

1-2014

GPHY 525.01: Seminar on Paleoclimate and Global Change

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**Geography 525: Seminar on Paleoclimate & Global Change
Spring 2014 Syllabus**

Instructor: Dr. Anna E. Klene

Class Time: T&H 2:10-3:30 pm, 217 Stone Hall

E-mail: anna.klene@umontana.edu

Office hrs: T&H 3:40-4:30 pm, 216 Stone Hall

Required Text: Earth's Climate: Past and Future, W. Ruddiman. Freeman & Co., NY. 2008.

Optional: Collapse: How Societies Choose to Fail or Succeed, Diamond, Penguin, Rev Ed 2011.

Climate Change: Biological and Human Aspects, J. Cowie, 2st Ed, Cambridge, 2012.

Moodle: Access the login page from UM's homepage. Enter your NetID and password.

Objectives: By the end of this course, you should know the major controlling factors of climate through time, be familiar with reconstruction methods, appreciate the impacts of climate on previous civilizations, and evaluate our current understanding of future climate challenges.

Tentative Schedule

| | | Tuesday | Thursday |
|-----------------|---------|---|---|
| | Week 1 | 28 – Introduction & Review Climate Basics <i>R: Online Supplement & 1</i> | 30 – Methods <i>R2: Archives, Data & Models</i> |
| February | Week 2 | 4 – Planetary Evol. & Tectonic-Scale Change <i>R3&4</i> | 6 – Snowball Earth Video <i>Hoffman & Schrag article</i> |
| | Week 3 | 11 – Last 100 Million Years <i>R5 & 6</i> | 13 – Orbital-Scale (Milankovitch Cycles) <i>R7 & article</i> |
| | Week 4 | 18 – Glacial Responses <i>R9 & EPICA article & Cowie 4.6.1</i> | 20 – Last Glacial Maximum <i>R12 & Cowie 4.6.4 (first part)</i> |
| | Week 5 | 25 – Deglaciation <i>R13 & Strong & Hills paper</i> | 27 – Video on Ice Ages – <i>Broecker & Denton articles</i> **Paper Topic Due** |
| March | Week 6 | 4 – Millennial Oscillations <i>R14</i> | 6 – Mid-Holocene Dust Event <i>Linden Chps & Davis & Thompson</i> |
| | Week 7 | 11 – The Anthropocene <i>R15 & Ruddiman, 2005 & Cowie 4.6.4b</i> | 13 – Climate since 1000 <i>R16 & Thompson Pop. Press Articles</i> |
| | Week 8 | 18 – MWP & LIA <i>Zhang et al., Kerr, & Buntgen et al.</i> | 20 – Collapse: Past Societies <i>Prologue & Montana & Okonski</i> |
| | Week 9 | 25 – Collapse: Greenland Norse <i>Chp. 6, 7, & 8</i> | 27 – Drought Year Without A Summer <i>Oppenheimer article</i> |
| April | Week 10 | Spring Break – No Classes | |
| | Week 11 | 8 – <i>AAG: No Instructor</i> <i>LIA Video</i> | 10 – <i>AAG: Skype Class</i> **Video Reviews** |
| | Week 12 | 15 – Drought in US – <i>Stahle et al.</i> <i>& Cook et al. (only pg 93-116, 132)</i> | 17 – Climate since 1850 – <i>R17 & 18</i> **Paper Outline Due** |
| | Week 13 | 22 – Future Climates: <i>Cowie Chp 5.2.3 & 5.3 & R19</i> | 24 – Future impacts & unknowns <i>Cowie Chp 6.5</i> |
| | Week 14 | 29 – Human Ecology & Climate Change <i>Cowie Chp 7.1</i> | 1 – Sustainability & Policy <i>Cowie Chp 8.1 & 8.5</i> |
| May | Week 15 | 6 – Guest Speaker: Dr. F.A. Heinsch: Climate Solutions | 8 – Heinsch cont – <i>Nature paper</i> **Papers Due Friday by 5pm** |
| | Exams | Tuesday, May 13 th – 1:10-3:10 pm: Student Presentations | |

Geography 525 Course Guidelines and Policy Statements

1. Course Outline - **KEEP** and use the attached outline to maintain continuity throughout the course.
2. Reading Assignments - The required reading assignments form the basis of class discussion in seminars. Typically at least one chapter and often 2 lengthy readings will be assigned for each class.
3. Student-led Discussions – Almost every day, one student will be assigned to provide a handout summarizing the main points of that reading and to lead a discussion of that piece. The handout and discussion leadership will be graded.
4. Video Review – Each student will select one video from a list to watch and review. Each student will write a 3 sentence blurb describing and reviewing the film and will also discuss the film for 5 minutes in class.
5. Term Paper – Each student will prepare a paper on some topic related to global change. It is recommended the topic be a potential thesis project or cover a subject that may be useful for future employment. The paper will be an ~ 8-10 page literature review. It is important not just summarize the literature, but also evaluate the different sources as it is an essential component of the scientific process.
6. Class Presentations – All students will give a presentation on their paper. This presentation (~ 15 min) will review the student’s topic, findings, and major conclusions. All of these presentations should be well planned, well illustrated, and given in a formal manner. Grading will reflect the presentation as well as the content.
7. Participation – A participation grade will be given for days with discussions and reflect how much the student contributed to the discussion. Completing the readings is expected prior to class. This is not an attendance grade however, so in the case of a family emergency, please see the instructor.
8. Academic Dishonesty - The university policy for cheating is clearly addressed on the website <http://www.umt.edu/studentaffairs/sccacademicconduct.htm>. Students cheating will be reported to the proper offices and receive a failing grade for the course.
9. Reasonable Accommodation - The university policy on students with disabilities is clearly addressed on the website <http://www.umt.edu/dss/default.htm>. Students who need assistance should contact the instructor immediately so that appropriate forms and procedures can be completed.
10. Final Course Grade – At the end of the course, the distribution will be examined and letter grades assigned at approximately: A=>90%, B=80-90%, C=70-80%, D=60-70%, etc. The “+/-” grading system will be used. ***There will be no extra credit of any kind.***

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| Grading: | Student-led Discussions | 60 (30 pts x 2) |
| | Video Review | 10 |
| | Participation | 30 |
| | Paper Topic & Description | 10 |
| | Paper Outline | 10 |
| | Final Paper | 60 |
| | <u>Paper Presentation</u> | <u>20</u> |
| | Total | 200 pts. |

***** This syllabus may be modified as necessary during the course. Ask the instructor if you have any questions about when materials are due.**