

Submit original with signatures + 1 copy + electronic copy to Faculty Senate (Box 7500).
 See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/> for a complete description of the rules governing curriculum & course changes.

TRIAL COURSE OR NEW COURSE PROPOSAL

SUBMITTED BY:

Department	Department of Geology and Geophysics	College/School	CNSM
Prepared by	Jessica Larsen	Phone	7992
Email Contact	jflarsen@alaska.edu	Faculty Contact	Jessica Larsen

1. ACTION DESIRED (CHECK ONE):

Trial Course X New Course

2. COURSE IDENTIFICATION:

Dept **GEOS** Course # **F194** No. of Credits **3**

Justify upper/lower division status & number of credits:

This course is being developed at the 100 level to be suitable for those enrolled in the Earth Sciences B.A. program, non-science majors, and Geology majors who wish to take an additional 100 level course focused on Natural Hazards. The 3-credit load for the course is suitable for the subject material, which does not require lab work for complete understanding of the course materials.

3. PROPOSED COURSE TITLE:

Natural Hazards and Disasters

4. To be CROSS LISTED? YES/NO

NO If yes, Dept: Course #

(Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)

5. To be STACKED? YES/NO

NO If yes, Dept: Course #

6. FREQUENCY OF OFFERING:

Spring 2012

Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) — or As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING
 (AY2011-12 if approved by 3/1/2012; otherwise AY2012-13)

AY2011-2012, Spring semester

8. 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 5 6 weeks to full semester

OTHER FORMAT (specify)

Mode of delivery (specify lecture, field trips, labs, etc)

9. CONTACT HOURS PER WEEK:

3 LECTURE hours/weeks 0 LAB hours/week PRACTICUM hours/week

Note: # of credits are based on contact hours. 800 minutes of lecture=1 credit. 2400 minutes of lab in a science course=1 credit. 1600 minutes in non-science lab=1 credit. 2400-4800 minutes of practicum=1 credit. 2400-8000 minutes of internship=1 credit. This must match with the syllabus. See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/guidelines-for-computing/> for more information on number of credits.

OTHER HOURS (specify type)

I will explore the possibility of a local field trip to help demonstrate concepts learned in class.

10. COMPLETE CATALOG DESCRIPTION including dept., number, title, credits, credit distribution, cross-listings and/or stacking (50 words or less if possible):

GEOS F1XX Natural Hazards and Disasters

3 credits

RECEIVED

SEP 12 2011

Dean's Office
 College of Natural Science & Mathematics

Survey of natural hazards and the disasters they cause, with emphasis on Alaska. Investigation of geologic and non-geologic hazards, prediction and mitigation. Topics include: earthquakes, volcanoes, tsunamis, weather/climate, and asteroid impacts. Provides non-science majors with basic natural hazards science, suitable for use in teaching, communications, policy, and emergency management careers. (3+0)

11. COURSE CLASSIFICATIONS: Undergraduate courses only. Consult with CLA Curriculum Council to apply S or H classification appropriately; otherwise leave fields blank.

H = Humanities S = Social Sciences

Will this course be used to fulfill a requirement for the baccalaureate core? If YES, attach form.

YES: NO:

IF YES, check which core requirements it could be used to fulfill:

O = Oral Intensive, Format 6 W = Writing Intensive, Format 7 Natural Science, Format 8

12. COURSE REPEATABILITY:

Is this course repeatable for credit? YES NO

Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).

How many times may the course be repeated for credit?

TIMES

If the course can be repeated for credit, what is the maximum number of credit hours that may be earned for this course?

CREDITS

If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course?

CREDITS

13. GRADING SYSTEM: Specify only one. Note: Later changing the grading system for a course constitutes a Major Course Change.

LETTER: PASS/FAIL:

RESTRICTIONS ON ENROLLMENT (if any)

14. PREREQUISITES No prerequisites
These will be required before the student is allowed to enroll in the course.

15. SPECIAL RESTRICTIONS, CONDITIONS

16. PROPOSED COURSE FEES \$

Has a memo been submitted through your dean to the Provost for fee approval?
Yes/No

17. PREVIOUS HISTORY

Has the course been offered as special topics or trial course previously?
Yes/No NO

If yes, give semester, year, course #, etc.:

18. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

The trial version of this course will have very low impact. It will serve as 3 credits of Prof. Larsen's teaching load (already approved in 2010-2011 Workload). The course will require classroom facilities with standard projection and computer equipment. The instructor will investigate making the course eventually accessible for web-based, distance delivery to broaden participation among students at other UA campuses, and other universities and colleges. I have arranged for access by students to the Geology Department computer lab for extra computing resources on an as-needed basis.

19. LIBRARY COLLECTIONS

Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No	<input type="checkbox"/>	Yes	<input checked="" type="checkbox"/>
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I contacted Ms. Jensen and since this course will not involve a major research paper, there will not be an extensive need for library collections. The collections already housed by Rasmuson will be sufficient.

20. IMPACTS ON PROGRAMS/DEPTS

*What programs/departments will be affected by this proposed action?
Include information on the Programs/Departments contacted (e.g., email, memo)*

The closest course listed in the catalog is GEOG F488 "Geographic Assessment and Prediction of Natural Hazards". The proposed trial course will have a much different scope (focused on basic understanding, geologic hazards, emphasis on Alaska) and target audience (targeted to 100 level students with no prerequisites). I see no conflicts between the proposed trial course and the course listed in the Geography department. In fact, it is quite possible that students wishing to broaden their understanding of hazards would enroll in the GEOG 488 course after taking the 100 level course through the Dept. of Geology and Geophysics first, thereby strengthening enrollment in both programs.

21. POSITIVE AND NEGATIVE IMPACTS

Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.

As also stated below, this trail course is part of a larger plan to introduce a concentration within the BA Earth Science program. This course will have a positive impact on the BA program by facilitating a new concentration in Natural Hazards. The aim of the new course and concentration are to help modernize the BA program, draw more students with related interests in communications, political science, sociology, and emergency management, and provide an avenue towards different career pathways for BA students. This course will have a positive impact on the Dept. of Geology and Geophysics by adding a new 100 level course with the goal of attracting more student enrollment. This course is highly complimentary to other 100 level GEOS courses already offered, particularly GEOS 101 and 120.

Another potentially positive impact is to the Geography department, in terms of increased enrollment in GEOG 488 by students who take the proposed course who would like to extend their learning at the 400 level.

One possible negative impact is that this course could draw enrollment away from GEOS 120 (Earthquakes, Glaciers, Volcanoes). However, the proposed course does not have a "core" designation so the likely student audience is sufficiently different that any competition should be minor.


JUSTIFICATION FOR ACTION REQUESTED

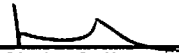
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory.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


Natural hazards are a fact of life, and their impacts can be severe and far-reaching. Alaska is one of the most geologically active areas on the planet and its citizens are vulnerable to a number of disasters from geologic (earthquakes, volcanoes, tsunamis) and non-geologic (coastal erosion, climate change, melting permafrost) hazards. An understanding of types of hazards that routinely and negatively impact people in Alaska, as well as elsewhere around the world, is important for students at UAF who are interested in using their degrees for employment in the following fields: teaching, journalism, science writing, emergency management, political science, and business (i.e. insurance companies). It would indeed be beneficial for all citizens to have a basic understanding of the causes of natural hazards, how they are predicted and mitigated, and how to prepare in case a disaster strikes near home. At present, UAF does not offer a course giving an overview of natural hazards at the 100 level. This trial course is designed to attract students interested in applying a basic understanding of natural hazards and the human dimension (prediction, mitigation, and societal impacts) without the need for specialized knowledge of the Earth Sciences.

The trial course is also aimed towards helping strengthen and modernize the Earth Sciences B.A. program within the Dept. of Geology and Geophysics. The Earth Sciences B.A. is currently a small program with great potential for growth. Development of this trial course is part of a larger plan to introduce a Natural Hazards concentration within the B.A. program. The goal of adding this concentration in the near future is to draw more students into the program, or into related GEOS courses. The Natural Hazards course (and concentration) will draw students with related interests in communications and/or public policy. The aim is to provide students with interests in emergency management, policy, communications, teaching and geoscience another practical career pathway.

APPROVALS: Add additional signature lines as needed.

	Date	9/12/11
Signature, Chair, Program/Department of: <u>Geology + Geophysics</u>		

	Date	9/12/2011
Signature, Chair, College/School Curriculum Council for:		

	Date	9/13/11
Signature, Dean, College/School of: <u>CNS</u>		

	Date	
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Signature of Provost (if applicable)

Offerings above the level of approved programs must be approved in advance by the Provost.

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

	Date	
Signature, Chair Faculty Senate Review Committee: <input type="checkbox"/> Curriculum Review <input type="checkbox"/> GAAC <input type="checkbox"/> Core Review <input type="checkbox"/> SADAC		

ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking)

	Date	
Signature, Chair, Program/Department of:		

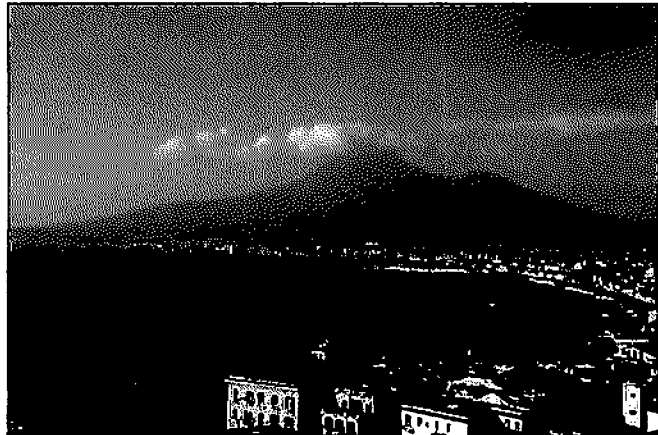
	Date	
Signature, Chair, College/School Curriculum Council for:		

	Date	
Signature, Dean, College/School of:		

Trial Course: Natural Hazards and Disasters

SYLLABUS: (GEOS F1XX, 3 credits) Spring 2012

INSTRUCTOR: Jessica Larsen
OFFICE: REIC 344
TELEPHONE: 907-474-7992
EMAIL: jflarsen@alaska.edu *best way to contact me*
LECTURES: T and TH 2:00-3:30PM
OFFICE HOURS: T and TH 3:45 – 4:45 PM



INTRODUCTION

It is very likely that we all have been, or will be, affected to some degree by a natural disaster. For example, your professor lived in Santa Cruz, CA during the M 6.9 Loma Prieta Earthquake. We lived without running water or electricity for about 5 days, in a city with brick buildings reduced to rubble. Imagine a similar scenario in Fairbanks during the dead of winter – we are all to some degree vulnerable to disaster (though humans often forget this!). This course will cover a survey of natural hazards and their societal impacts. The course will emphasize geologic, climate, weather, and extraterrestrial hazards, with a focus on impacts and examples from Alaska. The course will be lecture-based, but include in-class activities that extend and compliment lectures and homework assignments.

TEXTBOOK

Hyndman and Hyndman, 2011: Natural Hazards and Disasters, 3rd edition. Brooks/Cole.

WEBSITE RESOURCES (TO BE REVISED AS NEEDED)

We will use website resources to explore the distributions and types of hazards and their impacts globally, both in and outside of class for lectures, activities, and assignments. A select list of the types of resources we will explore:

FEMA website: www.fema.gov

Pacific Disaster Center, University of Hawaii: <http://www.pdc.org/iweb/pdchome.html>

University of Colorado, Boulder Natural Hazards Center: <http://www.colorado.edu/hazards/>

Alaska Volcano Observatory: www.avo.alaska.edu

Alaska Earthquake Information Center: www.aeic.alaska.edu

Alaska Seismic Hazards Safety Commission: <http://seismic.alaska.gov/>

West Coast and Alaska Tsunami Warning Center: <http://wcatwc.arh.noaa.gov/>

Pacific Tsunami Warning Center: <http://ptwc.weather.gov/>

OBJECTIVES

This course is being developed to provide anyone with an interest in learning more about natural hazards with basic information about types, causes, and how humans can both be vulnerable and resilient. This is a subject that explores how each type of hazard can impact people who are vulnerable, and the steps that can be taken to reduce the impacts of associated disasters. The course is particularly well suited to students seeking careers in teaching, journalism or science

writing, sociology, political science, public policy, emergency management, and business. A primary objective is to give students a working knowledge of the science behind natural hazards, to help them better prepare for their chosen careers.

To meet this goal, the course objectives are: 1) Explore major types of geologic and climate/weather related hazards, and the geoscience behind their causes. 2) Examine "case studies" that present ways that humans have tried to mitigate disasters associated with different types of hazards. 3) Explore the resulting societal impacts through case studies of recent hazardous events. 4) Apply what is learned in lecture through in-class and associated homework activities.

LEARNING OUTCOMES

At the end of the course, you will begin to see how geoscientists specializing in hazardous phenomena view the natural and human world. The course will provide avenues to apply what you have learned through class, homework, case study, and writing activities. Upon completion, you will be able to:

- ❖ Explain the basic science behind geologic and climate/weather related natural hazards (i.e. as a teacher instructing his/her pupils)
- ❖ Appraise modern methods used to help mitigate the negative impacts (disasters) that can come from natural hazards
- ❖ Assess in a basic way the degree of vulnerability in select populations from different types of hazards
- ❖ Apply retrospective analysis when examining "case studies" of hazards that have occurred recently. Be able to discuss what worked and what failed during recent natural disasters (such as the terrible earthquake and tsunami in Japan 2010, or Hurricane Katrina).
- ❖ Assess known (or previously unknown) vulnerabilities to a given hazard and discuss ways that people are (or should be) working on mitigation strategies through a clearly written, well-organized report.

INSTRUCTIONAL METHODS: The lecture format will be balanced between "traditional" lecturing (using PowerPoint and other web-based resources) and active learning methodologies. During lectures we will use clickers and brief group discussions to enhance your grasp on the material. Every 2 to 4 class periods will feature an in-class activity that provides hands-on learning experiences. Your active participation will be rewarded with homework activities that are partially complete before you leave the classroom, and a stronger grasp of the materials that will enhance your understanding for the exams. Participation and attendance will be graded, and worth 10% of your total grade.

Exams: There will be three exams, each worth 10% of your grade. You must be present in class the days of each of the exams, and there will be no make-up exams given. The only exception to this rule is in case of medical or family emergency, with documentation (e.g., Dr.'s note). The exams are not cumulative, and will each cover approximately 1/3 of the course material.

Activities/Homework assignments: There will be 9 assignments that you will begin to work on in class, and complete outside of class as homework. The assignments will be due one week from the day they are handed out, during the beginning of the class time period. The length of the assignment will be reasonable for completion within 1 week. Each assignment is worth 5% of your grade and I will drop your lowest homework score (grading 8 out of the 9). Late homework will be docked 10% per day past their due date.

Writing Assignment: 3 weeks from the end of the semester, you will be assigned a short writing project. This project will focus on investigating a likely or common hazard that could impact your hometown (i.e. where you grew up or where your family lives presently. Not necessarily Fairbanks, unless you grew up here!). You will write about the basic science behind the hazard, in what ways your town is vulnerable or at risk, what current efforts or plans are in place for mitigation, how you or your family (or community members) can adequately prepare for the hazard, and what recommendations you have for improving or lessening the vulnerability. The assignment will have very specific requirements that will be given to you to follow closely. This assignment is worth 20% of your grade.

ACCESSIBILITY

The Office of Disability Services implements the Americans with Disabilities Act (ADA) and ensures that UAF students have equal access to the campus and course materials. I will work with the Office of Disability Services (474-7043) to provide reasonable accommodation to students with disabilities. Please let me know at the beginning of the course if accommodations should be provided.

SUPPORT SERVICES

The Department of Geology & Geophysics computer lab is located in 316 Reichardt. If you need access to a computer to complete course work, you can request a computer account from Instructor Chris Wyatt (email: chris.wyatt@alaska.edu). Tell him you are a student in GEOS 1XX and that you need the computer lab resources for your coursework.

COURSE POLICIES

You must be present to take midterm and final exams as scheduled. The final exam will be given on the day and time scheduled by the Provost during final exam week. Please plan accordingly. Make-up examinations will be given only in case of personal or family illness or emergency (physician's or dentist's note required).

STUDENT CONDUCT

The Student Code of Conduct is listed on page 49 of the UAF catalog. The code outlines your rights and responsibilities, as well as conduct that is prohibited by the University. Please be familiar with the contents of this document.

GRADING

Letter grades for the course will be given according to the following percentage scale: A+ (100–97), A (96–93), A- (92–90), B+ (89–87), B (86–83), B- (82–80), C+ (79–77), C (76–73), C- (72–70), D+ (69–67), D (66–63), D- (62–60), F (59–0).

Exams: 30% total (each exam is worth 10%)

Homework/In class activities: 40% total (8 out of 9 assignments, I will drop the lowest score)

Written report: 20%

Class participation/attendance: 10%

Proposed Lecture Schedule (to be modified as needed)

DATE	LECTURE	HOMEWORK/ACTIVITY	READING ASSIGNMENT
1/19	Introduction		CH 1
1/24	Plate Tectonics		CH 2
1/26	Earthquakes: Causes		CH3
1/31	Earthquakes: Mitigation		CH4
2/2	<i>In class activity</i>	Great Earthquakes	
2/7	Tsunamis		CH5
2/9	<i>In class activity</i>	Japan, 2011	
2/14	Volcanoes & Eruptions		CH 6
2/16	Volcano Hazards & Mitigation		CH7
2/21	<i>In class activity</i>	Mt. Redoubt, Alaska	
2/23	Landslides		CH 8
2/28	Sinkholes/Subsidence		CH 9
3/1	EXAM #1		
3/6	Climate Change		CH 10
3/8	<i>In class activity</i>	TBD	
Spring Break March 12-16 (No Class)			
3/20	Streams, Floods, Humans		CH 11
3/22	<i>In class activity</i>	US: Midwest and Alaska	CH 12
3/27	Waves, Beaches, Erosion		CH 13
3/29	<i>In class activity</i>	Coastal NW Alaska	
4/3	Thunderstorms/Tornadoes		CH 15
4/5	EXAM #2		
4/10	Hurricanes		CH 14
4/12	<i>In class activity</i>	Katrina	
4/17	Wildfires		CH 16
4/19	<i>In class activity</i>	Alaska Wildfires	
4/24	Impacts: Asteroids and Comets		CH 17
4/26	<i>In class activity</i>	Great extinctions, close calls	
5/1	The Future		CH 18
5/3		Review	

*The final exam will be given during the scheduled day/time during finals week:
May 7-10*