

STUDY GUIDE FOR THE FINAL EXAM

This study guide is a general outline of materials covered in the class. It is not exhaustive and it should not be taken as a limiting device for all the materials, which can be covered on the exam. Remember – you should review the notes, notes you took and the quizzes and games. There are also readings and the museum trip which can appear as well.

1. The ocean impacts people differently
 - a. Emotionally
 - i. Expressed as art (painting, sculpture etc.)
 - ii. Music
 - iii. Dance
 - b. Recreationally
 - c. Scientifically
 - i. Definitions
 - ii. Biases
 - iii. Idea of system and integration of parts
 - d. Economically – blue economy
 - e. Travel and the populating of parts of the world
 - i. Ice ages and raising and lowering of the ocean levels
 - ii. Transportation and the population of the Pacific
 - iii. Navigation techniques
2. The nature of the ocean (Capt. Cook; Charles Darwin, Whyte)
 - a. Chemical composition
 - b. The structure of the ocean
 - i. From the shore (intertidal, neritic, pelagic
 - ii. From the surface (epipelagic, mesopelagic, bathypelagic, hadalpelagic, benthic)ND TH
 - c. The movement of the ocean
 - i. Tides
 1. Causes
 2. Kinds: high, low, neap. spring
 - ii. Waves: measurements
 1. Types
 - a. Wind driven
 - b. Rogue
 - c. Tsunami
 - d. Tidal
 - e. Storm surge
 2. How the waves impact the shore
 - iii. Currents
 1. Major currents and gyres
 - a. Surface (Gulf stream)

- b. Subsurface (Conveyor)
 - c. Coriolis effect
 - d. upwelling
 - iv. Weather and the ocean
 - 1. El Niño and the Southern Oscillation (ENSO)
 - a. Impacts on sea life
 - b. Impacts on weather (rain, drought)
 - c. Impact on food supplies and food costs
 - v. Different kinds of ecological niches
 - 1. Shorelines
 - 2. Mangrove swamps
 - 3. Deep ocean
 - 4. Estuaries
 - 5. Coral reefs
3. Life in the ocean
 - a. Classification systems
 - i. Linnaean taxonomic (Kingdom, phylum etc.)
 - ii. Cladistics and clades
 - b. Adaption to different environments
 - c. Major divisions:
 - i. Prokaryotes
 - 1. bacteria
 - ii. Eukaryotes
 - 1. animals,
 - 2. plants,
 - 3. fungi,
 - 4. protists
 - d. non taxonomic terms
 - i. algae
 - ii. plankton/nekton
 - iii. benthic
 - e. Definition of animals (5 points)
 - i. Different phyla: sponges (porifera); jellyfish anemones corals (Cnidaria); mollusks, arthropods, echinoderms, chordates and vertebrates (fish, amphibians, reptiles, mammals, birds)
 - ii. Animals and evolution – relationship to environment
 - 1. Darwin, Lamark, genetics
 - 2. Galapagos islands
4. Getting materials from the ocean
 - a. Fishing
 - i. Types of fishing
 - ii. Commercial fishing
 - 1. Types (trawling, gill nets, purse seine, long line)
 - 2. Shell fish: lobster cages, crab cages etc.

- 3. Duration of industries
 - iii. Damage to ocean
 - 1. By catch
 - 2. Ghost fishing
 - 3. Ecological damage from alteration of ecology (trawls, destruction of mangrove swamps for shrimp farms)
 - iv. Alternations:
 - 1. Aquaculture
 - 2. Mariculture
 - v. Sponge diving
 - 1. Types of diving
 - 2. Diving principles
 - b. Extracting of minerals
 - i. Metals, petroleum products
 - c. Hunting of Mammals
 - i. Whaling and sealing
 - 1. International Whaling Commission
 - a. Kinds of whaling
 - b. Interaction with different groups
 - i. Environmental
 - ii. Animal rights
 - iii. Eta in Japan
- d. Problems of Pollution
 - i. Degradation
 - ii. Kinds of pollution
 - 1. Plastics
 - 2. PCBs
 - 3. Heavy metals
 - 4. Oil
 - 5. Microbeads
 - 6. Radiation
 - 7. Aquatic nuisance species
 - iii. Cleaning oil spills
- e. Alien or invasive species
 - i. Arrivals
 - ii. Protection against
5. Legal Matters
 - a. Environmental Protection Agency
 - b. U.S. Coast Guard
 - i. Setting of national boundaries into the ocean
 - ii. Developments from nullus res
 - iii. Clean water acts
 - iv. Marine Mammal Protection acts
 - v. Crime on the seas

1. Piracy
2. Smuggling - drugs
3. Illegal immigrants