

Syllabus for GEOV 222 (Paleoclimatology), 2018

Time:

14:15-16:00 Wednesday, Aud 5 (RFB)

12:15-14:00 Friday, Aud 5 (RFB)

Books

1) Ruddiman, W.F. **Earth's Climate, past and future (3rd edition)**, W.H. Freeman, New York (2nd edition; 1st edition also ok if you have them already)

2) Thomas M. Cronin, **Paleoclimates** Columbia Univ. Press

Additional (useful but not required): **Paleoclimate** (Princeton Primers in Climate) by Michael L. Bender

General evolution of course topics

Part I: Framework of Climate Science—Climate system background

Part II: Tectonic scale climate changes—Long timescales & big changes

Part III: Orbital scale climate changes—Recent global climate swings

Part IV: Deglacial and abrupt climate changes—Sudden climate warmings

Part V: Holocene/Historical/Future climate changes—Natural and Anthropogenic change

- Paleoclimatology is a complex and rapidly developing field. There are often a variety of hypotheses argued to explain a given observation so it is most useful for you to begin reading the background information early so that you have a fundamental understanding of the components of the climate system and can begin to think critically about the hypotheses discussed in the class.

- A wide variety of past and current research "case studies" will be covered and discussed to cast light on the operation of the global climate system.

Academic integrity:

Scientific activities require high standards of personal and academic integrity by students and faculty alike. As academics each of us bears the responsibility to conduct our scholarly and research activities with integrity and intellectual honesty. The open exchange of ideas and sharing necessary for research and the advancement of knowledge require mutual trust that ideas, opinions, data, and insights will be respected, acknowledged and properly credited. In addition, as scientists it is our responsibility to objectively and honestly report all of our information (observations/data/work), its source, and its uncertainties.

This means that as students you are responsible for the full citation of others' ideas in all of your work and you must be honest in your course and exam work. Always submit your own work and not that of another student or other source material (book, papers, online materials) without proper citation. Finally, data must always be handled and reported honestly; fabrication, falsification, omissions, or misrepresentation of results are serious forms of misconduct.

For more information about academic integrity guidelines at UiB please see:

<http://www.uib.no/en/quality-in-studies/77866/useful-information-students-and-staff>

<http://www.uib.no/en/education/49058/use-sources-written-work-university-bergen#>

Grading

60% of your grade is based on your final exam

40% of your grade is based on coursework through the semester (20% from labs and class work and 20% from seminar participation/discussion).

Plan for GEOL 222 **final updated**

Foreleses av: Ulysses Ninnemann

Uke	dag	tid	tema
Uke 34	1	14-16	Framework of climate science and "paleoclimate"
	2	12-14	Lab 1 climate system familiarity; energy distribut
Uke 35	1	14-16	Cenozoic cooling
	2	12-14	Lab 2 Energy balance (understanding greenhouse)
Uke 36	1	14-16	BLAG and CO2 hypotheses & tectonics
	2	12-14	Lab 3 55 myr Cooling data exploration (understand $\delta^{18}O$)
Uke 37	1	14-16	Orbital theory of ice ages lecture
	2	12-14	Lab 4 Long term carbon cycling model
Uke 38	1	14-16	Last Glacial Maximum climate lecture
	2	12-14	Lab 5 Deglacial climate and dating records and organize seminar groups.
wk39-40 fieldtrip karst geology course			Use time to read seminar papers (for week 43 etc.)
Uke 41	1 10.10	14-16	Ice cores, CO2, and glacial cycles lectrure Margit ,
	2 10.12	12-14	<i>Lecture or activities?</i> kristine/Margit
Uke 42	1 17.10	14-16	(Abrupt) Millennial scale climate (Margit)
	2 19.10	12-14	Holocene climate (lecture) (kikki)
Uke 43	1	14-16	Student run seminar on origin of NH Glaciation
	2	12-14	Student run seminar on origin of NH Glaciation pt 2
Uke 44	1	14-16	Modes of climate variability (ENSO & NAO)
	2	12-14	ENSO lab (VERY SHORT)
Uke 45	1	14-16	Student run seminar on Abrupt climate change
	2	12-14	Recent warming & natural trends
Uke 46	1	14-16	Student run seminar on future climate change
	2	12-14	Plenum discussion of future challenges
Uke 47	1	14-16	review
	2	12-14	Independent review (study for exam!)
Uke 48	1	14-16	<i>REVIEW discussion/Question SESSION PRE-EXAM</i>
	2	12-14	