

**PHYSICAL SCIENCE 101/111**

**Topical Outline - City Colleges of Chicago**

<b>Topic</b>	<b>Items to be covered for final examination</b>
<b>SCIENTIFIC METHOD</b>	
General Principles	Facts, hypotheses, theories, laws Induction and deduction
<b>PHYSICAL GEOLOGY</b>	
Gross structure of earth	Size, shape, major features: atmosphere, hydrosphere and lithosphere
Minerals	Quartz, silicates, feldspars, micas, ferromagnesian
Rocks	
General types	Bed rock, mantle rock, and soils
Specific types	
Igneous	Granite, gabbro, lava, basalt, rhyolite
Sedimentary	Clay, shale, sandstone, limestone, coal
Metamorphic	Gneiss, marble, schist, slate, quartzite
Weathering and erosion	
Gradation	
Weathering agents	
Mechanical	Freezing of water, wind, loess, dunes
Chemical	General, nothing specific. No chemical equations
Ground water	Water table, springs, artesian wells, geyser, cave, sinkhole, stalactite, stalagmite, petrified wood, geodes
Running water	Valleys(young, mature, old), peneplain, meanders, oxbows, water falls, natural levee, alluvial fan, delta
Glaciation	Moraine (terminal, ground), outwash plain, cirque, U-shaped valley, valley glacier, ice sheet, hanging valley, kames, eskers, drumlins
Ocean coasts	Continental shelf, terraces
Vulcanism:	Magma, batholith, lacolith, dike, sill, lava, intrusive rock (granite and gabbro), extrusive rock (rhyolite and basalt), crystal size and rate of cooling.
Diastrophism:	Evidence of diastrophism, types of earthquake waves (primary, secondary, long (omit nature and speed of each), seismograph, folds (anticline, syncline, geo-syncline, geo-anticline), faults (thrust, tension), unconformity, tectonic plate motion

<b>HISTORICAL GEOLOGY</b>	
<p>Determination of age of geological formations</p> <p>Keys to Historical Geology</p> <p>Geology of the Chicago Region</p>	<p>General discussion of</p> <ul style="list-style-type: none"> <li>Rate of accumulation of sediments</li> <li>Rate of erosion</li> <li>Total salt in the oceans</li> <li>Radioactivity</li> </ul> <p>Index fossils</p> <p>Law of Uniformitarianism</p> <p>Law of Superposition</p> <p>Law of Unconformity</p> <p>Law of Igneous Intrusion</p> <p>Law of Organic Correlation</p> <p>Highlights only</p>
<b>METEOROLOGY</b>	
<p>The Atmosphere</p> <p>Properties</p> <ul style="list-style-type: none"> <li>Pressure</li> <li>Temperature</li> <li>Humidity</li> <li>Wind</li> <li>Methods of investigating upper atmosphere</li> <li>Atmospheric circulation</li> <li>Types of precipitation</li> <li>Air Masses</li> <li>Cloud Types</li> <li>Weather Forecasting</li> </ul>	<p>Extent, content, strata (troposphere, stratosphere, ionosphere, general)</p> <p>Variation and measurement, barometer (aneroid, mercurial), units (lbs/in<sup>2</sup>, cm. or mm. of Hg, millibars)</p> <p>Thermometer, units (Celsius = Centigrade and Fahrenheit scales)</p> <p>Relative humidity, dew point, wet and dry bulb thermometer</p> <p>Anemometer, vane, air currents and circulation</p> <p>Balloons, rockets, satellites (polar = NOAA and geostationary = GOES)</p> <p>Primary effects of heat from sun</p> <p>Effects due to rotation of earth</p> <p>Seasonal movement of wind zones</p> <p>Doldrums, trade winds, horse latitudes, westerlies, polar belts</p> <p>Local effects</p> <p>Rain, snow, sleet, hail, fog, dew, frost, man-made rain, cloud seeding</p> <p>High and low pressure areas. Cold fronts, warm fronts, stationary fronts and type of weather associated with each and why. Thunder storms, tornadoes, hurricanes</p> <p>General description of clouds: shape, appearance, etc., with altitude and fronts</p> <p>Weather maps— isobars and other information in symbol form. Change in wind direction, temperature and pressure with passage of fronts</p>

<b>ASTRONOMY</b>	
Earth as a solar body	Radius, diameter, circumference and other general physical properties
Evidence for shape of the earth	Equatorial bulge Magellan's voyage Disappearance of ships away from shore Changing position of stars as one travels north or south Earth's shadow on the moon High altitude photographs Artificial satellites
Motions of earth	Rotation, revolution, pole, axis, equator, zenith, star trails, Foucault pendulum, ellipse, focus, parallax, perihelion, aphelion
Measurement of time and distance	Solar day—variation and mean solar day, sidereal day, Greenwich meridian, standard time meridian, time zones, international data line, celestial sphere, poles, equator, longitude, latitude, arctic circles, season, equinoxes, solstices, plane of the ecliptic, celestial equator, year, Julian calendar (characteristics), Gregorian calendar and revised leap year rule.
Theories of Solar System	Ptolemy explanation
Geocentric theory	Copernicus explanation
Heliocentric theory	Retrograde motion
Law of Planetary Motion	Tycho Brahe's observations Kepler's three laws of planetary motion (by name not just by number) Invention of telescope and Galileo's observations General description of Newton's explanation
Other members of the Solar system	
Moon	Rotation and revolution. Phases, tides, eclipses (lunar and solar), surface features and characteristics
Planets	Name and position of each Inferior and superior, outer versus inner type characteristics
Comets	Orbits and nature. Halley's Comet
Asteroids	Brief description
Meteors and meteorites	Nature and composition
The sun	Age, size, mass, rotation, atmosphere, source of energy, sun spots, utilization of sun's energy
Other stars	Brief general description, Galaxy, Milky Way, Big Bang
Origin of the Solar System	Other planetary systems