GEOS 1304: History of Earth and Life

— Spring 2006, Time: MWF 11-11:50am, Room CB 1.120 —

Instructor: *Dr. Nathan R. Miller*, Office: FO 2.263, Office Hours: MW 1-2:30pm or by appointment, (972) 883-6852, miller@utdallas.edu.

Course Overview:
This lecture course provides an overview of major earth systems and the history of the earth through geologic time, fossils and evolution of life on earth, formation of the earth and evolution of earth's atmosphere and oceans, paleogeographic and plate-tectonic history of the earth, evolution of humans and impact of earth's future from a geological perspective. The accompanying lab course (GEOS 1104) provides additional practical experience in applying the concepts outlined in the lecture component

Overarching goal(s):
Based on application of skills introduced in lecture, small group interaction, and field excursions, successful students will be able to:

- Critique arguments/evidence regarding potential/actual environmental change (fossil fuel combustion, sea level change, volcanism, paleotemperature proxies, facies variations) in order to articulate a scientifically valid opinion.
- Predict potential consequences to Earth and life of perturbations to natural systems (present or past), given a set of critical environmental factors (plate spreading rates, ocean circulation, global distribution of continents, evolution of new predators)

Ancillary skill goals:

- Accessing, reading, and analyzing popular geologic literature; Reading comprehension & self-teaching; Peer teaching, working in groups, debate

Course Requirements

Texts:

1. Stanley, S.M., 1999, Earth Systems History, Freeman, 2nd Ed., http://www.whfreeman.com/ESH/
2. Walker, G., 2002, Snowball Earth: The Story of the Great Global Catastrophe That Spawned Life as We Know It, 269 p, Random House (Crown Publishing).
3. Bryson, B., 2004, A Short History of Nearly Everything, 687 p., Black Swan Publishing
4. Any dictionary of geological terms. *(i.e.,* Dictionary of Geological Terms by R.L. Bates and J. A. Jackson, American Geological Institute (recommended)

Assessment:

- Participation (attendance, field trip, small group activities, WebCT assignments) 30%
- Theme project 20%
- Term tests 30%
- Final Exam 20%

Field trip leaves at 8am in the West Parking Lot:
You have a "ticket" to participate on the Saturday fieldtrip. In the event of bad weather, the fieldtrip will be rescheduled for the next possible weekend day (Sat or Sun) according to maximum class attendance.

Policy on Scholastic Dishonesty: Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from The University. Since

such dishonesty harms the individual, all students and the integrity of The University, policies on scholastic dishonesty will be strictly enforced

Courteous behavior is expected in class – this includes arriving on time and remaining in class for the duration. Please turn cell phones off and refrain from text-messaging. I am happy to answer questions during class time, so feel free to raise your hand. Please refrain from talking with your neighbor – it's distracting to me and to other students.

Schedule of Topics/Readings/Due Dates

					Exams				Text Readiing			
Date	**Day**	**Wk**	**Class**	**Topic**	**1**	**2**	**3**	**4**	**ESH**	**SBE**	**ASH**	**Group Activities**
Organization of Geologic Time & Time Travel												
9-Jan	M	1	1	Introduction/Syllabus/Course Framework					1			1. Geopoetry assignment (due by last day)
11	W	1	2	Geologic Time - Timeline Exercise I					1			2. Timeline ex
13	F	1	3	Geologic Time - Timeline Exercise II					1		22	2. Timeline ex
I. Geologic toolkit for forensic Time Travel												
16	M	2		**MLK Jr. Day (UTD Holiday)**								
18	W	2	4	Formation of Earth, Moon, Continents & Atmosphere					11		1-3	
20	F	2	5	Intro to Earth Systems					1		5	
23	M	3	6	Rocks and Minerals					2		7, 9	3. Think-pair-share - Rx-Min & Time Travel
25	W	3	7	Rocks and Minerals					2		7, 9	4. Data in the Strata
27	F	3	8	Sedimentary Rx, Envs, & Stratigraphy I					4, 5		5	
30	M	4	9	Sedimentary Rx, Envs, & Stratigraphy II					4, 5			
1-Feb	W	4	10	Sedimentary Rx, Envs, & Stratigraphy III					4, 5			
3	F	4	11	Rock Record Correlation & Dating I					1, 6		10	
6	M	5	12	Rock Record Correlation & Dating II					3, 7			
8	W	5	13	Review for Exam 1: Gallery Walk of Essay Questions								
10	F	5	14	**Exam 1: Classes 1-12; Text Ch. 1-2, 4-7, 11**								5. GW Essay Review
13	M	6	15	Life on Earth					6		16, 23	
15	W	6	16	Bacteria					3, 7		19, 20	
17	F	6	17	Protists					3, 7			
20	M	7	18	Animalia					3, 7			
22	W	7	19	Animalia					3, 7			
24	F	7	20	Plants					3, 7			
27	M	8	21	Evolution					7		25, 26	
1-Mar	W	8	22	Plate Tectonics I					8, 9		12	
3	F	8	23	Plate Tectonics II					8, 9		14	
6	M	9		Spring Break (UTD Holiday)						1-3		
8	W	9		Spring Break (UTD Holiday)						1-3		
10	F	9		Spring Break (UTD Holiday)						1-3		
13	M	10	24	Major Chemical Cycles: Uniformitarianism and C-isotopes					10	1-3	17	6. Walker Disc. Topic 1 Questions Due
15	W	10	25	Major Chemical Cycles					10	4-6		10. CO2 Exercise in class
17	F	10	26	Review for Exam 2 (Gallery Walk of Essay Questions)						4-6		11. GW Essay Review
20	M	11	27	**Exam 2: Classes 15-26; Text Ch. 3, 6-10**						4-6		10. CO2 Exercise due
WE ARE NOW READY FOR TIME TRAVEL - FASTEN YOUR SEATBELTS (. . . and turn off all personal devices)												
II. Neoproterozoic Snowball Earth: a different world before advanced life										4-6		
22	W	11	28	Snowball Earth Hypothesis: Overview					12	4-6	27	7. Walker Disc. Topic 2 Questions Due
24	F	11	29	Glaciations - How Many? Really? How Extensive?					12	7-8		12. Neoproterozoic C isotope jigsaw ex.
27	M	12	30	Cap Carbonates & BIFs					12	7-8		8. Walker Disc. Topic 3 Questions Due
29	W	12	31	Snowball Earth Hypothesis and the Origin of Metazoa					12	9-10	19	12. Jigsaw group paper due
31	F	12	32	The Case for Snowball Earth in Ethiopia					*12*	9-10		9. Walker Disc. Topic 4 Questions Due
3-Apr	M	13	33	Phanerozoic Diversification, Terminal Permian Extinction					13-15		21	
III. Cretaceous World												
5	W	13	34	Introduction to the Mesozoic					16		6	
7	F	13	35	Cretaceous Global Warming					17			13. Virt. fieldtrip Ex. due
8	SAT			Saturday Fieldtrip - W parking lot - 7:45am (bus leaves at 8 sharp)					17			14. Cretaceous fieldtrip
10	M	14	36	End of an Era: When Worlds Collide					17		13	
12	W	14	37	Cretaceous vs. Neoproterozoic Discussion Session								
				TAKE HOME Exam 3: Classes 28-37; Text Ch. 12-17								
IV. Cenozoic - Paleogene-Neogene-Quaternary World												
14	F	14	38	Cenozoic: The Mammals Take Over					18		15	
17	M	15	39	Cenozoic: Neogene Climate Change					19			15. Semester paper table review; **Take home exam due in class.**

Constructing Paragraphs

Studies show that readers have certain expectation about paragraphs:

- That the beginnings and ends of paragraphs contain important guiding information
- That the opening sentence provides direction and lets readers know what the paragraph is about
- That the middle of the paragraph develops what the paragraph is about
- That the end of the paragraph may sum up the paragraph's contents bringing the discussion of an idea to a close in anticipation of the paragraph that follows
- That the paragraph "makes sense" as a whole, its words and sentences are clearly related
- That the paragraph relates in some clear way to the paragraphs around it

Elements of a well-written paragraph:

1. Unity – Every idea in the paragraph relates to the single focus or claim expressed in the topic sentence.

2. Coherence – The ideas within the paragraph are arranged logically. Techniques to insure coherence:

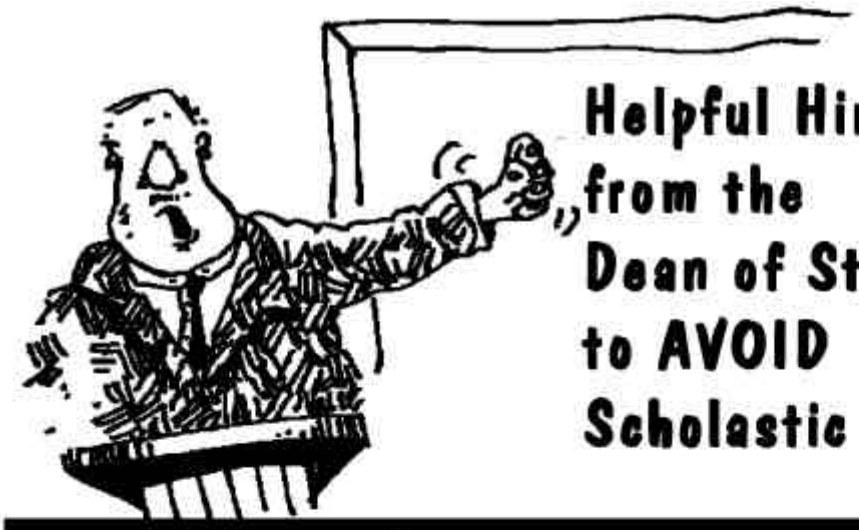
Spatial order
Chronological order
Logical order (general-to-specific, cause-effect, comparision/contrast)
Use of transitional phrases, parallelism, pronouns

3. Development – well-developed paragraphs include examples and reasons that demonstrate concrete pieces of knowledge and sensory details. The writer and the reader end up with the same picture/understanding at the end of the paragraph.

It may be useful to think of a typical paragraph in an academic paper as an "essy-in-miniature":

Essay	***Paragraph***
Intro/thesis	Intro/topic sentence
Body – proof	Body – details, examples, reasons
Conclusion	Conclusion

Try to now use these guidelines in your written assignments in this class. Can you identify the topic sentence, support, transitional devices, and conclusion in your paragraphs? Do your paragraphs anticipate what is to come?



Helpful Hints from the Dean of Students to AVOID Scholastic Dishonesty

Collaborating/Cheating

Unless working together on an assignment has been specifically approved, it is not allowed. Do not assume that working together is allowed! Always ask your instructor what his or her expectations are in this regard. You should assume that you are to perform all assignments independently unless you have specific permission to work together on an assignment.

Allowing another person to view your work, drafted or completed, is academic dishonesty, regardless of intent.

At some point a friend or classmate may ask to see your work. They may tell you that they will not copy your work, that they just want to see your format. If you allow the person to see your work you have committed academic dishonesty.

Do not allow anyone to see your work.

Plagiarism

Copying passages verbatim from another writer's work and representing them as one's own work constitutes **plagiarism**.

If passages/sentences are copied verbatim, they must be put in quotation marks and properly footnoted. **All direct quotes must be in quotation marks or in block quote format!** Simply providing a footnote without using quotation marks or block quote format is considered academic dishonesty.

Like a direct quotation, a paraphrase is the use of another's ideas to enhance one's own work. For this reason, a paraphrase, just like a quotation, must be cited. In a paraphrase, however, the author rewrites in his or her own words the ideas taken from the source. Therefore, a paraphrase is not set within quotation marks. So, while the ideas may be borrowed, the borrower's writing must be entirely original; merely changing a few words or rearranging words or sentences is not paraphrasing. Even if properly cited, a paraphrase that is too similar to the writing of the original is plagiarized.

For more information on Academic Dishonesty see:

http://www.utdallas.edu/student/slife/dishonesty.html

There you will find:

- *Handbook of Operating Procedure, Title V, Student Discipline and Conduct*
- *Examples of Scholastic Dishhonesty*
- *Regent's Rules and Regulations*