

**Introduction to Earth Science (GEOL-1030)**  
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**NOTE:** This document is NOT meant to replacement your syllabus. In addition to the course calendar & reading assignments -- which you've already received -- the remaining sections of the syllabus are on-line at: <http://www.mtsu.edu/~cdharris/GEOL100/> (class website). **READ ALL THESE DOCUMENTS!!!**

This document IS meant to briefly summarize: (1) what is expected of you between today and the next time this class meets; (2) what your general conduct in this course should be; and (3) how this course is administered. As you will read below, for the second class meeting you have several small reading assignments, one of which is available only on-line. If you do not have access to an Internet-ready computer, then you should go to one of the many computer laboratories on campus, or to the main campus library. There you can log on to any available computer and get started. If you have never used the Internet before, be sure to ask for help from one of the lab assistants in a computer laboratory.

### CLASS HIGHLIGHTS

#### Requirements & Policies

- \* **Enroll in & attend both lecture [GEOL1030] & lab [GEOL-1031]**
- \* **Buy lab book & lab kit for 1st lab meeting.** Your lab may begin this week (look around for notices).
- \* **Read complete syllabus** (including on-line component); answers to FAQ's are also available online
- \* **Class involves lecture plus in-class discussion & activities -- attendance is required**
- \* **Assigned readings required for every class period (i.e. read material BEFORE coming to class!)**
- \* **Required items (3):**
  - a) *Earth Science, 12 or 13 ed., Tarbuck & Lutgens;*
  - b) *Lecture guide 2002-2003 ed.* (available at campus bookstore)
  - c) i>clicker "audience response" hand-held "clicker" (bookstore or online)
- \* **No "extra-credit" -- instead get started TODAY focusing on the available credit!**
- \* **NOTE: During this class, electronic media devices can ONLY be used to record lecture content. No electronic media devices may be used during exams. NO EXCEPTIONS.**

#### Grading - Read the class syllabus for complete details

- \* A total of 115 points are available in the class; Grades are based on a pre-determined scale (see on-line)
- \* Four exams - 100 points total (machine-graded: buy 4 Scantron "test answer sheet B" [5.5" x 11"] forms)
  - First three exams = 30 questions, 1 pt. each; 30 pts. per exam
  - Drop lowest of first three exam grades (i.e. 60 pts. possible)
- \* **No make-up exams -- if you miss Exam 1, 2, or 3 that is the score (0) that will be dropped**
  - Final exam = 40 questions, 1 pt. each; 40 pts. total
  - = 30 pts. on new material, 10 pts. comprehensive (questions from Exams 1, 2, and 3)
- \* Exams are machine-graded, typically multiple-choice, true-false, or some form of matching
- \* i>clicker use = 15 points; some for attendance (5 pts.), others are awarded for participation (10 pts.)

#### Attendance policy

- \* **Attendance is mandatory** & will play a role in your final grade. Attendance is taken via i>clicker.
- \* You are allowed three absences before you begin losing points. There are no "excused" absences.
- \* i>clicker use will also serve as your record of attendance for government financial aid purposes.
- \* I take NO responsibility for problems cause by skipped class (e.g. "missed exam", "studied wrong thing")

#### Class webpage - URL: <http://www.mtsu.edu/~cdharris/GEOL100/>

\* Lots of vital information available, including: Complete syllabus; Practice exam questions; Class news; Earth Science: A Primer (required reading for 1st exam); Study guide; etc.

#### Things to do for next class period

1. Read syllabus (hand-out/on-line) to become familiar with class requirements
2. Buy textbook, lecture guide, & i>clicker; bring lecture guide & i<clicker to class (everyday!)
3. Register your i<clicker online
4. Read "Introduction" & "Minerals", begin "Plate Tectonics" in textbook (see syllabus for textbook pages).
5. Read "Earth Science: A Primer" & "Study guide" on-line at the class website

6. If the lecture guide is unavailable, go on-line and print out a copy of *Minerals* and *Plate Tectonics - Part I* (for next class period), *Rocks & the Rock Cycle*, (for independent study and review purposes).

7. Review lecture guide materials for "*Rocks and the Rock Cycle*" (p. ROCK1 - ROCK9); my lecture notes for this material are available on-line at the class website; read related material (p. 52-54) in the textbook.

### **Things to do for every class period**

1. Consult class webpage for class news (if any)
2. Consult syllabus to determine reading assignment for next lecture
3. Read assigned pages in textbook
4. Review lecture guide materials for assigned topic(s)
5. Bring your lecture guide to lecture

### **Class notes (example) - Minerals lecture [p. 13/LG] (note my use of abbrevs.)**

**Note:** rvw objctvs bef./aft. studying

Know defs. - element; atom; nucleus; ion; cation(+); anion(-); compound; isotope

? an + cat = molecule (compound)

? diff. b/w ion (electr. chrgd) vs. isotope (same elem., diff. # of neut.)

? chrg of: prot? +, neut? 0, elec? -, cat? +, an? -

**T1:** know syml/name/rank of commonest crustal elem. [1) O, 2) Si, 3) Al, 4) Fe; Mg,Ca,K,Na]; also C,S,Cl

**T2:** ? diff. b/w elements? # of prot. ? C = graphite & diamond (both ntv elem)

? diff. b/w ntv elem. & cmpnd - single vs. mltpl elem in molecules (e.g. C vs. NaCl)

**T3:** Know diff. b/w Si (element), silica (SiO<sub>2</sub> - molecule; compound), silicates (min grp)

**T4:** Def. mineral; rock; Min = specific 5 part def. (know!; xtl. = ordrd atomic arrang.); Rk = general def.

**T5:** 3 main origins for min. (& rks): ign., sed., meta.

**T6:** min. classifc. uses chem. comp. & xtl. struct.; min. I.D. uses phys. traits (know them)

**Note:** t/f (therefore) classifc. & I.D. NOT based on origin

**T7:** chem. comp. & xtl. struct ==> (produce/affects) phys. traits

phys. traits = empirical t/f empirical classifc.\* (e.g. silicate min = emp.)

origin = genetic classifc. (e.g. evap. min. = gen.)

\*emp. classif. usually easier to use (less info rqrd)

**T8:** rk-forming (i.e. v. common) min's

Know: [quartz #2, feldspar #1, pyroxenes, amphiboles, olivine, muscovite, biotite,]\* calcite, dolomite, ice, gypsum, halite, clay min group\*

[\* = silicates; others = "non-silicates"]

**T9:** Know diff. b/w mafic & felsic min's (lo silica, hi Fe+Mn vs. hi silica, lo Fe+Mn)

**Notes:** (1) ntv elem. not rk-frm; (2) every min. belongs to spec. min. grp based on anion; (3) read txtbk/know: common min's & min groups (esp. those in lecture guide) (4) answer/know: review ?'s in LG

### **Rocks & Rock cycle presentation** -- **Note:** rvw objctvs bef./aft. studying

**on-line at:** <http://www.mtsu.edu/~cdharris/GEOL100/rocks/Annotated-Rocks.htm>

**T1:** classify RX as ign., sed., or meta. by genetic conditions

**Note:** skim txtbk for ex. from each grp; Note: read txtbk for LG terms pg. ROCK-1 & ROCK-4:

sediment, bedrock, basement rk, sedimentary platform, shield, craton, orogen, continental crust

**T2:** Rk classified by texture + (mineral or chemical) comp.; txtr = size, shape & arrangement of grnz

**T3:** Rk cycle: depicts infnt complexity of earth processes & mtrls (products)

**Note:** know Rk cycle terms/fltnshps for exam 1, don't just memrz diagram

**T4:** plate tect. is driving force for rk cycle; skim P.T. in txtbk (for now); Note: by 1st exam know/understand P.T. diag. pg. ROCK-4

**T5:** Rk distrib: mantle = ign; crust = ign; 75% of continental surface (includ. platforms) = sed; mtns.

(orogens) = ign, meta, & sed; shields = ign&meta

**Note:** sed rx cover 75% of cont. surface but compose only 5% of crust!

**T6:** Epicontinental seas: on cont. interiors; Pericont.: on cont. margins

**T7:** Rk deposits of epicont. seas (= sed platforms)

Shale = 75%; t/f (therefore) epicont. seas mostly quiet water envs.

Deposits eroded if sealevel falls (regress.); t/f geol. record of platform rx v. spotty

**T8:** Ex. triggers of transgress./regress. (T/R = SL change ==> area of marine vs. cont. envs)

Climatic - warm/cool cycles ==> glacial/ocean water volume

Tectonic - rates of seafloor spreading ==> ocean basin volume