

ESC 1000: Introduction to Earth Science

Study Guide for Lectures 32-36

Note: this study guide lists topics covered in lectures 32-36 (Nov 22-Dec 6). It is not intended to replace going to lecture or doing the readings, rather, it serves largely to alert you to the important topics covered in these lectures that will likely be covered on the exams. The topics listed are non-exclusive, that is, there will be other material in the lectures that you are likely responsible for learning. Make special note of the vocabulary lists...there is a lot of terminology in this class that you will need to learn. Your textbook has a glossary that should be helpful.

Lecture 32 (Florida Hydrogeology and Karst; Nov 22):

How much water does the average person use per year?

What reservoir in the hydrologic cycle is the most important source of fresh water in Florida?

What are the four most important aquifer systems in Florida, and which of these is most important?

What are the main features of the Floridan Aquifer system?

What is the largest spring in the world?

How does karst form?

What are the main features of karst?

Why are caves important?

What are the main features of caves?

What are the three main types of sinkholes, and how do they form?

Vocabulary: Sand and Gravel Aquifer, Intermediate Aquifer, Biscayne Aquifer, Floridan Aquifer, karst, carbonate rock, potentiometric surface, sinkhole, disappearing streams, speleothem, stalactite, stalagmite, helictite, cave pearl, flowstone, rimstone, dissolution, suffosion, solution sinkhole, cover collapse sinkhole, cover subsidence sinkhole,

Lecture 33 (Oceans; Nov 29):

What percentage of the world's water is in the oceans?

What are the main features of the ocean basins?

What is the true division between oceanic and continental crust on passive continental margins?

What is the salt content of the oceans, and what are the major ions dissolved in seawater?

How do salinity, temperature and density of seawater vary with depth and latitude?

What are the main types of water circulation in the oceans, what drives them, and how are they connected??

What is the Gulf Stream and why is it important?

What is coastal upwelling, and how is it related to El Niño?

Vocabulary: Abyssal plains, mid-ocean ridges, trenches, continental slopes and shelves, passive continental margin, submarine canyon, salinity, surface currents, deep circulation, Gulf Stream, coastal upwelling, El Niño, global conveyor belt

Lecture 34 (Coastal Processes; Dec 1):

What are tides, what causes them, and why are they important?
Why are there two high and two low tides each day?
What are (and what causes) neap and spring tides?
How do tides affect Earth's rotation?
What parameters are used to describe waves in water, and what affects these parameters?
What are the differences between waves of oscillation and waves of translation (where do you find them, why, how does water move in them, etc.)?
What are the effects of wave refraction on coastlines?
What causes sand to be transported along shorelines?
What features are caused by wave erosion and beach drift?
How do coastlines evolve?
What are the main types of human response to shoreline erosion problems? What are the pros and cons of these approaches? Especially know the case example from Miami Beach discussed in class.

Vocabulary: tides, waves, neap tide, spring tide, flood current, ebb current, tidal flat, wave height, wavelength, wave period, fetch, wave of translation, wave of oscillation, surf, wave refraction, oblique waves, beach drift, longshore current, sea arch, sea stack, baymouth bar, spit, barrier islands, jetty, groin, breakwater, seawall,

Lecture 35 (Glaciers; Dec 3):

What are glaciers, and why are they important?
What are the different types of glaciers?
How do glaciers form?
Is glacial ice a mineral? Is it a rock (if so, what kind is it)?
How do glaciers move?
What are glacial budgets? (that is, what controls the growth or recession of glaciers?)
How are glaciers related to surficial processes in the rock cycle?
What are the main types of landforms produced by glaciers?
What were the ice ages, and what were their effects?
Why did the ice ages happen?
Has Earth's climate been constant with time?

Vocabulary: piedmont glacier, valley (alpine) glacier, ice cap, ice sheet, firn, granular snow, glacial ice, basal slip, plastic flow, zone of accumulation, zone of wastage, calving, plucking, abrasion, iceberg, rock flour, striations, glacial polish, glacial till, fjord, U-shaped valley, hanging valley, moraine, Milankovitch Hypothesis, precession, tilt, eccentricity,

Lecture 36 (Climate Change; Dec 6):

What happens to incoming solar radiation?

What is the Greenhouse Effect?

What is a Greenhouse Gas (in the generic sense) and which gases in our atmosphere fall into this category?

Where do Greenhouse gases come from?

What is the most important Greenhouse Gas?

Which Greenhouse Gas is typically cited as a concern for global warming?

What controls the amount of CO₂ in the atmosphere? What has been happening to the concentration of this and other greenhouse gases?

How is the Greenhouse Effect related to the theory of global warming?

How has temperature varied within the last 130 years? What is the cause of this trend?

What would the effects of global warming be? What would happen to Gainesville?

What would happen to the Gulf Stream, and why is this important?

What can be done to combat increases in Greenhouse Gases?

Vocabulary: albedo, greenhouse gas, negative feedback loop, sequestration,