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### GEO 311.01: Paleobiology

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## Course Syllabus GEOS 311 – PALEOBIOLOGY Spring, 2017

INSTRUCTOR: George Stanley Email: george.stanley@umontana.edu

**Required Text:** *Ancient Invertebrates* Harold L. Levin (available at Bookstore)

Office: C.H. Clapp 302  
 Telephone: 243-5693  
 Office Hours: T/Th 1:00-3:00 p.m. or by appointment

Date	Subject	Practicals	Assigned Reading
Jan 23	Introduction to the class		--
25	How fossils get preserved		1
27	Classification and taxonomy		1
30	Biotic evolution and fossils		1
Feb 01	How fossils are preserved	<b>Practical 1</b>	1
03	Value and use of fossils		2
06	Mass extinctions and the fossil record		2
08	Earliest fossils		3
10	Earliest fossils continued		3
13	Protoctista - One celled life		4
15	One-celled life	<b>Practical 2</b>	4
17	Porifera – the pore bearers		5
20	<b>President's Day- no class meeting</b>		-
22	Porifers	<b>Practical 3</b>	5
24	Cnidaria		6
27	Cnidarians and history of reefs		6
Mar 01	Cnidaria	<b>Practical 4</b>	
03	Cnidaria continued	<b>Practical 4</b>	6
06	Bryozoans – the moss animals		7
08	Bryozoa	<b>Practical 5</b>	7
10	Phylum Brachiopoda		8
13	Brachiopods	<b>Practical 6</b>	8
15	<b>Mid-term exam today on above topics</b>		-
17	Mollusks introduction		9

20	<b>Spring Break- no meeting</b>		
22	<b>Spring Break- no meeting</b>		
24	<b>Spring Break- no meeting</b>		
27	Mollusks continued		9
29	Mollusks continued	<b>Practical 7</b>	9
31	Mollusks continued	<b>Practical 7</b>	9
Apr 03	Phylum Arthropoda – the ecdysians		10
05	Arthropods continued		10
07	Arthropods	<b>Practical 8</b>	10
10	Arthropods continued	<b>Practical 8</b>	10
12	Echinoderms – the spiny skins		11
14	Echinoderms continued		11
17	Echinoderms	<b>Practical 9</b>	11
19	Echinoderms continued	<b>Practical 9</b>	11
21	Graptolites - hemichordata		12
<b>22</b>	<b>Day field trip 7:30-5:30</b>		
24	Graptolites	<b>Practical 10</b>	12
26	Conodonts		13
28	Conodonts	<b>Practical 11</b>	13
May 01	Student presentations		TBA
03	Student presentations (paper due)		TBA
05	Course review		
12	<b>Final exam is scheduled today at 10:10-12:10</b>		

Basis for Grading:

Ten lab practicals (one may be omitted or lowest is dropped)	30%
Mid-term exam	20%
Student project presentations	5%
Homework and chapter assignments	5%
Final exam (comprehensive)	30%
Field trip to collect fossils (TBA)	10%

## The University of Montana Student Conduct Code

*“Academic dishonesty is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code”. The Code is available for review online at:*

[http://www.umt.edu/vpsa/policies/student\\_conduct.php](http://www.umt.edu/vpsa/policies/student_conduct.php)

### **Attendance:**

Attendance is required for successful completion of the course. *UM policy: “Students are expected to attend all class meetings and complete all assignments for the course. Instructors may excuse brief and occasional absences for reasons of illness, injury, family emergency, religious observance or participation in a University sponsored activity. (University sponsored activities include for example, field trips, ASUM service, music or drama performances, and intercollegiate athletics.) Instructors shall excuse absences for reasons of military service or mandatory public service.”*

If you have an excused absence and miss class meetings, see instructor as soon as possible afterwards to make up assignments.

**Practicals:** The “lab” experiences provide “hands-on” work with fossils and will follow topics covered in lectures and readings. Due dates are normally a week after being handed out. Assignments are due as posted and late points deducted for each day. No credit is given one week beyond due date. You are encouraged to work together to learn but writing and completion of the labs must be your own work (Student Conduct Code, section 5A).

The basis for grading is as follows:

A 93-100%    B 83-86%    C 73-76%    D 63-66%

A- 90-92%    B- 80-82%    C- 70-72%    D- 60-62%

B+ 87-89%    C+ 77-79%    D+ 67-69%    F 59 or below

The number one reason for making a poor grade in this class is non-attendance and missed lab practicals! If you have an excused absence and miss assignments you must make timely arrangements with instructor for making them up.

**Students with disabilities** may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. “Reasonable” means the University permits no fundamental alterations of academic standards or retroactive modifications”.

## Learning Outcome Goals of the Course

*Upon successful completion of this course, students will be able to:*

- Understand the basic groups of fossils and their value to the geological sciences in terms of age, paleoecology, evolution, contribution to sediments and geological importance
- Understand and develop concepts and principles of geologic time, biotic evolution, mass extinctions, fossil preservation, paleoecology and ecosystems, stratigraphic paleontology and paleogeography and taxonomy and cladistics
- Make inferences about the paleoecology and functional morphology of extinct organisms by interpreting their morphology, paleoecology and geologic distributions
- Use taphonomy to understand the occurrence and deposition of fossils
- Demonstrate an understanding of the nature of scientific inquiry by drawing appropriate conclusions from the application of scientific concepts
- Effectively describe multiple lines of evidence that support evolution by natural selection.
- Explain the biologic and geologic contribution of fossils that has shaped the Earth, the ancient environment and evolution
- Interpret graphical representations associated with geologic, biologic or paleontologic data and to solve problems in geology and biology
- Take accurate stratigraphic and paleontologic notes and make interpretations while in the field
- Acquire skills of reading and writing scientific prose by assignments, researching a particular aspect of paleontological inquiry or by practicing teamwork in presenting an assigned topic

*How course activities and course structure help students achieve these goals:*

The learning outcomes are addressed by specific lecture, lab and field activities. For example through student topical research, writing about a paleontological research problem or completing the lab and homework assignments. While solving problems or participating in a field trip students must "think like a geoscientist," addressing several learning outcomes simultaneously. A combination of teamwork and individual accountability allows students to support one another and achieve these goals.