

Exam #2 Study Guide

EVPP 111 Lecture

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Biomes

- What is the definition of the term biome
- How does "biome" differ from "ecosystem"
- What role does climate play in the distribution of biomes
- If we know the biome of an area what types of things about that area can we predict
- What are the two most important climatic factors in determining the distribution of biomes
- The interaction of what factors determines the distribution of biomes
- What are the major biomes of the world
- For each major biome, what are its characteristics in terms of temperature, precipitation, types of vegetation, types of organisms, locations

Biogeochemical Cycles

- How is the movement of energy through an ecosystem described
- How is the movement of matter through an ecosystem described
- What is the definition of a biogeochemical cycle
- How is it said that the many biogeochemical cycles are unified
- What are the 4 "spheres" through which matter cycles
- What are the two main determinants in determining the average times of storage or cycling of matter through the reservoirs
- What are the 3 main categories of biogeochemical cycles
- What are three examples of gaseous cycles
- What are 2 examples of sedimentary cycles
- What is the hydrologic cycle, what are its characteristics, what is its function, what are the main processes of the cycle and the characteristics of those processes, how does water move through the cycle, how do human activities impact the water cycle
- What is the carbon cycle, what are its characteristics, what is its function, what are the main processes of the cycle and the characteristics of those processes, how does carbon move through the cycle, how do human activities impact the carbon cycle
- What is the nitrogen cycle, what are its characteristics, what is its function, what are the main processes of the cycle and the characteristics of those processes, how does nitrogen move through the cycle, how do human activities impact the nitrogen cycle
- What is the phosphorous cycle, what are its characteristics, what is its function, what are the main processes of the cycle and the characteristics of those processes, how does phosphorous move through the cycle, how do human activities impact the phosphorous cycle

Aquatic Biomes

- What are the two major categories of aquatic biomes
- What is the difference in the salt concentration of freshwater versus marine biomes
- What are the physical and chemical parameters used in defining layers of vertical stratification in aquatic ecosystems
- Distinguish between the photic and aphotic zones of aquatic biomes
- What is the thermocline
- What are the two categories of freshwater biomes
- What influences the characteristics of freshwater biomes
- What are the 2 categories of freshwater biomes
- What are examples of standing and moving bodies of water
- How are lakes formed
- What are the four zones of a freshwater lake and what are the characteristics of each
- What factors determine the productivity of a lake
- What is biochemical oxygen demand (BOD)
- What are the three categories into which lakes are often classified based on their production of organic matter and what are the characteristics of each
- What are wetlands, what are their characteristics, what are some examples of types of wetlands, what are the topographic situations in which wetlands develop
- What are the three zones of a river from its headwaters to where it meets the ocean, what are the characteristics of each zone
- What are the general characteristics of the headwaters of a stream or river
- How does the oxygen and nutrient content of a stream or river change as it moves from its source to its mouth
- What largely determines the nutrient content of a stream or river
- What is an estuary, what are the characteristics, productivity, locations, etc.
- What is a marine biome, what is its salt concentration, where are they located, why are they important
- What are the 5 zones of a marine biome, what are the characteristics of each, where are they located
- What are the zones within the intertidal zone that are based on the percentage of time spent submerged
- In aquatic ecosystem, what limits primary production and how does it differ in freshwater versus marine ecosystems
- Why are tropical and subtropical oceans less productive than we would expect based on the availability of solar radiation in those areas

Energy: Patterns of Consumption

- What "fuel" represented early civilization's first use of energy in a form other than food?
- What were some of the issues associated with the increased use of wood as an energy source?

- Which source of energy replaced wood when wood supplies declined in Europe and North America?
- What are fossil fuels?
- How, in general, are fossil fuels formed?
- Which fossil fuel was the first to be extensively used, starting around the beginning of the industrial revolution?
- What was the Industrial Revolution? When did it begin? Where did it begin?
- How did per capita energy consumption change with the advent of the Industrial Revolution?
- What is the link between economic growth and the availability of inexpensive energy?
- What role did the automobile play in economic growth and energy consumption?
- What is the relationship between gross domestic product and energy consumption?
- How does the amount of energy used in industrialized countries compare to that in less developed countries?
- How does the way energy is used in industrialized nations compare to the way its used in less developed nations?
- How does the industrial use of energy in industrialized nations compare to that in less developed nations?
- How does the transportation use of energy in industrialized nations compare to that in less developed nations?
- How does the residential and commercial use of energy in industrialized nations compare to that in less developed nations?
- How did world energy consumption change between 1985 and 1999?
- What the world's three major sources of energy?

Energy: Fossil Fuels - Coal

- What is meant by the term "nonrenewable resources"?
- What are some examples of nonrenewable resources?
- What is meant by the term "renewable resources"?
- What are some examples of renewable resources?
- What is the difference between a "resource" and a "reserve"?
- What is the difference between a "known" reserve and an "unknown" reserve?
- What are the 3 types of fossil fuels?
- How, when and where was coal formed?
- What are the characteristics of coal exposed to higher heat and pressure during formation?
- What are the characteristics of coal exposed to lower heat and pressure during formation?
- What are the three most common grades of coal?
- What are the characteristics, uses and deposit location of lignite?
- What are the characteristics, uses and deposit location of bituminous coal ?

- What are the characteristics, uses and deposit location of anthracite?
- What is the general distribution of known world coal reserves?
- At current and projected use rates, approximately how long will the known world coal reserves last?
- How abundant is coal relative to the other fossil fuels?
- What is the general distribution of known US coal reserves?
- At current and projected use rates, approximately how long will the known US coal reserves last?
- What are the two main methods of coal extraction?
- What are the characteristics of surface coal mines and mining? When are they used? What are their advantages and disadvantages?
- What are the characteristics of subsurface coal mines and mining? When are they used? What are their advantages and disadvantages?
- Approximately what percentages of world and US energy is provided by coal?
- What are the main uses of coal?
- What is the trend in coal use?
- What is the predicted future trend in coal use and why?
- What impurities does coal contain that can be released when it is burned?
- What are the environmental impacts that result from the use of coal?
- What are the human health impacts associated with coal?
- What are the land disturbance issues associated with the use of coal?
- What is acid mine drainage?
- What is acid deposition?
- What are the air pollution issues associated with the use of coal?
- What greenhouse gases are associated with the use of coal?
- What are some of the methods being used to make coal a cleaner fuel?
- What are desulfurization systems?
- What is fluidized bed combustion?
- What are syngases?

Labs that are "fair game" for this exam

- You in the food chain
- Primary productivity
- Personal energy inventory
- Renewable energy
- Effectiveness of insulation
- Soil pH and plant nutrients