

Submit original with signatures + 1 copy + electronic copy to UAF Governance.  
 See <http://www.uaf.edu/uafgov/faculty/cd> for a complete description of the rules governing curriculum & course changes.

**TRIAL COURSE OR NEW COURSE PROPOSAL**

**SUBMITTED BY:**

Department	Geography/SNAP	College/School	SNRAS
Prepared by	John Bailey	Phone	474-6504
Email Contact	John.Bailey@alaska.edu	Faculty Contact	John Bailey

1. ACTION DESIRED (CHECK ONE):  
 Trial Course  New Course

2. COURSE IDENTIFICATION:  
 Dept: **GEOG** Course #: **430** No. of Credits: **3**

Justify upper/lower division status & number of credits:

The cross-disciplinary material will require students to be familiar with basic learning concepts, and have the ability to extract, summarize, evaluate, and apply supplied class materials. In addition, students must be able to undertake independent research in order to complete course projects. The course involves approximately 2400 contact minutes, equating to 3 credits.

3. PROPOSED COURSE TITLE: **Google Earth and Neogeography**

4. 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. STACKED? YES/NO  No If yes, Dept.  Course #

6. FREQUENCY OF OFFERING: **Every Fall semester**  
 (Every or Alternate) Fall, Spring, Summer - or As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING (if approved) **Fall 2011**

**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 one)  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  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/cd/credits.html> for more information on number of credits.

OTHER HOURS (specify type)

10. COMPLETE CATALOG DESCRIPTION including dept., number, title and credits (50 words or less, if possible):

Google Earth and Neogeography  
GEOG 430  
3 credits

2/23/2011: REVISED course description is attached. Please refer to it for updated course description. jbh

DO NOT USE:

An exploration of the World we live in using Google Earth, Keyhole Markup Language (KML) and SketchUp. Students will learn how to view and create dynamic visualizations using geospatial datasets describing natural hazards and environmental issues, and from self-collected data.

ATTACHMENT IS PAGE 5 - before syllabus.

11. COURSE CLASSIFICATIONS: (undergraduate courses only. Use approved criteria found on Page 10 & 17 of the manual. If justification is needed, attach on separate sheet.)

XXXXXXXXXX  XXXXXXXX

N = Natural Science

S = Social Sciences

No (h) request.

Disregard this.

Will this course be used to fulfill a requirement for the baccalaureate core?  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).

[Empty box for justification]

How many times may the course be repeated for credit?  TIMES

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:

LETTER:  PASS/FAIL:

RESTRICTIONS ON ENROLLMENT (if any)

14. PREREQUISITES

These will be required before the student is allowed to enroll in the course.

RECOMMENDED

Classes, etc. that student is strongly encouraged to complete prior to this course.

15. SPECIAL RESTRICTIONS, CONDITIONS

16. PROPOSED COURSE FEES

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

17. PREVIOUS HISTORY

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

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

Spring 2011: Geog 493, CRN ????? - Google Earth and Neogeography  
Spring 2010: Geog 493, CRN 37843 - Neogeography Using Google Earth  
Spring 2008: Geog493, CRN 39046 - Exploring the Virtual Earth  
Fall 2010: Geog493, CRN 78451 - Exploring the Virtual Earth

**18. ESTIMATED IMPACT**

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

This will continue to use the existing facilities and resources used for previous offerings. The teaching faculty is currently a Research Assistant Professor within the SNAP group, and relies on agreements between SNAP and Geography Dept/SNRAS for release of time to teach.

**19. LIBRARY COLLECTIONS**

Have you contacted the library collection development officer (ffklj@uaf.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

Yes

All materials required for this class are freely available online

**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)

This is a topic of interest to potentially anyone in the student body. Previous classes have attracted students from a large number of disciplines, and many non-degree students interested in learning to use these new tools. For the Geography Department and UAF as a whole this class is a unique achievement as it was the first known accredited class of type (i.e. dedicated to teaching Google Earth and Keyhole Markup Language) in the country.

**21. POSITIVE AND NEGATIVE IMPACTS**

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

**Positive Impacts:**

This course will be a permanent offering of a class that has now been taught on three occasions and will be taught again in Spring 2011. There continues to be a high demand for this subject from Geography students and other majors. Last Spring the class operated at maximum capacity, with several students left on the waitlist.

**Negative impacts:**


None anticipated.

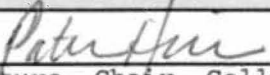
**JUSTIFICATION FOR ACTION REQUESTED**

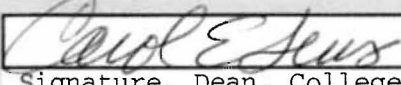
The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory.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

This course is in keeping with UAF's openness to utilize modern teaching opportunities and this course seeks to support further diversity and substance to these developments. Virtual Globes, and in particular Google Earth are becoming part of everyday life, and represent a new way through which geographical data is being organized and viewed. Understanding its possibilities and limitations, and learning to use the tools that operate it (e.g. Keyhole Markup Language) will provide students with powerful abilities to visualize geographic form and better describe issues affecting our World and society.

**APPROVALS:**

	Date	10-11-10
Signature, Chair, Program/Department of:	<u>Geography</u>	

	Date	10-11-10
Signature, Chair, College/School Curriculum Council for:	<u>SNRAS</u>	

	Date	10-8-10
Signature, Dean, College/School of:	<u>SNRAS</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, UAF Faculty Senate Curriculum Review Committee		

**ADDITIONAL SIGNATURES: (If required)**

	Date	
Signature, Chair, Program/Department of:		

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

	Date	
Signature, Dean, College/School of:		

GEOG 430  
Google Earth and Neogeography  
3 cr  
Fall

Neogeography is a term used to describe "new" primarily web-based mapping techniques and technologies. This course teaches neogeography through the use of Google Earth, a free computer application often called a "Virtual Globe", which provides the base imagery, terrain data and viewing functionality. Students will learn to create location-based visualizations of geospatial data in Google Earth using Keyhole Markup Language (KML). The methods and skills learned by the students will be applicable to assignments in many other classes and thesis research projects as a way of producing dynamic visualizations from any dataset with a geospatial component. (Prerequisite: junior standing or higher with completed course work in geographic methods (GEOG 338, 339, 304) or 300 level coursework in other natural / social sciences; or permission of instructor) (3+0)



# Google Earth and Neogeography

## Course Information

**Department:** Geography

**Number:** GEOG 430

**Credits:** 3

**Meeting Times:** x3 one-hour meetings per week (MWF schedule, times TBD)

**Location:** TBD

**Instructor:** Dr. John E. Bailey

**Office:** SNAP Offices @ Denali Building, College Road

**Phone:** 474-6504

**Office Hours:** TBD

## Course Description

Neogeography is a term used to describe “new” primarily web-based mapping techniques and technologies. This course teaches neogeography through the use of Google Earth, a free computer application often called a “Virtual Globe”, which provides the base imagery, terrain data and viewing functionality. Students will learn to create location-based visualizations of geospatial data in Google Earth using Keyhole Markup Language (KML). The methods and skills learned by the students will be applicable to assignments in many other classes and thesis research projects as a way of producing dynamic visualizations from any dataset with a geospatial component.

## Pre-requisites

Students must be of junior standing or higher with completed course work in geographic methods (GEOG 338, 339, 304) or 300 level coursework in other natural / social sciences; or permission of instructor.

## Course Objectives

This is an advanced and challenging geographic methods class that will provide students with powerful abilities to visualize geospatial data. The class will build on knowledge of geographical methods and physical features gained in 300 level classes (see pre-requisites). It is designed to:

- Equip student with the skill to use the full capabilities of Google Earth.
- Use Keyhole Markup Language authoring as a medium for generating dynamic visualizations of geospatial data.
- To teach students to critically assess how to best illustrate different geospatial datasets, depending on the type of data and their target audience.

## **Student Learning Outcomes**

Those students who attend class and complete assignments will gain the following knowledge and skills by the end of semester:

- 1) Understanding of how cartography evolved into web-based maps, and then further developed into virtual globe applications.
- 2) How to design a neogeography project to optimize usability and the ability to distribute the finished map.
- 3) Understanding of the availability of different imagery in Google Earth; its coverage, resolution and limitations.
- 4) An in-depth understanding of the capabilities of Google Earth
- 5) Working ability to create 3D models in SketchUp
- 6) How to operate a Gigapan robotic camera mount.
- 7) How to create KML objects (geometry and images), KML controls (addition of time to animate, set default views), and KML tours.
- 8) How to best organize KML in folders and files, and how to publish those files on a website.

## **Instructional Methods**

The class will meet on Mondays, Wednesdays and Fridays. Typically the Monday class will be a traditional lecture, Wednesdays will involve instructor led tutorials, and Fridays will be hands-on practical sessions with interactive demonstrations.

### **Lectures**

- “Traditional” lectures presented with extensive use of multimedia visualizations. The topics will cover demonstrating the capabilities of Google Earth; providing an understanding of how the history of geospatial technologies has led to the development of Virtual Globe technologies; and illustrating possible applications for different types of KML.

### **Tutorials**

- These classes will be part lecture, part students working at their own speed online exercises with instructor help as required. They will consist of follow along tutorials sessions on how to use features in Google Earth and SketchUp, and how to create different types of KML.

### **Practical Sessions**

- These Sessions will also be part tutorial by the instructor, part hands-on application by the students (both individually and in groups). They will contain instruction on a mixture of features in Google Earth, other web-based

applications, use of equipment (e.g. the Gigapan robotic camera mount) and advanced KML development.

## Course Texts

**Required:** Josie Wernecke (2009), *The KML Handbook* (1<sup>st</sup> Edition), Addison-Wesley, 337 p.

**Recommended:** Aidan Chopra (2010), *Google SketchUp 8 for Dummies* (1<sup>st</sup> Edition), John Wiley & Sons, 496 p.

*Note: For this subject matter changes occur too quickly for traditional textbooks to be useful or available for several topics. Homework “reading assignments” will be supplemented by additional online materials that will cover material missing in paper publications.*

## Grading

All grades will be based on absolute grades and will not involve curves. Letter grades will be assigned according to the total percentage combined from five components:

KML exercises	30%
Midterm Exam	15%
Final Exam	15%
Campus mapping (group project)	20%
KML creation (individual project)	20%

A	85 – 100 %	C+	60 – 64 %
A-	80 – 84 %	C	55 – 59 %
B+	75 – 79 %	C-	50 – 54 %
B	70 – 74 %	D	40 – 49 %
B-	65 – 69 %	F	Below 40%



## Schedule

Based on UAF's plan for the 2011-12 academic year which contain semesters with 14 weeks of instruction.

<b>Week</b>	<b>Lectures (Mon)</b>	<b>Tutorials (Wed)</b>	<b>Practical Sessions (Fri)</b>	<b>Reading</b>
<b>1</b>	Overview of Google Earth	GE: Navigation	Finding and Exploring KML	Wernecke, Ch1, p1-13
<b>2</b>	Geospatial Data Collection	KML: Point-Placemarks	KML Project Organization	Wernecke, Ch2, p15-29
<b>3</b>	History of Cartography	KML: Description Balloons	Spreadsheet Mapper	Wernecke, Ch2, p30-43
<b>4</b>	Geometry in KML	KML: Paths and Polygons	Authoring Using Text Editors	Wernecke, Ch3, p45-61
<b>5</b>	Creating and editing KML styles	KML: Styles	Authoring Using Text Editors (cont.)	Wernecke, Ch4, p71
<b>6</b>	Evolution of Web based Maps	KML Styles (cont.)	KML: Timelines	Wernecke, Ch7, p195-207
<b>7</b>	<i>Mid-term exam</i>	KML: Models	3D Warehouse	Wernecke, Ch3, p64-70
<b>8</b>	Overview of SketchUp	Using SketchUp	Using SketchUp (cont.)	Chopra, Ch 4 (available as handout)
<b>9</b>	Modeling your campus	Modeling your campus (cont.)	Streetview and Historical Imagery in Google Earth	Chopra, Ch 9 (available as handout)
<b>10</b>	Images in KML	KML: GroundOverlays	KML: ScreenOverlays	Wernecke
<b>11</b>	Fundamentals of Remote Sensing	KML: PhotoOverlays	Gigapan	Wernecke, Ch5, p133-143
<b>12</b>	Touring using KML	KML: Tours	KML Tours (cont.)	
<b>13</b>	Publishing your KML files	KML: Network Links	Hosting KML using Google Sites	
<b>14</b>	Class Project Presentations	Class Project Presentations	Class Project Presentations	Wernecke, Ch6, p145-160
<b>15</b>	<i>Exam Week: Review sessions and final exam</i>			

## Course Policies

- Attendance is expected. If circumstances arise that prevent a student attending class, they should email/phone the instructor before the scheduled class occurs. Missed assignments/deadlines due to absence are the responsibility of the student.
- Course activities will involve a high degree of interaction between students but assignments activities, unless instructed otherwise, are expected to represent the individual efforts of students, and be in keeping with UAF's policies regarding plagiarism and academic integrity.
- The instructor work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities. Any students with disabilities that may limit or adversely effect their participation in the class should contact the instructor prior to or immediately after the first class.
- Due to the nature of the material covered in this class there are no traditional tutoring or support services available to students. However, students encountering difficulties at any time are encouraged to speak with the instructor to help find a resolution for their problem.

## Definitions

Some important terms that will be referred to frequently during this course:

### Virtual Globe



A 3D representation of the Earth (or another planetary body) about which a user can freely navigate around by changing viewing angle and position. *Virtual Globes* have the capability for adding any content that has a geographical component, such as geographical features (e.g. earthquake epicenters), man-made constructions (e.g. roads locations; 3D building models) or abstract representations (e.g. population demographics). Added content can be navigated and/or manipulated within the program interface. They are often referred to as Mirror Worlds, as they attempt to model a true representation of a World.

### Google Earth



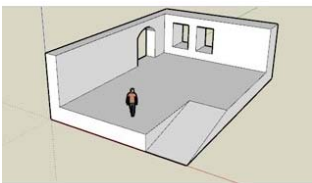
Originally a *Virtual Globe* program called *Earth Viewer* developed by Keyhole, Inc., it was repackaged and released as *Google Earth* in 2005, a year after Google acquired Keyhole. It maps the earth by the superimposition of images obtained from satellite imagery, aerial photography on a GIS 3D globe. Content is added and manipulated within Google Earth through the use of Keyhole Markup Language.

### Keyhole Markup Language (KML)



KML is an Extensible Markup Language, similar in structure to the code used to make webpages, HTML. An Open Geospatial Consortium (OGC) international standard, KML has become the language of *Virtual Globes*. As HTML does for the web, KML provides a cross-platform method through which data can be visualized in range of Geobrowsers.

### Google SketchUp



*SketchUp* was developed by startup company @Last Software, Boulder, Colorado which was formed in 1999, and acquired by Google in 2006. *SketchUp* is a 3D modeling program designed for professional architects, civil engineers, filmmakers, game developers, and related professions. One of its most common uses is to design buildings to be displayed on *Google Earth*. It was designed to be more intuitive, flexible, and easier to use than other 3D modeling programs.