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(Email electronic copy to jbharvie@alaska.edu)

REQUEST FOR CORE WRITING INTENSIVE DESIGNATOR

SUBMITTED BY:

Department	Biology & Wildlife	College/School	CNSM
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See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/> for a complete description of the rules governing curriculum & course changes.

1. COURSE IDENTIFICATION:

Dept	BIOL	Course #	485	No. of Credits	3
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COURSE TITLE	Global Change Biology
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Existing Course	<input checked="" type="checkbox"/>	New Course Pending Approval*	<input type="checkbox"/>
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*Must be approved by appropriate Curriculum Council.)

2. CURRENT CATALOG DESCRIPTION AS IT APPEARS IN THE CATALOG: including dept., number, title and credits. If there extensive changes to an existing course, include the CHANGED CATALOG DESCRIPTION as well. (Doing so will facilitate correct Banner entries.)

BIOL F485 Global Change Biology (a)

3 Credits
Offered Fall Odd-numbered Years

Contemporary science and policy concerns of global change that involve biological processes. Includes structural and functional responses and sensitivities of biological processes to environmental changes (such as climate and human uses of land and biological resources); implications of biological responses to global change for conservation and management of biological resources; and the social and economic consequences of biological responses to global change. Prerequisites: BIOL F371; CHEM F105X; CHEM F106X. Cross-listed with WLF F485. (3+0)

JUSTIFICATION FOR ACTION REQUESTED

The purpose of the department and campus-wide curriculum committees is to scrutinize course designator applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. Use as much space as needed to fully justify the proposed change and explain what has been done to ensure that the quality of the course is not compromised as a result.

The change of the course to a Writing Intensive (W) course reflects the emphasis on writing in the course. The majority of the assessment is based on two article critiques, a major poster project, and exams that are short-answer, essay style. Students' writing skills at the start of the course will be evaluated via an ungraded writing assignment. The instructor will meet with each student at the start of the term, after the writing diagnostic assignment, and after writing assignments to provide guidance and feedback.

The **attached syllabus** must clearly reflect the following basic elements for a class to be **WRITING INTENSIVE**. Please note them directly on the syllabus, using the corresponding letter.

- A** A majority of the final grade is derived from writing activities
- B** A research paper/project
- C** Personal conference with the student
- D** Drafts/revisions/Feedback


RECEIVED


OCT - 9 2013


Dean's Office

College of Natural Science & Mathematics

APPROVALS:

 (Diane Wagner)	Date	8/9/2013
Signature, Chair, Program/Department of:	Biology + Wildlife	

	Date	10-20-13
Signature, Chair, College/School Curriculum Council for:	CNSA	

 for Paul W. Layer	Date	Oct 30, 2013
Signature, Dean, College/School of:		

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

	Date	
Signature, Chair, Senate Core Review Committee		

These guidelines are included for your reference.

November 12, 1990
UAF Faculty Senate Meeting #22

GUIDELINES FOR CORE WRITING INTENSIVE DESIGNATOR:

A. General guidelines for 3-credit course with "W" designator

1. The lower-division writing sequence as specified in the Core Curriculum will be a prerequisite for all "W"- designated courses.
2. Instructors are encouraged to have students write an ungraded diagnostic composition on or near the first day of class to help assess writing ability and general competence in the discipline. [If diagnostic tests indicate that remedial work may be needed, teachers can set up specialized tutoring for their students with UAF Writing Center tutors.]
3. Teachers regularly evaluate students' writing and inform students of their progress. If a major written project (research project) is part of the course, the project should be supervised in stages. If possible, a writing activity should comprise a major portion of the final examination.
4. At least one personal conference should be devoted to the student's writing per term and drafts of papers should receive evaluation from the teacher and/or peers.
5. Written material should comprise a majority of the graded work in the course for it to be designated "intensive." "Written material" can consist of quizzes and exams with short answers or essay sections, journals, field notes, informal responses to reading or class lectures, structured essays, research projects, performance reviews, lab reports, or any forms suitable to the discipline being taught.

B. Guidelines for the "W" designator in Technical courses

1. In order to ensure that technical disciplines can meet the goals of the writing intensive requirements without compromising the technical quality of their courses, such disciplines may substitute longer courses or a series of courses (typically 1-credit labs) for each of the two necessary 3-credit writing intensive or "W"-designated courses. Courses meeting all the general guidelines will, of course, also be acceptable.
2. The longer course option allows the "W" designator for a 4- or 5-credit course in which written material comprises a portion of the grade equivalent to "a majority" of a 3-credit course. The course must also meet the other general guidelines.
3. The series option allows a student to replace one or both 3-credit "W" courses with a series of courses, each of which may be less than three credits--e.g., a series of 1-credit or 1-credit-equivalent laboratories. Each series, however, must sum to the equivalent of at least one 3-credit "W"- designated course. The initial course in the series will be designated "W1" and, while less than three credits, will fulfill all the other general requirements for a "W." The subsequent courses will base a majority of the grade on written material. Students must take the "W1" course before taking the other courses in the series.

** To grade a course on written work means to use the student's written work as the basis for his or her grade. Written work is graded mainly on content and organization, with tone, word choice, sentence structure, grammar, punctuation, and spelling accounting for a smaller fraction of the grade.

Effective: November 29, 1990

PROPOSED CHANGES IN RED
(CLIMATE CHANGE TOPICS TO BE EXPANDED)

GLOBAL CHANGE BIOLOGY
BIOL/WLF F485
Fall 2009

Note: This is the syllabus when I most recently taught the course.

Mon-Wed-Fri 11:45A-12:45P Irving 201

Instructor

Richard Boone, Professor of Ecosystem Ecology
Department of Biology & Wildlife, and
Institute of Arctic Biology
122 Arctic Health Research Building
474-7682 (Office) / rdboone@alaska.edu

Course Description

Students will be introduced to global changes that have occurred during the distant and recent past and their effect on biological systems. Topics will include climate change, biodiversity, and human population dynamics. We will examine the degree to which humans are causing global and biological changes and how the degree of impact is influenced by technology and lifestyles. Relatively well-understood global changes from the recent and distant past will be compared with comparable events underway now.

Course Goals

Major changes in climate, biogeochemical cycles, and biotic resources are among the greatest challenges that will face humankind in the 21st Century. The goal of this course is provide students with (1) good understanding of the major changes in the Earth's climate, biogeochemical cycles, and biotic resources; (2) the factors that promote those changes; (3) interactions among those factors; and (4) skills to critically evaluate the quality of global change information. It is my hope that through this course you will become both a better biologist and a more informed citizen.

Readings

There is no textbook for the course. Readings will come from primary papers, the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, the Arctic Climate Impact Assessment (ACIA), and the web. Readings will be given out in class and/or posted on Blackboard.

Instructional Methods

The course will include a variety of instructional approaches including lectures, discussions, and group and individual learning activities.

Grading

Grades will be weighted as follows: 20% midterm exam, ~~30~~25% critiques, 25% poster project, 5% class participation, and ~~20~~5% final exam. The critique grade will be based on a written evaluation of two articles, one from the popular press and one from the scientific literature. Posters will be judged on the basis of content and presentation. Final course grades will be based on the following scheme:

90-100%	A	60-69%	D
80-89%	B	<60%	F
70-79%	C		

I will not use plus/minus grades in assignment of final course grades. Grading rubrics will be provided for the critique and poster assignments.

A

PROPOSED CHANGES IN RED
(CLIMATE CHANGE TOPICS TO BE EXPANDED)

This is a Writing Intensive (W) course. At the start of the course your writing will be assessed via an ungraded essay (1-2 pages) that you write on any topic related to climate change science. As part of the assessment I will meet with you in conference (roughly 30 minutes) to go over my review comments and to discuss aspects of your writing that can be improved. Over the course of the semester you will receive written and oral feedback on your critiques and written feedback on the writing and organization of your poster. Over the course of the semester I will use examples to highlight issues that are often problematic in technical writing.

Poster Assignment

You will become an expert on an ecoregion (an assemblage of plant and animal communities that is geographically distinct), including evolution of the ecoregion, current conditions, and how it may respond to pressures anticipated for the ecoregion (e.g., land-use alteration, exotic species, climate change). The ecoregion concept increasingly is being used by conservation organizations and federal and local resource management agencies for management and planning purposes. Students also will present an oral summary of their poster at a class poster session.

B

Reading Expectations

You are expected to do the readings before they are covered in class. Come prepared with questions, discussion points, and criticisms. Also use the class period as a chance to share any relevant information obtained independently from other sources.

Critiques (2)

You will write a critique (3-4 pages double-spaced) of (1) a newspaper or magazine article that focuses on some aspect of global change biology, and (2) a paper from the peer-reviewed literature. I will give some example publications. The purpose of your critique of the popular article is to evaluate the writer's objectivity, the quality of their information, and whether opposing views (if appropriate to the story) are presented. You should also evaluate the effectiveness of any graphs or illustrations. A major challenge, given the high volume of information in the popular literature on global change, is to discern quality information from conjecture, speculation, jargon, and simple sensationalism. Your critique of the article from the peer-reviewed literature should evaluate the overall quality of the science, the quality of the presentation, and the degree to which the author integrated findings into a larger scientific context.

B

For both critiques, your initial submission should be a draft. I will review it, then meet with you to go over my comments, with a focus on both the writing and the content. Your second submission should reflect the feedback and will be graded.

C, D

Exams

The mid-term and final exams will focus more on conceptual understanding (your ability to explain concepts or to make well-reasoned predictions based on what you know) rather than factual knowledge. You will need to know key facts, but the exams not uncommonly will require you to apply that knowledge. **The exams will be short-answer essay style.**

Plagiarism

Plagiarism is a serious violation of academic ethics and the UAF Student Code of Conduct. This issue has become a greater problem with the availability of information on the web. Any assignments with plagiarized material will receive an "F". More serious penalties apply if there are repeated cases of plagiarism. An excellent definition of plagiarism is found at www.uaf.edu/library/instruction/handouts/Plagiarism.html. If you have any doubts about what constitutes plagiarism contact me.

PROPOSED CHANGES IN RED
(CLIMATE CHANGE TOPICS TO BE EXPANDED)

Disability Services

The UAF Office of Disability Services implements the Americans with Disabilities Act (ADA) and ensures that UAF have equal access to the campus and campus materials. I will work with the Office of Disabilities Services (x7043) to provide reasonable accommodation to students with disabilities.

Blackboard

I will use the UAF Blackboard site (<http://classes.uaf.edu/>) extensively to post announcements, readings, and other global change resources in the literature and on the web.

**SCHEDULE
GLOBAL CHANGE BIOLOGY
BIOLOGY 485
FALL 2009**

Note: Content will be adjusted to reflect focus on climate change

SECTION I: Introduction

<u>September</u>		<u>Topic</u>
4	F	Introduction
9	W	Sources of information & assessing information quality

SECTION I: Human Population and Societies as Drivers of Global Change

11	F	History of human population changes
14	M	Causes of human population growth
16	W	Human population projections
18	F	Ecological footprint

SECTION II: Climate Change

21	M	Sources of climate data (direct observations and proxy data)
23	W	Temperature and precipitation trends
25	F	Circumpolar and Alaska temperatures
28	M	Milankovich cycles
30	W	Human and natural drivers of recent climate change

October

2	F	Carbon dioxide
5	M	Methane and nitrous oxide
7	W	Clouds, aerosols, and global dimming
9	F	Clouds, aerosols, and global dimming (cont.)
12	M	Snowball Earth
14	W	Ocean currents and thermohaline circulation
16	F	Midterm Exam
19	M	Projections of future climate change
21	W	Global circulation models (GCMs) – how do they work?
23	F	Evidence of abrupt climate change
26	M	Evidence of abrupt climate change (cont.)
28	W	Processes that cause abrupt climate change
30	F	Contrarian views of climate change (skeptical environmentalist)

Critique #1 Due **B, C, D**

PROPOSED CHANGES IN RED
(CLIMATE CHANGE TOPICS TO BE EXPANDED)

SECTION III: Biophysical Impacts of Climate Change

November

2	M	Indigenous perspectives		
4	W	Indigenous perspectives (cont.)		
6	F	Sea ice		
9	M	Snow cover, glaciers, and permafrost		
11	W	Animals – physiological responses		
13	F	Marine mammals - Polar bears, ringed seals, and walrus		
16	M	Marine mammals and fish		
18	W	Plant growth responses	<i>Critique #2 Due</i>	B, C, D
20	F	Plant distribution responses		
23	M	Plant distribution responses		
25	W	Forecasts for forestry and agriculture		
27	F	No class (Thanksgiving break)		
30	M	Human health		

SECTION IV: Human Impacts (non-climate)

December

2	W	Land-use land-cover changes		
4	F	The greening of New England		
7	M	Invasive species – Planet of the Weeds?		
9	W	Biodiversity		
11	F	The UN Millennium Assessment: What does the future hold?		
12	W	Poster presentations		B
14	F	Poster presentations (cont.)		
16	W	Final Exam (10:15A-12:15P)		

Note: This Schedule is subject to change

Information on the Critique Assignment

Due Date: Monday, October 5, 2009

Note: This is the first critique assignment from when I most recently taught the course. The critique assignments will be changed to reflect a greater emphasis on writing and will include a detailed rubric for evaluation of the students' writing.

Critique Assignment

Your assignment is to write a critique (~3-4 pages double-spaced) of a magazine or feature-length newspaper article that focuses on some aspect of global change biology. The purpose of your critique is to evaluate the writer's objectivity, the quality of their information, and whether opposing views (if appropriate to the story) are presented. You should also evaluate the effectiveness of any graphs or illustrations. A major challenge, given the high volume of information in the popular literature on global change, is to discern high quality information from conjecture, speculation, jargon, and simple sensationalism.

Please do not use an article that is particularly short, or you won't have much to say. I recommend you choose a magazine article (at least 3 pages long). For magazine articles you can go to a periodical (e.g., Harpers, Atlantic Monthly, Time, National Geographic) or a lay-audience scientific publication (e.g., Discover, Scientific American). If you choose to focus on a newspaper article, you should select a feature-length (longer) article from a major newspaper such as The New York Times, the Los Angeles Times, or The Globe and Mail (Canadian). The New York Times has a great science section in its Tuesday edition.

Alternate options for this assignment:

- (1) Comparison of two articles. Compare two that address the same topic. You can briefly introduce the topic, then examine how each article addressed it. Articles from the journals Science and Nature are often profiled in major newspapers the week before or the week after they appear in print.
- (2) Newspaper – scientific journal comparison. Compare a magazine or newspaper article about a recently reported finding with the information in the original peer-reviewed science article. Normally a magazine or newspaper writer will cite the source of their information. Read the original journal article as well as the magazine or newspaper article.

Consider the following questions are you write your critiques

- (1) Were the articles accurate? Is the science explained correctly?
- (2) Does the writer show bias?
- (3) Is key information left out?
- (4) Does the article present alternative points of view if the topic is controversial?
- (5) Are the original sources of information given?
- (6) Does the article indicate any degree of uncertainty about the science or the meaning of reported findings?
- (7) Are any graphics clear and do they add sufficiently to the article?
- (8) Would it have been helpful if graphics had been added?

What to Submit

Provide paper copies of the original articles (including peer-reviewed articles if you did a comparison) with your critiques.

Recommendations about Writing

Strive for organization, clarity, and economy of words. You can provide figures or other graphics from the articles if they allow you to communicate your points more effectively.

Grading Rubric

Quality of assessment	70%
Organization	20%
Spelling/grammar	10%

How to Find an Article

Examples of some newspapers and magazines that could be used are given below. All have online editions; the UAF library has electronic subscriptions to many periodicals. Save an article if you aren't sure it will be available later. Most online newspapers have a link to their science articles. If not, most online editions have search engines that allow you to search for an article on a particular topic.

An alternative to the online approach is to browse through the hard copies of periodicals and newspapers for which Rasmuson Library has a subscription. The last time I checked the library still subscribed to a large number of papers (national and international). Rasmuson and the Noel Wien Library in Fairbanks also subscribe to a large number of popular magazines.

Do consider periodicals and newspapers from countries that I haven't considered. I'm sure you'd find great articles in lay publications from any English speaking country.

Possible Sources for Articles*Magazines*

- Atlantic Monthly <http://www.theatlantic.com/>
- Harpers <http://www.harpers.org/>
- The Economist (UK) <http://www.economist.com/>
- Mother Jones <http://www.motherjones.com/>
-

Newspapers

- The New York Times <http://nytimes.com/>
Note: The NYT has a "Science Times" section (printed on Tuesday) with in-depth, typically well-written articles. The articles normally give the journal sources for information reported.
- The Seattle Times <http://seattletimes.nwsourc.com/html/home/>
- The Boston Globe <http://www.boston.com/bostonglobe/>
- The Los Angeles Times <http://www.latimes.com/>
- The Washington Post <http://www.washingtonpost.com/wp-srv/front.htm>
- The Globe and Mail (Canadian) <http://www.globeandmail.com/>
- The Toronto Star <http://www.thestar.com>
- The Manchester Guardian (UK) <http://www.guardian.co.uk/>
- The Irish Times <http://www.ireland.com/>
- The Australian <http://www.theaustralian.news.com.au/>
- The Times (London) <http://www.timesonline.co.uk/>

Global Change Biology BIOL 485
Midterm Exam
October 16, 2009

Name: _____

100 points total (value for each question in parentheses)

- (18) 1. List and describe 3 proxies for paleotemperatures. For each proxy give its rough time frame coverage (e.g. 1000 yrs? 1 million yrs?), spatial coverage, and advantages and limitations.

(12)

2. a. Describe the “demographic transition” described in Cohen.

a. Has the demographic transition model worked for the United States? Why or why not?

b. What is the potential “demographic dividend” in Africa? What factors will determine if it is realized?

(8)

3. World population (now at 6.9 billion) is projected to increase to at least 9 billion later in 2050. Baring any unexpected catastrophes, this population increase will likely take place even if mean global fertility (number of children per woman of child bearing age) quickly drops from 2.7 (the current level) to 2.1 (the replacement level). Explain.

(3) 4. A conventional view is that converting open land (low biomass) to a forest (high biomass) will increase carbon sequestration by the land and reduce global warming. Recently a scientist presented results indicating that effect of reforestation (conversion of open land to a forest) on the Earth's temperature (net radiation balance) will **depend on the latitude** at which the trees are planted. Based on your knowledge of all the forcing factors, why this could be true.

(8) 5. a. Why has the rise in air temperature (as a result of global warming) been more pronounced in the Arctic than at lower latitudes?

(4) b. Has the rise in air temperature been more pronounced in the Antarctic? Why or why not?

(5) 6. In the year 1200 (assuming there had been no recent global catastrophes) was the Earth's terrestrial landscape likely a greater or smaller net carbon sink than is it today? Give your reasoning.

(10) 7. What are the Milankovitch Cycles and what are their strengths and weaknesses as an explanation for glacial and interglacial periods?

(32)

8. List 4 of the major forcing factors (other than changes in the Earth's orbital patterns and ocean circulation patterns) that influence the Earth's temperature. Describe how each of the forcing factors influences temperature (+ or -), how and why the intensity of each forcing factor has changed over the past 150 yrs, and the cause of the forcing factor. (Next page left blank for space).

Ecoregion Assignment

Global Change Biology 2009

BIOL/WLF 485

Your major assignment for the rest of the semester is to become an expert on an **ecoregion (an assemblage of plant and animal communities that is geographically distinct)**, including evolution of the ecoregion and how it may change in response to climate change, changes in atmospheric gases, and other human-related factors (e.g., farming, agriculture, pollution, water use). The ecoregion concept increasingly is being used by conservation organizations and federal and local resource management agencies for management and planning purposes. You will summarize your findings in a poster that will be presented at the end of the semester. You will be graded on the basis of the poster (quality of information and the presentation) as well as your oral presentation of the poster to the class.

Making the poster: There are several programs that can be used to make a poster. PowerPoint is most commonly used, but other programs work as well. If you have not made a poster with PowerPoint or another program before, let me know. I can show you the basic steps. I will let you know soon which large-format UAF printer will be used to make the hard copies of the posters. There are printers in IAB, the Geology Department, and the GI. The printing cost will be covered by the course.

Prepare your poster as if it were intended for a government, non-governmental organization, or business group that wants to know how a particular ecoregion worldwide will be affected by global change. You will be in the position of evaluating the elements of global change that are given high priority by society now, plus any others that you believe may have a significant impact on your bioregion in the future. You should consider that people reading your paper may be seeking answers to some of the following questions:

- How will predicted climate changes influence plants and animals (health, productivity) and potential for production of land-based resources (e.g., crops, timber, pasturage)
- What threatens biodiversity in the area?
- What services or goods are provided now by the bioregion?
- Is pollution a problem now, and how is it likely to change in the future?
- Will human pressures on the bioregion likely increase or decrease?
- What are the human pressures on the bioregion?
- Does your bioregion include any parks or wilderness areas?

You will need to identify the location of your ecoregion with respect to political boundaries (e.g., countries, counties, states, provinces, towns)

Your bioregion poster should include 3 major sections:

1. **What is the origin and history of the bioregion?** Include information on the geologic, vegetation, and land-use history. Don't go further back in time than the Pleistocene!
2. **What is the current state of the bioregion?** This will include a description of climate, soils, biomes or current vegetation, wildlife, topography, current human uses (e.g., agriculture, forestry, mining, recreation), any areas of concern (e.g., invasive species, reduced productivity, susceptibility to insect attack, reduction of biodiversity, landscape fragmentation), and any conservation activities.

3. **What are the predicted changes for your bioregion over the next 100 years, and how is your bioregion likely to change?** Include predicted changes in weather (temperature, precipitation, droughts, severe storms, growing-season length), biodiversity, resource use, and air & water quality. Include any major changes in recreation if you wish. Include information on the uncertainties of the predictions if possible.

The poster should end with a section listing your main references.

Maps and figures are a highly effective way to communicate information. When you use maps or figures from another source, don't forget to cite them. Figures (including maps) should include a figure number (sequentially ordered through the poster) and a figure legend that allows the reader to understand the figure without having to read the text in the paper.

Get in touch with me at any phase of the project if you need feedback or direction. At the end of the process I'd like you to have become an authority on your ecoregion and to feel a considerable sense of accomplishment.

Getting Started

The **first step** is to examine a map of the world's ecoregions, investigate those that you find interesting, and **choose an ecoregion** for your paper.

There are several schemes for mapping the ecoregions of the globe – one by The Nature Conservancy (TNC), another by the World Wildlife Fund (WWF), and others by government agencies (USFS). Most are very similar. Don't be put off by the political trappings of the conservation organizations. TNC and the WWF have put together some fantastic scientific resources on bioregions and other scientific topics. The WWF Ecoregions map, along with information about each of 867 ecoregions, can be found at the National Geographic Society web site at <http://www.nationalgeographic.com/wildworld/terrestrial.html>.

If you go to "Terrestrial Ecoregions", you will get a map of ecoregions for the globe. You can use your mouse to draw a box around a region if you want to examine it in more detail. There are further map controls on the right side of the web page. If you click on one ecoregion you will get its description. At the end of the description, you will see a link labeled World Wildlife Fund Scientific Report. This will take you to further information for most ecoregions.

Links to some additional useful maps

National Atlas <http://nationalatlas.gov/natlas/natlasstart.asp>

USFS: <http://www.fs.fed.us/recreation/map/finder.shtml>

Terraserver <http://terraserver.microsoft.com/default.aspx>

Harvard: <http://hgl.harvard.edu/jsps/basemap.jsp>

US Census <http://tiger.census.gov/cgi-bin/mapbrowse-tbl>

Natural Resource Conservation Service (NRCS) <http://www.nrcs.usda.gov/>