

Submit originals and one copy and electronic copy to **Governance/Faculty Senate Office**
 See <http://www.uaf.edu/uafgov/faculty/cd> for a complete description of the rules governing curriculum & course changes.

CHANGE COURSE (MAJOR) and DROP COURSE PROPOSAL

SUBMITTED BY:

Department	GEOGRAPHY	College/School	SNRAS
Prepared by	P.Heiser	Phone	7068
Email Contact	paheiser@alaska.edu	Faculty Contact	D. Mann

1. COURSE IDENTIFICATION:

Dept	GEOG	412	No. of Credits	3
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COURSE TITLE _____

2. ACTION DESIRED:

Change Course	<input checked="" type="checkbox"/>	If Change, indicate below what change.	Drop Course	<input type="checkbox"/>
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NUMBER	<input type="checkbox"/>	TITLE	<input checked="" type="checkbox"/>	DESCRIPTION	<input checked="" type="checkbox"/>
PREQUISITES	<input type="checkbox"/>	FREQUENCY OF OFFERING		<input type="checkbox"/>	
CREDITS (including credit distribution)	<input checked="" type="checkbox"/>	COURSE CLASSIFICATION		<input type="checkbox"/>	
CROSS-LISTED	<input checked="" type="checkbox"/>	Dept.	<input type="checkbox"/>	(Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)	
STACKED (400/600) Include syllabi.	<input checked="" type="checkbox"/>	Dept.	<input type="checkbox"/>	Course #	<input type="checkbox"/>
OTHER (please	_____				

3. COURSE FORMAT

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

COURSE FORMAT: (check all that apply)	1	2	3	4
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6. *CURRENT CATALOG DESCRIPTION AS IT APPEARS IN THE CATALOG: including dept., number, title and credits*

GEOG F412 Geography of Climate and Environmental Change

3 Credits
Offered Spring

Serves as a "synthesis" breadth course focusing on the geography of climate and environmental change. The major concepts of global climate processes and climate change will be reviewed on multiple time scales. The impacts of natural and anthropogenic environmental change will be examined through selected case studies and readings (e.g. permafrost, invasive species, sea ice, fire, urbanization). Prerequisites: BIOL F271; GEOG F401; or permission of instructor. (3+0)

7. *COMPLETE CATALOG DESCRIPTION AS IT WILL APPEAR WITH THESE CHANGES: (Underline new wording ~~strike through old wording~~ and use complete catalog format including dept., number, title, credits and cross-listed and stacked.) PLEASE SUBMIT NEW COURSE SYLLABUS. For stacked courses the syllabus must clearly indicate differences in required work and evaluation for students at different levels.*

~~**GEOG F412 Geography of Climate and Environmental Change**~~

**GEOG/ATM/BIO/GEOS 412
Processes of Climate Change Past, Present, and Future**

~~3~~ 4 Credits
Offered ~~Spring~~ Spring Fall

~~Serves as a "synthesis" breadth course focusing on the geography of climate and environmental change. The major concepts of global climate processes and climate change will be reviewed on multiple time scales. The impacts of natural and anthropogenic environmental change will be examined through selected case studies and readings (e.g. permafrost, invasive species, sea ice, fire, urbanization). Prerequisites: BIOL F271; GEOG F401; or permission of instructor. (3+0)exam~~

~~This course is a survey of climate change science extending from the paleo-recBt42.00le.t42.00h1R climate change sc3.425.~~

a copy of written notification.)

9. **GRADING SYSTEM:** *Specify only one*

LETTER:

PASS/FAIL:

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APPROVALS:

	Date	
Signature, Chair, Program/Department of:		

	Date	
Signature, Chair, College/School Curriculum Council for:		

	Date	
Signature, Dean, College/School of:		

	Date	
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ATTACH COMPLETE SYLLABUS (as part of this application).

Note: The guidelines are online: <http://www.uaf.edu/uafgov/faculty/cd/syllabus.html>

The department and campus wide curriculum committees will review the syllabus to ensure that each of the items listed below are included. If items are missing or unclear, the proposed course change will be denied.

Geography 412 /612 (ATM/BIO/GEOS)

Processes of Climate Change Past, Present, and Future

4 CREDITS

Instructor: **Dr. Daniel Mann** , Geography Program, School of Natural Resources, UAF
email: dhmann@alaska.edu

Office: Scenario Network Arctic Planning, Denali Building

phone: 474-6929

Office Hours: MWF 9:30-10:30 and by appointment

Meeting Time and Location: (TBA)

3 regular lectures hours per week + one hour discussion group/recitation

Course Description

This course is a survey of climate change science extended to modern climate dynamics and modeling. The class consists of two distinct but integrated topical 'modules'. The first seven weeks will explore the paleoclimatic changes that have occurred on planet Earth, using the climate events in the Past to better understand current and future climatic changes. The second half of the semester introduces first principles of climate dynamics and then applies these dynamics to predictive climate models.

Course Prerequisites: Sein Geography or natural sciences, graduate permission.

Course Objectives: This is a 'synthesis' course for upper division Geography and Natural Sciences undergraduates and graduate students. Students will gain a thorough understanding of Earth climate dynamic and change through the study of both past climate event and modern climate processes. Students will be trained to critically evaluate both the validity of paleoclimatic reconstructions and climate model predictions.

Instructional / Teaching Methods: This class will be a lecture course with discussion groups and one field trip. Discussion groups will require critical evaluation of assigned readings and the current scientific literature.

Student Assignments: Students will write two short papers during the course of the semester, one in each 'module'. These papers will involve critical reviews of 2-3 related journal articles. A field trip report is also required.

Required Texts: William F. Ruddiman, Earth's Climate Past and Future. Second Edition 2008, Dennis Hartmann, Global Physical Climatology (The International Geophysics Series, Vol 56) by Academic Press, 1994, ISBN: 012328530-5. List Price: \$83.95.

SCHEDULE OF LECTURES, EXAMINATIONS, AND ASSIGNMENTS

Subject to change.

Exams, field trip, discussion group deadlines provided on Bb.

Week 1	Introduction to Paleoclimate Reconstruction	Rudd 1-2
Week 2	Precambrian Climate	Rudd 3-4
Week 3	Mesozoic Climates (and Mass Extinctions)	Rudd 5-6
Week 4	Orbital Scale Climatic Changes	Rudd 7-9
Week 5	Pleistocene Ice Ages, Trace Gases, Feedbacks	Rudd10-11
Week 6	LGM and Deglacial Climate Change	Rudd 12-14
Week 7	The Holocene	Rudd 15-17
Week 8	Global Energy Balance	Hart. 1, 2
Week 9	Radiative Equilibrium	Hart. 3
Week 10	Surface Energy Balance	Hart. 4
Week 11	Atmospheric General Circulation	Hart. 6
Week 12	Climate Feedbacks	Hart. 9
Week 13	Climate Modeling	Hart. 10
Week 14	Anthropogenic Climate Change	Hart. 11

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Paleoclimates Field Trip: Mandatory weekend field trip to Isabel Pass with stops at important paleo-climate sites in Interior Alaska, including loess sections, paleo-dune fields, Pleistocene and Holocene moraines, and an examination of lake sediments.

Assignments and Grading:

Paleoclimates:

Exam 1 15%
 Exam 2 15%
 Field Trip Participation and Report 10%
 Article Review 10%

Climate Dynamics and Modeling

Exam 1 15%
 Exam 2 15%
 Discussion 10%
 Project 10% (Summarize in 15 minute,
 oral presentation).

GRADUATE vs UNDERGRAD EXPECTATIONS AND GRADING

- 1) Two tier exam structure, graduate students will have an additional take-home component and will be graded with higher expectations, different rubric.
- 2) Grad student article review will require 3-4 papers, undergrad 1-2 (with instructor guidance). Grad students will review longer and more sophisticated articles, and their reports evaluated with higher expectations.
- 3) Graduate students will give short presentations and each lead one discussion session.

Course grades will be assigned as indicated at the table below. Course %'s are for THIS course only and may vary with different instructors. Grade point values are indicated on the table as well. Please see "Academics and Regulations" section of UAF 2007-2008 Catalogue.

grade % GP

A+ 100-97 4.0	C+ 79-77 2.3
A 96-92 4.0	C 76-72 2.0
A- 91-90 3.7	C- 71-70 1.7
B+ 89-87 3.3	D+ 69-67 1.3
B 86-82 3.0	D 66-62 1.0
B- 81-80 2.7	D- 61-60 0.7

Course Grading Scale: All grades are determined on an absolute score (with no curve) according to the following scale:

A = 90-100 percent: outstanding work, mastery of topic

B = 80-89 percent: above average work, all assignments completed well

C = 70-79 percent: average, all or most assignments completed, most work satisfactory

D = 60-69 percent: pass, unsatisfactory or missing work

F = less than 60 percent: failure to meet requirements of course

Support and Disabilities Services: The UAF Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. The course instructors will work with the Office of Disabilities Services to provide reasonable accommodation to students with disabilities. Please notify the instructor of any special needs.

Plagiarism/Academic Integrity: University Standards and Policies apply (see UAF Catalog).

Extra Credit: Extra credit is not an option in this course except under unusual circumstances.

Information on Exams and Assignments: Examination format will include a mixture of multiple choice, short answer / diagram / map, and essay.

end