ES202 Final Exam Study Guide (Winter 2016)

The Exam Style

Multiple choice, true/false, completion, short list, short definition, lab-style problems, essay / sketching / drawing, map calculations / identification, identification of surface landforms from slides / overheads. The exam will focus on new material from mid-term, but with basic fundamental questions related to theme concepts covered early in the class. NOTE: focus on yellow-highlight terms and concepts.

Recommended Study Techniques

1) go over pre-lab questions / study them
2) review the "How to Study" sheet handed out at beginning of term
3) use the concepts below as a guide to help you focus on your notes
4) memorize terms and concepts
5) go back over the labs and make sure you can do the tricks / skills
6) review some of the important figures in your lab manual and text
7) go to the lab and look at the lab answer keys, and study the physical models / displays.
8) review the techniques for working with maps / air photos
9) Go over the mid-term study guide (final will be in part comprehensive)
10) Go over and study the online homework questions
11) give your dog a bath
12) drink water

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

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
porosity
permeability
permeable / impermeable
Zone of Aeration
Vadose Zone
Zone of Saturation
Capillary Zone
Water Table
well
confined aquifer
unconfined aquifer
spring / seep
perched aquifer
aquitard / aquiclude
potentiometric surface
artesian aquifer

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 moutenee
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 suge
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
tied 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?
What's the difference between a floodplain and a terrace?
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?
Can you draw cross-sections of groundwater systems?
Can you calculate the porosity of an earth material given the data?
How does sediment texture affect the porosity and permeability of an earth material?
Do you know the basic porosity types associated with common earth materials (limestone, sand, etc.)?
How does solution porosity form?
How is porosity and permeability developed in volcanic rocks?
What are the degrees of permeability associated with common earth materials (limestone, sand, etc.)
How are porosity and permeability related?
What is the hydraulic difference between an unconfined and confined aquifer?
What are the environmental hazards associated with groundwater?
Why are groundwater resources important?
How do caves form? What chemical processes / geologic processes are involved?
what types of climate and geologic conditions are associated with karst?
Can you write the chemical equations that result in the dissolution of limestone?
How are sink hole lakes related to the water table?
How do stalactites and stalagmites form?
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 temperate and polar 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?
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?
How do ocean tides form?
What drives ocean circulation / currents?
How do waves form? What is their morphology and physics?
What coastal landforms are associated with emergent coasts? with submergent coasts?
What are the primary hazards associated with coastal areas... particularly coastal areas in western Oregon?
How do rocky shorelines erode / evolve over time?
What are the basic beach transportation processes?

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?

azimuth vs. quadrant compass bearings?
Location by township, range, section?
Identify basic river features: e.g. floodplain, channel, oxbow, terrace, braided river, meandering river
How about seeing airphotos in 3-D?
Drawing groundwater contour lines and groundwater flow paths.
Drawing contour lines in general (interpoloating 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. rate of delta growth, rate of coastal erosion, rate of uplift, etc.)
Interpreting aerial photographs / seeing in stereoscopic vision.
Identifying actual landforms from slides / photos.
Identifying landforms and geomorphic processes on topographic maps (e.g. glacial forms, karst forms, river forms, desert forms, etc.).
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?