Physical Geography Exam 2 study guide
Chapter 4 – starting on pg 118 Atmospheric Patterns of motion
Chapter 5
Chapter 7
Notes

-understand the three cell circulation model
  -tropics
    -understand the Hadley cell in terms of the ITCZ and SHPB with respect
to convergence and divergence at the surface and aloft, turbulence, and
precipitation levels
    -know the general windbelt direction in the tropics
    -understand how the Hadley cell migrates with seasons
  -midlatitudes
    -understand how the SHPB flows into the midlatitudes and how this
affects direction of weather and winds
  -polar region
    -understand general direction of flow and strength
-understand how the winds influence oceanic currents
-know what a gyre is and the circular direction of flow in northern and southern hemispheres
-which coasts that water piles up and spreads heat north and south and how much heat
-be familiar with the gulf stream
-understand how water exists in 3 different states and what happens to energy in the atmosphere
when water changes states
-understand how the molecules of water are arranged in each state what role temperature plays
-understand the processes of phase change that are associated with cooling and heating of the atmosphere
-understand in particular the latent heat of vaporization and latent heat of condensation plays in
heating and cooling of the atmosphere
  -how does this relate to weather
    -how does this play a role in transferring heat from low to higher latitudes
-understand what relative humidity, absolute humidity and capacity are and how to calculate these
-understand how capacity is a function of temperature and how this also relates to dewpoint
  -how this relates to condensation and weather
-understand how vertical motion of air can cause condensation and precipitation
-understand the different mechanism of lifting for vertical motion of air (unstable air)
-be able to calculate temperatures of air parcels with the adiabatic rates given whether it's raining
or not
-know the difference between the environmental lapse rate (surrounding ambient air) and the
adiabatic rates (air parcels)
-know the difference between stable and unstable air and how this relates to weather
  -be able to understand how you could analyze the ELR, DAR, and MAR to tell whether
  air is stable or unstable
-know how clouds are formed, the different types and weather conditions associated with each, as
well as what type of frontal boundary each is associated with
-know the different types of air masses, each ones locations, and impact on weather and climate
-understand the difference between the different kinds of fronts and which air mass each is
associated with
-know what happens when a warm front or cold front moves through and understand the reason
for the different conditions associated with each
-understand how to read a weather station model and isobar map
-symbols for fronts, cloud cover, wind direction and speed
-how to read pressure on model
-understand the stages of a mid-latitude cyclone in the northern hemisphere
-understand the different types of storms
  -thunderstorms
    -frequency, energy exchange, classification, uplift mechanisms
    -squall lines
    -hazards
    -tornado formation
    -tornado alley
  -tropical storms
    -where do they form and why and in which general direction do they travel in the trades
    -how do they intensify
    -how do they die
    -size of storm
    -structure>>where is the most intense storms? where is it calm and why?
    -classification
    -storm surges>>what 2 things play a role in causing surge? Where is the strongest surge in relation to the eye
    -generally are fatalities increasing or decreasing and why?
    -where location(s) are experiencing the highest costs of tropical storm damage in N. America
  -4 factors of hurricane forecasting in the Atlantic
-understand how the various climate controls affect long-term weather patterns
  -solar energy as a function of latitude
  -intertropical convergence zone and subtropical high pressure
  -land vs. water (continentality vs. marine)
  -topography
-know the koppen climate regions (by name and A,B,C,D,E) and the general locations of these climates
  -two A climates by name and location
  -three C climates by name and location
  -one D climate by name and location
  -one E climate by name and location
-be able to understand how to read and interpret a climograph
-understand el nino
  -what are normal conditions of pressure and trade winds in S. Pacific
  -what causes change
  -what are the impacts of el nino changes
  -what is a thermocline and how does it relate to el nino
  -major costs of el nino
  -how often do they generally occur