Geography 17 **Study Guide: Chs 1-4; Labs 2, 3, 14-17** Fall, 2013

Chapter 1: Introduction to Earth

TOPICS

The 4 Environmental Spheres
(The Size and Shape of Earth)
The Geographic Grid
Latitude
Longitude

Earth Movements & Reasons for Seasons
("RRIP") *Rotation on Its Axis*
Revolution Around the Sun
The Annual March of the Seasons
Solstices
Equinoxes
Changes in Daylight and Darkness

Telling Time (& Time Zones)
Standard Time & Central Meridians
The International Date Line
Daylight Saving Time
Greenwich

KEY TERMS

Antarctic Circle (66.5° S)
aphelion ("away")
Arctic Circle (66.5° N)
atmosphere
biosphere
circle of illumination
equator (0°)
equinox (equal day & night, etc.)
~~great circle~~
hydrosphere
inclination (tilt→ 23.5°)
insolation
international date line
latitude (*parallels*)
lithosphere
longitude (*meridians*)
Perihelion ("close")
plane of the ecliptic
polarity/parallelism
prime meridian ("Greenwich")
solstice (extremes in daylength)
subsolar point/verticle or perpendicular
Tropic of Cancer (23.5° N)
Tropic of Capricorn (23.5° S)
~~Universal Time Coordinated~~

Chapter 2: Portraying Earth

TOPICS

Maps vs. Globes
Projections (conic, cylindrical, planar)
3 Scale Types (graphic/bar scale, representative fraction, verbal/written)
- Large & Small Scale

KEY TERMS Isotherm scale isoline

Chapter 3: Introduction to the Atmosphere

TOPICS

Composition of the Atmosphere (permanent & variable gases)
Gases & Particulates
Vertical Structure of the Atmosphere
Temperature
Pressure & Density

Topographic Barriers
Latitude
Elevation
Weather vs. Climate (*elements & controls of*)
Coriolis

Pollution; pollutants(CO, NO_x, SO_x); Photochemical (L.A.) Smog – why are we so good at producing it?
People and the Environment: Human-induced Atmospheric Change & Depletion of the Ozone Layer
The Ozone Hole & Montreal Protocol

KEYWORDS

carbon dioxide (CO_2)
chlorofluorocarbons (CFCs)
heterosphere
homosphere
Methane (CH_4)
mesosphere
controls (of weather/climate)
ozone (O_3)
ozonosphere
particulate
sensible heat
stratosphere
thermosphere
troposphere
("weather layer")

Chapter 4: Insolation and Temperature

TOPICS

Energy, Heat, Temperature (Measuring Scales – Fahrenheit, Celsius & Kelvin & the conversions between)
Solar Energy (e-m radiation/spectrum, relative wavelengths – visible, UV, IR); (Sun vs. Earth; short- vs. longwave)
Absorption, reflection (albedo), scatter (blue sky, red sunset), transmission
Greenhouse Effect
Conduction, convection, advection

Adiabatic Heating & Cooling (later in semester)
Energy Budget (surplus vs. deficit)
Why land-water heating differences? (specific heat, transmission, mobility, evaporative cooling)
Resulting continental or maritime climates
Latitudinal Differences (*#1 influence on temp*)
Environmental vs. Average Lapse Rate; temperature inversions
Temperature Controls: Latitude, Altitude, Land-Water, ocean currents (Iceland & the Gulf Stream & Annual temp ranges)
People and the Environment: **Global Warming** and the **Greenhouse Effect (*Kyoto Protocol*)**

Temperature Concepts and Measurement: Temperature (measure of kinetic energy) vs. heat (form of energy that flows; feel as sensible heat: transfer from warmer objects to cooler objects)

Temperature Scales & Conversions F = 9/5 °C + 32 (& vice-versa)
(melting/freezing temp of ice/water): (boiling temp of water):
Kelvin*: scientific scale that starts at "absolute zero" (no molecular motion)
*don't use degree symbol, no negative numbers

Principal Temperature Controls:
latitude (#1 influence; daylength and sun angle vary), altitude (temp & density change w/ altitude; gain & lose energy rapidly, daily temp ranges greater; remember normal lapse rate: 6.4 C°/1000m) cloud cover (lower daily max temps & raise nighttime min temps; reflect or insulate; clouds cover 50% of sky at any given time), land-water heating differences (5 controls): 1.evaporation (85% of world total occurs over oceans, cools oceans), 2.transparency (water transparent, land opaque), 3.specific heat (water has 4x the specific heat/"heat capacity" of land), 4.movement (water is fluid; mixing spreads/redistributes energy), 5.ocean currents (what does Gulf Stream do to Iceland temps?)
marine effects (locations that exhibit moderating influences of ocean) vs. continental effects (those areas not affected by sea, experiencing greater daily & yearly temperature ranges) Think San Francisco vs. Siberia

Earth's Temperature Patterns:
isotherm (line connecting points of equal temp), thermal equator (connecting points of highest mean temp), Jan vs. July maps (bend equatorward in N Hemis during winter & poleward in N Hemis during July)
wind chill & heat index (actual vs. apparent temp? wind accelerates heat loss, humidity reduces effectiveness of perspiration-evaporation)
energy deficit at poles, surplus at equator (angle of incidence)

Remember to focus on those items from **lecture, textbook** & **lab.**