GEOG 3230/5230
Pyrogeography: Fire, Humans, and the Environment

Fall 2016

M/W 3-4:20 Bldg 73, Rom 106

Professor:	Dr. Andrea Brunelle/Bldg 73 Rm 205, 585-5729/andrea.brunelle@geog.utah.edu	
Office Hours:	M/W 1:30-2:30, after class, and by appointment	
Prerequisite:	Some basic knowledge of Earth processes	
Required Text/Supplies:	Digital readings off WebCT	
	Clicker	
Course Web Page:	CANVAS	
Grading:	Participation (quizzes and in-class exercises)	15%
	Fire in the News	5%
	Exam I & II	35% each
	Field Trip Participation and Report	10%

Course Description: Fire is an inherently geographical process. Fire can affect landscapes on spatial scales from local to sub-continental and fire can affect, and be affected by processes that occur in a day or over millennia. The past, present and future role of wildland fire is of major concern to scientists, land managers, and the public. Concerns over issues such as forest health and sustainability, especially in light of global change, have added urgency to understanding the role of fire in ecosystems. To understand the interaction of fire and ecosystems the following topics will be covered in this course: the history of humans and fire, fire physics, fire weather, wildland fuels, fire ecology including the effects of fire on plants and soils, methods of obtaining fire history including historical documents, dendrochronology, and paleoecological proxy, fire regimes, how humans have evolved with fire, how humans have modified fire, fire management, fire problems in the urban-wildland interface, and future fire regimes.

Expected Learning Outcomes: When students are finished with this course they will be knowledgeable about:

- The history of fire on Earth
- Fire climate and weather
- Fire management in the U.S.
- Fire ecology
- Humans and fire (multiple time scales)

Essential Learning Outcomes: ELO's are skills that should be gained in general education coursework that prepare students to be "effective 21st century global citizens" (U of U General Education Guidelines). Through the discussions over the course of the semester and with assignments described above, we will specifically work on several of these outcomes and they will be incorporated and assessed as follows:

- *Critical Thinking and Reasoning*- Critical thinking and reasoning skills will be developed and employed on a daily basis through the presentation, discussion, and consideration of scientific data on fire science. These skills will be assessed during the in-class and online quizzes and on the exams which will include short answer and essay responses.
- *Inquiry and Analysis*- The field trip and research project and report will require students to develop a research hypothesis, collect primary data, organize and analyze those data and then report on implications of what they found. The report will be the assessment tool for this outcome.
- *Oral Communication* – Each group of 2-3 students will be required to present on a current topic related to pyrogeography. Students will prepare their own presentation but also observe other student presentations, learning what makes an effective presentation and what doesn't. The presentation evaluation will be the instrument for assessing this outcome. In addition, peer reviews will be conducted to help students critically consider their peer's presentations.

- *Written Communication* – Student written communication skills will be assessed and constructive feedback provided during the research report and on the written portions of the exams.
- *Teamwork* – Students must work in a team on their current topics presentation. This will be assessed during the presentation as the instrument (and student grade) includes a variable on group preparation and cohesion. In addition, several of the in-class quizzes will be taken in their groups and require teamwork.

Class Policies: Participation in is expected and will be reflected in your grade. Note: If you do not ATTEND you CANNOT participate. Reading assignments are expected to be completed BEFORE class and quizzes over the reading assignment or the previous lecture will occur each day. Reading Guides are required for some of the readings (see schedule below). These are due to our Canvas webpage before class. Late assignments will not be accepted. There are NO make-ups for missed participation exercises; however the two lowest scores will be dropped. Note that some quizzes will taken as individuals and in your groups, (you will be part of a group of 2-3 students) so be sure to attend class. Quizzes will be taken using your clicker. If you forget your clicker you cannot take the quiz and it cannot be made up. Please don't ask.

Register your clicker! Details forthcoming on how to do this! This needs to be done by the first day of class.

Fire in the News: Each group will be required to find an article (newspaper, magazine, journal) and present a 10 minute summary of their topic with at least one visual aid.

There will be two in-class exams. These cannot be made up unless the instructor is contacted PRIOR to the absence, and then only at the discretion of the professor. If a make-up exam is offered, it may take any form and must be taken at the University Testing Center where a fee will be imposed.

Incompletes will only be given at the discretion of the professors and only if the student is passing at the time.

Turn your cell phone off when you come in to class.

A required, all-day field trip will be held on Saturday September 17th, 2016. This trip will be held rain or shine! We will meet at the Paradigm II building (see map in field trip packet) at 9:00 a.m. and plan to return by 5:00 p.m. Plan to bring a lunch, snacks, sunscreen, bug spray, walking shoes, water, and whatever else you need to be comfortable for the day.

Students taking the 5230 level course will be held to higher standards on the field trip report and exams.

You are responsible for all information presented in lecture and over the course website (CANVAS).

The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the instructor and to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD) to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services.

TENTATIVE CLASS SCHEDULE. Updates provided in class and on Canvas.

Week Of:	Topic	Reading
Aug 22	Introductions & The Origin of Fire Fire Fundamentals	Pyne[a]: Chapt 1 Pyne[b]: Chapt 1 (thru Section 1.6)
Aug 29	Wildland Fuels Fire Weather	Pyne[b]: Chapt 3 (thru Section 3.4) Pyne[b]: Chapt 4 (thru Section 4.4)

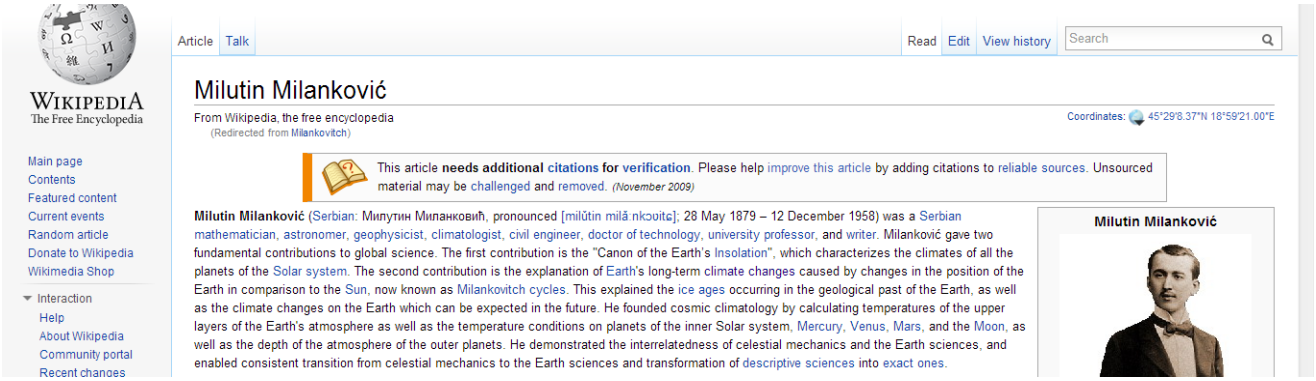
Sept 5	Fire effects- Air, Water, and Soil	Rainbow series fire on water and soil Rainbow series fire on air
Sept 12	Fire Ecology Finish up and field trip methods **SATURDAY FIELD TRIP (9/17/16)**	Pyne[b]: Chapt 5 (171-197)
Sept 19	Fire regimes in different forests Superfire Video & Viewing Guide	Pyne[b]: Chapt 5 (197-212)
Sept 26	Fire History Methods: Dendro Finish up and review	Agee: Chapt 4
Oct 3	**EXAM I** GUEST LECTURE- MICKEY CAMPBELL	TBA
Oct 10	No Class- Fall Break!	
Oct 17	Fire History Methods: Sedimentological GUEST LECTURE: BRIAN CODDING- ANTHROPOLOGY	Whitlock & Larsen 2001 (*Reading Guide*) TBA
Oct 24	Humans and Fire (Paleoecological Perspective) Native Americans and Fire	Pyne[a]: Chapt 2 Keeley, 2002 (*Reading Guide*)
Oct 31	Humans and Fire (Recent) GUEST LECTURE- MITCHELL POWER- GEOGRAPHY AND UMNH	Pyne[b]: Chapt 6 (213-270) TBA
Nov 7	Fire Management-History and Overview GUEST LECTURE-DR. TOM COVA - GEOGRAPHY	National Fire Plan- http://www.fireplan.gov/../overview/whatis.html Pyne[b]: Chapt 9 (456-472); Pyne[b]: Chpt 10 (538-554) http://www.fs.fed.us/rm/fire_game/ TBA
Nov 14	Biomass burning Firestorm Video & Viewing Guide ***Management Summaries (2 scenarios) due 11/16***	Mouillot & Field 2005 (*Reading Guide)*
Nov 21	GUEST LECTURE- JOSH TRAMMELL- ANTHROPOLOGY Wed- no class (Thanksgiving)	
Nov 28	Fire Effects- Flora & Fauna Finish up and Review	Rainbow series fire on flora Rainbow series fire on fauna
Dec 5	Firestorm & Megafire Videos **EXAM II (in class on Dec 7th)**	

Reading Key
Pyne[a] : Pyne, S.J. 2001. Fire, A Brief History.
Pyne[b] : Pyne, S.J. 1996. Introduction to Wildland Fire.
Agee : Agee, J. K. 1993. Fire Ecology of Pacific Northwest Forests.
****Additional readings may also be assigned as appropriate for the discussion topic****

Academic misconduct will not be tolerated. Penalties may include failure of an assignment, the entire course, and/or the filing of formal charges with appropriate university authorities. Academic misconduct includes, but is not limited to, cheating, misrepresenting one's work, and plagiarism:

• Cheating involves the unauthorized possession or use of information in an academic exercise, including unauthorized communication with another person during an exercise such as an examination.
• Misrepresenting one's work includes, but is not limited to, representing material prepared by another as one's own work or submitting the same work in more than one course without prior permission of all instructors.
• Plagiarism means the intentional unacknowledged use or incorporation of any other person's work in one's own work offered for academic consideration or public presentation.

- When you gather information from any source (internet, book, newspaper, journal article, etc), you need to paraphrase. This means changing the words from the original source into your own. Even though the words are yours, the content is still from somewhere else, so it still needs a citation.
- The way that I do this is I'll read something and make notes on what I read. Then I put the original source away and explain it using my words and notes.
- You can take text directly from a source if you put the material in quotation marks, cite the source and the page number from the excerpt. However, I don't want to see any direct quotations in any of your work. I want paraphrasing with appropriate citations.
- Here is a good and bad example of paraphrasing from the Wikipedia entry on Milutin Milankovitch.



BAD:
Milutin Milankovic was a Serbian mathematician who gave two fundamental contributions to global science. These include the "Canon of the Earth's Insolation" which characterizes the climates of all the planets in the solar system. The other contribution is the explanation of the Earth's long-term climate changes caused by the position of the Earth and Sun.

GOOD:
Milutin Milankovitch made many contributions to our understanding of the Earth's climate. He was widely trained in the Earth, Geological and Astronomical sciences but is best known as a Serbian mathematician and astronomer. His most important contribution was his explanation for the ice ages, which is based on changes in the Earth's relationship with the Sun, known as Milankovitch Cycles (Wikipedia, 2012).

<u>References Cited</u>
Wikipedia. Accessed Dec. 30, 2012. Milutin Milanković, http://en.wikipedia.org/wiki/Milankovitch