Review for Final ES 100

Chapter 14

**Concept 1:** Examine the chemical composition of seawater and the sources of sea salts.

**Concept 2:** Explain the physical, chemical, and density variations that define the ocean water's layered structure.

**Concept 3:** Describe the classification of marine organisms and marine life zones.

**Concept 4:** Discuss the productivity of the oceans and the dynamics of food webs.

Chapter 15

**Concept 1:** Explain the development and importance of ocean currents.

**Concept 2:** Describe the movement of water in the open ocean and coastal zone, including wave characteristics and types.

**Concept 3:** Explain the development of shoreline features used to characterize and classify coastlines.

**Concept 4:** Discuss the factors that influence tides and describe the monthly tidal cycle, tidal patterns, and tidal currents.

Chapter 16

**Concept 1:** Understand the importance of our atmosphere and compare and contrast weather and climate.

**Concept 2:** Describe the physical and chemical features of the atmosphere including variations in composition, pressure, and thermal structure.

**Concept 3:** Explain the causes of the seasons.

**Concept 4:** Compare and contrast the definitions and properties concerning energy, light, heat, and temperature.

**Concept 5:** Discuss the controls on temperature that contribute to temperature variation locally and globally.
Chapter 17

**Concept 1:** List the processes that cause water to change from one state of matter to another.

**Concept 2:** Define humidity and explain the importance of and the factors used to determine relative humidity.

**Concept 3:** Describe the movement of air and how this movement contributes to the basic cloud-forming process.

**Concept 4:** List the criteria used to classify clouds and provide examples of several important types of cloud.

**Concept 5:** Discuss the formation and types of precipitation.

Chapter 18

**Concept 1:** Examine the weight of air and the definition of air pressure in order to understand how air pressure is measured and how it changes with altitude.

**Concept 2:** Explain how the pressure gradient force, Coriolis effect, and friction influence wind.

**Concept 3:** Describe the movements of air and features associated with the two types of pressure centers.

**Concept 4:** Discuss the idealized global patterns of pressure and wind including the general atmospheric circulation in the mid-latitudes.

**Concept 5:** Describe how wind is measured as well as the development and importance of local winds.

**Concept 6:** Discuss atmospheric conditions and consequences of El Niño/La Niña and the global distribution of precipitation.

Chapter 19

**Concept 1:** Define air mass and explain how air masses are classified and related to weather.

**Concept 2:** Explain the relationship between weather patterns and fronts.
**Concept 3:** Describe the development and effects of mid-latitude cyclones.

**Concept 4:** Discuss the characteristics and effects of different types of severe weather including thunderstorms, tornadoes, and hurricanes.

Chapter 20

**Concept 1:** Explain what is meant by Earth's climate system and discuss the factors used to describe climate.

**Concept 2:** List the five principal climate groups of the Köppen system and use examples to describe the criteria used to define each group.

**Concept 3:** Explore human impact on climate and consequences of global climate change.

Chapter 21

**Concept 1:** Consider the contributions of ancient civilizations to the development of Astronomy including the geocentric and heliocentric views of the Universe.

**Concept 2:** List major developments leading to modern astronomy including the work of Nicolaus Copernicus, Tycho Brahe, Johannes Kepler, Galileo Galilei, and Sir Isaac Newton.

**Concept 3:** Explain the importance of constellations and the equatorial system for locating stars.

**Concept 4:** Describe the primary motions of Earth and Earth's relationship with respect to the Moon and the Sun.

Chapter 22

**Concept 1:** Consider the formation of the solar system and the general characteristics of the planets.

**Concept 2:** Describe the major features of the lunar surface and discuss the Moon's history.

**Concept 3:** Compare and contrast the distinguishing features of each planet in the solar system.
Concept 4: List and describe the minor members of the solar system.

Chapter 23

Concept 1: Explain electromagnetic radiation and the two models used to explain its properties.

Concept 2: Describe how the field of spectroscopy and light spectra can be used to investigate the properties of stars.

Concept 3: Compare and contrast different types of telescopes and explain how they are used.

Concept 4: Understand the properties and characteristics of our Sun, including the source of the Sun's energy.

Chapter 24

Concept 1: Consider how astronomers measure and classify the distance, brightness, temperature, mass, and size of stars.

Concept 2: Describe interstellar material and the different types of nebulae.

Concept 3: List several possibilities describing stellar evolution including the life and death of stars.

Concept 4: List and describe the major types of galaxies.

Concept 5: Consider the evidence supporting an expanding universe and describe the Big Bang theory.

In addition to these chapter there will be a few questions from the previous 13 chapters, assigned films, and topics covered in lecture that were not in the book as well as the in class activities. If you missed one of these days please contact one of your study buddies to get the information.

Remember to turn your extra credit ASAP. There were 58 points worth of extra credit announced in class available throughout the semester.