers Lab Exercise (Part 1 Only)~~
- ~~8-5. Lab Exercise - Glaciers [Complete Part 1 and 2 Only]~~
- ~~9-4. Lab Exercise - Deserts [Complete Part 1 only]~~

KEY WORDS

Topo Map Review

topographic maps
north arrow
magnetic declination
map scale
fractional scale
graphical scale
longitude latitude
township-range-section
equator
prime meridian
parallels
angular measurement
7.5 min quadrangle
contour interval
index contour
law of V's / streams
air photos
stereovision

Landscape Analysis

Four Criteria:
Landform
Material
Age
Process
Bedrock vs. regolith
Wind-water-ice-gravity
Upland vs. Valley bottom
Hillslope
Active Channel
Floodplain
Terrace

Soil/Mass Wasting

bedrock
soil
regolith
colluvium
alluvium
drift
lacustrine
anthropogenic
aeolian

clay
mass wasting
slope gradient
angle of repose
creep
slide
flow
debris flow
mud flow
landslide
debris slide
solifluction
slump
rock fall

Rivers

Rivers / fluvial
stream gradient
channel
floodplain
oxbow lake
meandering
levees
cutoff
cutbank
floodplain
terrace
stream gradient
bedload
suspended load
dissolved load
braided
straight
normal discharge
flood discharge
~~capacity vs. competence~~
dendritic
~~trellis~~
~~radial~~
alluvial fans
deltas
base level
watershed
drainage divide

Hydrologic Cycle

hydrologic cycle

precipitation
evaporation
advection
convection
infiltration
evapotranspiration
condensation
vegetative interception
runoff
soil moisture
ground water
surface water
rivers
lakes
oceans
atmospheric moisture
glaciers / ice budget
biologic water

Groundwater

Groundwater
~~connate water~~
~~meteoric water~~
~~juvenile water~~
porosity
permeability
Porosity Types
intergranular porosity
Fracture porosity
solution porosity
vesicular porosity
~~Basics of Darcy's Law~~
permeable / impermeable
Zone of Aeration
Vadose Zone
Zone of Saturation
~~Capillary Zone~~
Water Table
~~Groundwater Contours~~
~~Water Table Gradient~~
Cone of Depression
~~Hydraulic Gradient~~
well
confined aquifer
unconfined aquifer
spring / seep
~~perched aquifer~~
aquitard / aquiclude
potentiometric surface

artesian aquifer
 free-flowing artesian aquifer
 groundwater contamination
 upgradient / downgradient
~~groundwater subsidence~~
~~karst~~
~~dissolution~~
~~limestone~~
~~evaporites~~
~~solution depressions~~
~~caves / caverns~~
~~sink holes~~
~~sinking streams~~
~~karst springs~~
~~karst collapse~~
~~fracture control of caverns~~
~~solution sinkholes~~
~~collapse sinkholes~~
~~karst lakes / sink hole lakes~~
~~swallow holes~~
~~caves~~
~~cave deposits~~
~~stalactites~~
~~stalagmites~~

Glaciers

glaciers
 snowfields
 snow-firn-ice
 global ice budget
 alpine glaciers
 continental glaciers
 cirque glaciers
~~piedmont glaciers~~
 ice sheets
 ice shelf
~~temperate glacier~~
~~polar glacier~~
 basal slip
 internal ice flow
 crevasse / fracture
~~transverse crevasse~~
~~longitudinal crevasse~~
~~glacial surging~~
 snow line
 zone of accumulation
 zone of ablation
 ice advance

ice retreat
~~static equilibrium~~
 glacial erosion
 plucking
 abrasion
 rock flour
 glacial striations
 u-shape valleys
 v-shape valleys
 hanging valleys
 paternoster lakes
 cirque
 tarn
 fjords
 aretes
 horn
 col
~~roche moutonnee~~
~~glacial pavement~~
 drift
 till
 outwash
 sorted / stratified
 unsorted / unstratified
 moraine
 lateral moraine
 medial moraine
 end moraine
 terminal moraine
 recessional moraine
~~ground moraine~~
 glacial erratics
 outwash plain
 kettles
 drumlins
 eskers
~~kames~~
 glacial climate
 interglacial climate
 climate change
 Pleistocene glaciation
 Oxygen Isotope record
 Laurentide Ice Sheet
 Glacial / Pluvial Lakes
 Milankovitch Theory

Deserts

arid climate

desert
 semi-arid
 polar deserts
 sub-tropical deserts
 orographic / rain shadow effect
 Playa lakes
 salt flats
 pluvial lakes
 differential erosion
 butte
 mesa
 Inselbergs
 pediments
 badlands
 piedmont
 mountain front
 alluvial fan
 bajada
 bolson
 closed drainage
 arroyo
 aeolian
 deflation
 blow outs
 ventifacts
 desert pavement
 desert varnish
 sand dune
~~erg~~
 dune morphology
 wind direction
 barchan dune
 parabolic dune
 transverse dune
 longitudinal dune
 loess
 desertification

Coasts

~~Ocean~~
~~Coast~~
~~Marginal Marine~~
~~salinity~~
~~density~~
~~ocean convection~~
~~tidal bulge~~
~~spring tide~~
~~neap tides~~
~~tidal range~~

~~daily tidal cycle~~
~~ocean currents~~
~~waves~~
~~storm surge~~
~~hurricane~~
~~orbital waves~~
~~wave crest~~
~~wave trough~~
~~wave height~~
~~tsunami~~
~~wave length~~
~~wave velocity~~
~~wave base~~
~~surf zone~~
~~breaker~~
~~swash~~

~~longshore current~~
~~rip currents~~
~~beach~~
~~foreshore~~
~~wave-cut platform~~
~~wave-cut terrace~~
~~sand beach vs. rock coast~~
~~longshore drift~~
~~spit~~
~~baymouth bar~~
~~tombolo~~
~~tidal island~~
~~jetties~~
~~groins~~
~~breakwater~~
~~erosional headlands~~

~~sea cliffs~~
~~sea stacks~~
~~sea arches~~
~~barrier islands~~
~~back barrier lagoon~~
~~tidal inlet~~
~~delta~~
~~submergent~~
~~emergent~~
~~fjords~~
~~estuaries~~
~~coastal uplift~~
~~coastal subsidence~~
~~sea level rise~~
~~sea level fall~~
~~reefs~~

Questions for Thought

Do you know how to deal with maps?... profiles, map reading, directions, topography, contour lines, elevations?
Can you calculate a stream gradient? I.D. a channel pattern and drainage pattern.
What about simple unit conversions from English to Metric?
Map Scale and Distance Calculations: graphical scale, verbal scale, fractional scale.
What's the difference between a floodplain and a terrace?
What are the diagnostic landscape features associated with river environments? Can you identify them?
What are drainage divides and how are watersheds defined?
What are the hazards associated with mass wasting and rivers?
Can you draw, label, and discuss the hydrologic cycle in detail?
~~Draw a matrix summary of the landslide classification system based on material and process.~~
Can you draw / sketch showing the difference between an unconfined aquifer and a confined aquifer.
~~Can you label a block diagram showing the primary features of karst cave limestone landscapes.~~
How do glaciers and glacial ice form?
Why do glaciers flow?
How does the global ice budget relate to sea level / vice versa? How does it relate to climate?
What are the physical differences between a continental and alpine glacier?
What are the erosional and depositional effects of glaciation at the earth's surface?
How does a fluvial-dominated landscape compare to a glacial-dominated landscape?
What are the diagnostic landforms associated with alpine glaciers vs. continental glaciers? Can you identify them on a block diagram by name?
How has glaciation affected North America over the past 2 million years?
How are glaciations related to sea level fluctuations?
What are the precipitation / vegetative characteristics of a "desert"? Are all deserts hot?
How are landforms in a desert different from humid climates and why?

2. Lab Skills to Work On

Locate positions on a map?
I.D. contour interval, hills, valleys, etc?
Calculate stream gradient?
recognize steep vs. gentle topography?
Determine azimuth compass bearings between two points?
Location by longitude and latitude
Identify basic river and hillslope features on a topographic map: e.g. floodplain, channel, oxbow, terrace, braided river, meandering river, hillslope, alluvial fan, ridge top, valley bottom
Drawing contour lines in general (interpolating points of constant elevation).
Calculating gradients from maps.
~~Calculating groundwater gradients.~~
Measuring distances, directions, and scales on a topographic map.
Reading contour lines / elevations from a topographic map.
Determining gradients from a topographic map (slope gradients, stream gradients).
Calculating basic rates of process (change in process per unit time: e.g. erosion rate)
~~Interpreting aerial photographs / seeing in stereoscopic vision.~~
Identifying actual landforms from slides / photos.
Identifying landforms and geomorphic processes on topographic maps
~~Determining the direction of ice flow from drumlins, or from terminal / end moraine patterns.~~
Can you label and identify landforms from different climates on a block model?
Can you identify landforms from slides / photographs?

