

## EARTH SYSTEMS 1 STUDY SHEET 1- Spring 2003

### Terms to Know:

system	intermediate	disintegration	stratification
atmosphere	mafic	chemical weathering	strata; stratum
hydrosphere	ultramafic	decomposition	laminae
biosphere	rhyolite/granite/pumice	frost action	thin-bedded
geolithosphere	obsidian	acid	medium-bedded
geology	andesite/diorite	hydrogen ion	massive
atoms	basalt/gabbro	base	cross bedded
nucleus	peridotite	hydroxyl ion	graded bedded
proton	igneous bodies	oxidation	homogenous bedding
neutrons	pluton	hydration	bioturbation
electron clouds	stopping	carbonation	relict structure
electrons	xenolith	regolith	bedding planes
element	country rock	soil	ripple marks
atomic number	dike	erosion	current ripples
chemical compounds	sill	sediments	symmetrical ripples
mineral	laccolith	soil profile	mudcracks
crystal structure	volcanic neck	soil horizons	sole marking
rock	diatreme	parent material	tool marks
silicates	kimberlite	pedalfer	load cast
tetrahedron	batholith	humus	flame structure
igneous rock	stocks	litter	pseudonodules
sedimentary rock	discordant	A horizon (top soil)	nodules
metamorphic rock	concordant	humic acid	concretion
texture	columnar jointing	B horizon (subsoil)	geode
composition	pohoehoe	C horizon	vug
melt	aa	humic acid	sedimentary facies
magma	pillow lava	pedocal	epicontinental sea
plutonic	pyroclastic debris	caliche	pericontinental sea
intrusive	dust	evaporative pumping	continental shelf
lava	ash	laterite	continental slope
volcanic	cinder	bauxite	continental rise
extrusive	lapilli	lithification	ocean basin
phaneritic	blocks	compaction	metamorphism
aphanitic	bombs	desiccation	metasomatism
glassy	juvenile water	cementation	contact metamorphism
porphyritic	quiet eruption	pore space	aureole
phenocryst	explosive eruption	clastic/detrital	regional metamorphism
groundmass	intermediate eruption	non-clastic rocks	zones of metamorphism
vesicular	nueé ardente	chemical rocks	grades of metamorphism
pyroclastic	active volcano	biochemical	high grade metamorphism
Bowen's reaction series	dormant volcano	inorganic chemical rocks	low grade metamorphism
olivine	extinct volcano	conglomerate	foliated
pyroxene	volcano	breccia	non-foliated
amphibole	vent	sandstone	gneiss
biotite	shield volcano	siltstone	schist
Ca plagioclase	cinder cone	claystone	phylite
Na plagioclase	composite cone	shale	slate
K feldspar	stratovolcano	chalk	metaconglomerate
muscovite	fissure flow	limestone	marble
quartz	fissure	dolostone	quartzite
hydrothermal fluids	flank flow	chert	anthracite coal
discontinuous series	lava dome	rock gypsum	graphite
continuous series	cauldera	rock salt	rock cycle
magmatic differentiation	weathering	peat	
felsic	physical weathering	coal	

Be able to explain:

concept of a system  
components of the Earth system  
parts and construction of atoms  
significance of the number of protons  
how chemical compounds form  
criteria defining minerals  
difference between minerals and rocks  
complexity of the silicates  
major rock groups  
difference between a melt, magma and lava  
difference between extrusive and intrusive rocks  
factors determining the formation of the textures of igneous rocks  
factors determining the composition of a melt  
Bowen's reaction series and its relationship to rock composition  
continuous versus discontinuous series  
significance of magmatic differentiation, rocks produced and expected types of volcanic eruptions  
compositional terms used in defining igneous rocks  
basic types of igneous rocks  
how to read the igneous rock chart  
types of intrusive igneous bodies and how they form  
methods by which magma migrates  
why magma migrates  
how xenoliths form  
difference between concordant and discordant igneous bodies  
types of extrusive igneous bodies and the importance of melt composition to their formation  
various types of surface textures of lavas  
how pillow lavas form  
various materials expelled by volcanoes  
types of eruptions and importance of melt composition  
stages of volcanic activity and true significance of the terms used  
types of volcanic cones, materials composing them and importance of melt composition  
weathering and the two major types of weathering  
examples of physical weathering  
changes produced in a rock by physical weathering  
factors controlling chemical weathering  
relationship of chemical weathering and igneous mineral and rock stability  
interaction between physical and chemical weathering in rock destruction  
examples of the common types of chemical weathering  
difference between soil and regolith  
development and structure of a soil profile  
factors controlling the type of soil that develops  
three major types of soils and their profiles  
processes involved in the formation of most sedimentary rocks  
major processes involved in lithification  
basic grouping of sedimentary rocks  
major types of sedimentary rocks

types of stratification (bedding) in terms of thickness and grain orientation  
features developed on bedding surfaces and how they form  
features found within rock layers  
difference between a flame structure, pseudonodule, nodule, concretion, vug and geode  
what creates the colour seen in rocks  
sedimentary facies  
where sediments are deposited  
processes involved in metamorphism and how they alter a rock  
types of metamorphism  
zones or grades of metamorphism  
metamorphic textures  
types of metamorphic rocks  
most likely type of metamorphic rock produced by altering various igneous and sedimentary rock  
rock cycle

Be able to identify from drawings the following:

various parts of an atom  
various atoms in a tetrahedron  
phaneritic, aphanitic and porphyritic texture  
various plutons  
types of extrusive igneous structures  
layers of a soil profile  
cross bedding, graded bedding, homogenous bedding and relict structures  
types of ripple marks, sole marks, nodules, concretions  
flame structures and pseudonodules  
aureole  
foliated rocks  
rock cycle