Life on a Dynamic Planet

Course title and number: GEOL 208 Life on a Dynamic Planet
Term: Fall XXXX
Meeting times and location:
Lecture: M W TBD
Lab: TBD

Course Description and Prerequisites

Description: Critical events in the Earth’s 4.6 billion-year history that shaped life as we know it, and the tools to investigate them; interactions between global environments, the evolution of life and the geologically recent development of human societies.

Credits: 2-1; Prerequisites: None

Learning Outcomes

Upon successful completion of this course students will be able to:
- Pose scientific hypotheses about the earth system
- Critically evaluate scientific evidence to support and refute hypotheses
- Use information from the sedimentary record to investigate Earth’s History
- Explain the interactions between life and the Earth system through time
- Use past events to understand the modern world and forecast future changes

Instructor

Name: Dr. Christina Belanger
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Email address: Christina.Belanger@tamu.edu
Office hours: TBD
Office location: Halbouty 265

Resource Material

Weekly readings from peer reviewed journals and popular science literature. No textbook.

Grading Policies

The final course grade will be based upon:

- Thought Experiments: 12%
- Laboratory Assignments: 28%
- Take Home Midterm #1: 15%
- Take Home Midterm #2: 15%
- Final Exam: 30%

Students are expected to attend all classes with exceptions provided by the University’s policy for excused absences. For more information, visit http://student-rules.tamu.edu.

Grading Scale

Standard Letter Grading Scale: A = 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, F = <60
## Course Calendar

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Required Reading &amp; Activity / Lab Topics</th>
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<tbody>
<tr>
<td>1</td>
<td>Week 1: Historical Hypotheses</td>
<td>Monday: Introduction; Geologic Time&lt;br&gt;Wednesday: Cleland, 2001&lt;br&gt;Lab 1: Clocks in Rocks</td>
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<td>2</td>
<td>Week 2: Life Against All Odds</td>
<td>Monday: Arndt and Nisbet, 2012&lt;br&gt;Wednesday: Thought Experiment #1&lt;br&gt;Lab 2: Testing Historical Hypotheses</td>
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<td>3</td>
<td>Week 3: Snowball Earth</td>
<td>Monday: Hoffman and Schrag, 2000 (SA)&lt;br&gt;Wednesday: Thought Experiment #2&lt;br&gt;Lab 3: Climate Controls</td>
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<td>4</td>
<td>Week 4: Explosion of Diversity</td>
<td>Monday: Marshall, 2006&lt;br&gt;Wednesday: Thought Experiment #3&lt;br&gt;Lab 4: Ways of Being an Animal</td>
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<td>5</td>
<td>Week 5: Take Home Exam 1 Due on eCampus Friday 5 pm</td>
<td>Monday: Complete Part 1 Exam, Collaborative&lt;br&gt;Wednesday: Complete Part 2 Exam, Collaborative&lt;br&gt;Lab 5: The Three Evolutionary Faunas</td>
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<td>6</td>
<td>Week 6: The Rise and Fall of Seas</td>
<td>Monday: Sheehan, 2001&lt;br&gt;Wednesday: Thought Experiment #4&lt;br&gt;Lab 6: Sedimentary Rocks</td>
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<td>7</td>
<td>Week 7: Riding the Continents</td>
<td>Monday: Zaffos et al., 2017; Dalziel 2005 (SA)&lt;br&gt;Wednesday: Thought Experiment #5&lt;br&gt;Lab 7: Plate Tectonics</td>
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<td>8</td>
<td>Week 8: CO2, Heat, and Acid</td>
<td>Monday: Benton and Twitchet, 2003&lt;br&gt;Wednesday: Thought Experiment #6&lt;br&gt;Lab 8: Analyzing Extinctions</td>
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<td>9</td>
<td>Week 9: Extraterrestrial Impacts</td>
<td>Monday: Schulte et al., 2010; Betz 2017 (DM)&lt;br&gt;Wednesday: Thought Experiment #7&lt;br&gt;Lab 9: Stratigraphic Records</td>
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<td>10</td>
<td>Week 10: Opportunity from Extinction</td>
<td>Monday: Brusatte and Lou, 2016 (SA); Brusatte 2016&lt;br&gt;Wednesday: Thought Experiment #9&lt;br&gt;Lab 10: Analyzing Radiations</td>
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<tr>
<td>11</td>
<td>Week 11: Take Home Exam 2 Due on eCampus Friday 5 pm</td>
<td>Monday: Complete Part 1 Exam, Collaborative&lt;br&gt;Wednesday: Complete Part 2 Exam, Collaborative&lt;br&gt;Lab 11: Environmental Reconstruction</td>
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<td>12</td>
<td>Week 12: Megafaunal Engineers</td>
<td>Monday: Bakker et al., 2016; Switek 2017 (SA)&lt;br&gt;Wednesday: Thought Experiment #10&lt;br&gt;Lab 12: Pollen Records of Change</td>
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<td>13</td>
<td>Week 13: Holocene Stability (or Not)</td>
<td>Monday: Mayewski et al., 2004; Douglas et al., 2016&lt;br&gt;Wednesday: Thought Experiment #11&lt;br&gt;Lab 13: Holocene Climate Records</td>
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<td>14</td>
<td>Week 14: The Anthropocene and Beyond</td>
<td>Monday: Kidwell, 2015, Barnosky et al., 2017&lt;br&gt;Wednesday: Thought Experiment #12&lt;br&gt;Lab 14: Conservation Paleobiology</td>
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Assignments

Thought Experiments are short prompts requiring an approximately 1 paragraph response to be turned in via eCampus before the start of classes on Wednesdays. Students are expected to discuss their thoughts with classmates at the start of class before a whole group discussion on the topic. Typically, these will ask students to evaluate how an event affected life or how the evolution of new organisms affected earth environments. Students may miss no more than ONE Thought Experiment assignment without penalty, except as allowed in accordance with http://student-rules.tamu.edu/rule07.

Lab Assignments are guided learning projects that will begin during the lab period but often can be completed outside of the lab period if needed. Labs assigned in one week are due at the beginning of the next week’s lab period.

Late Policy and Attendance
Attendance is mandatory with allowances for excused absences with proper documentation in accordance with http://student-rules.tamu.edu/rule07. Reading Assignments, Thought Experiments, and Laboratory Assignments will not be accepted late, except as in accordance with rule 07.

Americans with Disabilities Act (ADA)
The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

Academic Integrity
For additional information please visit: http://aggiehonor.tamu.edu

“An Aggie does not lie, cheat, or steal, or tolerate those who do.”