

**COURSE TITLE:** GOOGLE EARTH BASICS

**NO. OF CREDITS:** 2 QUARTER CREDITS  
[semester equivalent = 1.33 credits]

**WA CLOCK HRS:** 20  
**OREGON PDUs:** 20  
**PENNSYLVANIA ACT 48:** 20

**INSTRUCTOR:** Glenn Monahan  
glennanaconda@msn.com

**COURSE DESCRIPTION:**

Google Earth is a free, revolutionary computer application with tremendous potential in K-12 education. It features satellite imagery of the entire Earth, and has great potential to expand our students' global awareness. Google Earth can readily be used to enhance the curriculum at all grade levels, and in all subjects, including math, science, social studies, and language arts. Examples of activities that can be pursued with Google Earth include: identify and explore major river deltas, research the effects of planetary overpopulation, study Greek and Roman history, explore Earth's weather, earthquake activity, and volcanoes. In this introductory course you will learn navigational basics and how to customize Google Earth for use in your classroom.

**LEARNING OUTCOMES:** Upon completion of this course, participants will have:

- Learned how to download Google Earth onto a PC.
- Learned and applied the basic components of the Google Earth program, such as searching, navigation, and place-marking, and how to utilize the functions of these components.
- Explored numerous Google Earth "Layers" - overlays that can display add-on features ranging from political boundaries and roads, to thematic overlays of earth's endangered species.
- Create a classroom teaching unit using Google Earth.

**COURSE REQUIREMENTS:**

Completion of all specified assignments is required for issuance of hours or credit. The Heritage Institute does not award partial credit.

The use of artificial intelligence is not permitted. Assignment responses found to be generated by AI will not be accepted.

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**HOURS EARNED:**

Completing the basic assignments (Section A. Information Acquisition) for this course automatically earns participants their choice of CEUs (Continuing Education Units), Washington State Clock Hours, Oregon PDUs, or Pennsylvania ACT 48 Hours. The Heritage Institute offers CEUs and is an approved provider of Washington State Clock Hours, Oregon PDUs, and Pennsylvania ACT 48 Hours.

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**UNIVERSITY QUARTER CREDIT INFORMATION**

**REQUIREMENTS FOR UNIVERSITY QUARTER CREDIT**

Continuing Education Quarter credits are awarded by Antioch University Seattle (AUS). AUS requires 75% or better for credit at the 400 level and 85% or better to issue credit at the 500 level. These criteria refer both to the amount and quality of work submitted.

1. Completion of Information Acquisition assignments 30%
  2. Completion of Learning Application assignments 40%
  3. Completion of Integration Paper assignment 30%
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### **CREDIT/NO CREDIT (No Letter Grades or Numeric Equivalents on Transcripts)**

Antioch University Seattle (AUS) Continuing Education Quarter credit is offered on a Credit/No Credit basis; neither letter grades nor numeric equivalents are on a transcript. 400 level credit is equal to a "C" or better, 500 level credit is equal to a "B" or better. This information is on the back of the transcript.

AUS Continuing Education quarter credits may or may not be accepted into degree programs. Prior to registering, determine with your district personnel, department head, or state education office the acceptability of these credits for your purpose.

### **ADDITIONAL COURSE INFORMATION**

#### **REQUIRED TEXT**

There are no required texts. Google Earth contains an accompanying User Guide that will provide participants with a thorough reference document that will allow you to learn the program's basic and intermediate features.

Supplementary information regarding Google Earth is available both on the internet, and in printed format. These resources can easily be found using a search engine, or by searching book vendors such as Amazon.com.

None. All reading is online.

#### **MATERIALS FEE**

Free resources online

### **ASSIGNMENTS REQUIRED FOR HOURS OR UNIVERSITY QUARTER CREDIT**

#### **A. INFORMATION ACQUISITION**

Assignments done in a course forum will show responses from all educators who have or are taking the course independently. Feel free to read and respond to others' comments.

Group participants can only view and respond to their group members in the Forum.

#### **Assignment #1: Assignment:1 Download Google Earth To Your PC**

Download Google Earth to your PC and open Google Earth

- Open your Internet browser (e.g. Internet Explorer), and initiate a search for "Download Google Earth." This will take you to one of the Google Earth servers, where you can follow the instructions for downloading and installing Google Earth on your PC.
- Following installation of Google Earth, you will now have an icon on your desktop (or in your "Programs" folder); click on this icon to open Google Earth. At this point, before proceeding to the next assignments, you may wish to embark on an introductory exploration of Google Earth.
- In the online response box, post the date you completed this step and identify any problems you encountered or new Internet skills you learned.

#### **Assignment #2: Exploring the Google Earth Menu & Tools**

Open the Google Earth program.

- Embark on an exploration of all of the features that appear in the MENU of Google Earth, at the top of the screen (FILE EDIT TOOLS ADD HELP). The goal for this exploration is to develop a familiarity with the program features that can be accessed from the Menu. There will be opportunities to further explore some of these features in upcoming assignments.
- Embark on an exploration of all of the different TOOLS (appearing as a horizontal series of icons below the MENU) that are components of Google Earth. As with the menus, the purpose of this activity is for you to have an opportunity to "play" with the tools, and develop an overview of Google Earth's features.
- From the menu, choose HELP, which will open a pull down window. From this window, choose HELP RESOURCES. This will bring you to a Google site that provides instructions for using Google Earth. For this basic course, you will not be utilizing all of Google Earth's features, but HELP is the go-to place for help in learning how to use Google Earth. NOTE: Google Earth goes through several "updates" each year, so if you cannot find a working HELP section, please conduct a web search for items using

search strings such as, "Google Earth Help", "Google Earth Tutorial", etc.

Submit to your instructor

- Choose 3 MENU items that you explored, and which you found useful. Write a description of what each of these do within the Google Earth program and how each may be useful to you.
- Choose 3 TOOL items that you explored, and which you found useful. Write a description of what each of these do within the Google Earth program, and how each may be useful to you.

### **Assignment #3: Search, Places & Layers**

The Panes: Search, Places, Layers

Google Earth has 3 panes that appear on the left side of the screen, titled SEARCH, PLACES, LAYERS. In this assignment please explore the purpose and uses of each of these panes, and any components that appear within the 3 individual panes. Note that the individual components within these 3 panes may need to be expanded by clicking on the "+" symbol.

Submit to your instructor – using the Online Response box – the following:

- Describe how you can add an item to the PLACES panel. Learning this skill will allow you to save places that you have visited, so that you won't have to search for them again in a later session of Google Earth.
- From your exploration of the LAYERS pane, write a description of the options that are available in the following checkboxes: WEATHER, BORDERS AND LABELS, and ROADS, and describe how each may be useful in your classroom.

### **Assignment #4: Focus On The Layers Pane**

The Google Earth Gallery

In the previous assignment, you explored three components of the LAYERS Pane –namely WEATHER, ROADS, and BORDERS AND LABELS. Please examine the other components of the LAYERS pane, so as to familiarize yourself with them, and to discover components that may be useful in your classroom. You will likely discover that the usefulness and quality of the various components will vary greatly, so you will need to search for items that are of interest to you, and that you may find useful on your classroom. It is recommended that you specifically explore the "Gallery" and the "Global Awareness" sections.

Submit to your instructor

From your exploration of the remainder of the LAYERS pane, write a description of three of the components, and describe how they could be used in your classroom.

### **Assignment #5: Navigation Techniques**

Navigating in Google Earth; Vertical Exaggeration

- Open the Google Earth HELP, from the HELP menu (previously accessed in Assignment #2). Use HELP to learn how to navigate with the mouse, including combining the mouse with the SHIFT, CTRL, and ALT keys; With your mouse, explore the effects of combining these 3 keys with your mouse's scroll wheel and its buttons. NOTE: If the HELP menu does not provide sufficient guidance, please conduct a search of the internet to research mouse navigation techniques.
- Open the TOOLS>OPTIONS dialogue box, and locate the section called TERRAIN. Try changing the numeric values in the ELEVATION EXAGGERATION box, and observe how changing this value affects your viewing of Google Earth images.
- Write a description of the functions of the ALT, SHIFT, and CONTROL in navigating with the mouse.
- Describe how changing the Elevation Exaggeration values affects GE images, and discuss potential uses for using different settings for Elevation Exaggeration.

### **Assignment #6: Google Earth Flight Simulator**

Finding Places, Directions, Flight Simulator

Use the HELP RESOURCES to learn the various ways to use the SEARCH pane, specifically:

- entering a physical location (e.g. a city)
- entering a street address
- entering latitude and longitude coordinates.

#### **In the SEARCH Pane:**

Use the GET DIRECTIONS feature to get driving directions between 2 locations of your choosing.

After getting your directions, learn how to play an animation of your driving route. This may require a search in the HELP RESOURCES.

**From the TOOLS menu, choose ENTER FLIGHT SIMULATOR:**

Teach yourself how to fly either an F-16 fighter, or an SR22 general aviation aircraft. For an added challenge, try landing the aircraft, and flying through the Grand Canyon. You can control the aircraft with either a joystick or the numeric keypad on your keyboard. NOTE: A web search will provide instructions on using the keypad for aircraft control.

Submit to your instructor the following:

A one-page response discussing how each of the above 3 features that you've investigated could be useful in your classroom.

### **Assignment #7: Marking Places "Placemarks"**

#### Marking Places

A powerful feature of Google Earth is the ability for you to create a personal database of places of interest. With this feature you can easily return to locations that you have identified during previous Google Earth sessions, with the ability to store these locations and turn on and off the display of any or all of such places of interest. From HELP RESOURCES search for and read the information and instructions on "Marking Places" – where you will learn to create and save PLACEMARKS. Please spend some time on how to work with and manage PLACEMARKS. Pay particular attention to the techniques for the following three items:

- Customizing the look of and annotating a placemark
- Sharing a place-mark with other Google Earth users,
- Saving and organizing your place-marks in the PLACES pane.

Submit to your instructor the following:

- Create a Google Earth view of the area around your home with approximately 5 miles of distance represented from the left to right sides of your monitor.
- Identify 3 places of interest near your home (schools, museums, parks, zoos, etc) and create 3 personal place-marks, using a different icon for each placemark.
- For each placemark, add an annotation describing the feature that you have place-marked.
- Upon completing the above steps you will need to save your image, with the placemarks, as a JPG (JPEG) file. The menu command sequence to do this is FILE> SAVE > SAVE IMAGE. You will then be prompted to name the, and finally to save it on your computer's hard drive.
- Once you have saved your image on your hard drive, upload it in the response box.

## **ADDITIONAL ASSIGNMENTS REQUIRED FOR UNIVERSITY QUARTER CREDIT**

### **B. LEARNING APPLICATION**

In this section, you will apply your learning to your professional situation. This course assumes that most participants are classroom teachers who have access to students. If you do not have a classroom available to you, please contact the instructor for course modifications. Assignments done in a course forum will show responses from all educators who have or are taking the course independently. ?Feel free to read and respond to others' comments. Group participants can only view and respond to their group members in the Forum.

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### **Assignment #8: Employing Google Earth in Your Classroom**

In this assignment, you will apply your Google Earth skills to create a Google Earth-based thematic teaching unit for this topic that you will use in your classroom.

There are two options available:

- You can choose to work on the project designed by the instructor (see below)
- OR**
- You can design a project based upon an area of interest to you, and appropriate to your teaching situation. Should you choose the second option, the depth and breadth of your project should equal that of the instructor designed project.

Embark upon an exploration of Earth's major river deltas by using both Google Earth and Internet searches to learn about deltas in general, and about specific deltas mentioned below.

- Conduct Internet research about deltas, exploring topics such as geology, flooding, human habitation, agriculture, importance of deltas, sustainability, effects of dams, etc.
- In Google Earth, examine the following major river deltas: Nile, Amazon, Mississippi, Iriwaddy, and Ganges. As you use Google Earth to travel to these deltas, you may wish to add place-marks and annotations, thus creating customized images that you can

- use as teaching aids.
- Create a teaching unit that can be used in your classroom that will allow your students to embark on their own exploration of major river deltas. Your unit should include: Instructions your students will follow as they use Google Earth to explore deltas.
- It should include a worksheet (or response sheet or quiz) that your students will use to direct their learning.

### **Assignment #9: (500 Level ONLY)**

Create a Google Earth based exploratory project for your students, in which you will direct their learning activities as they explore a current environmental issue. Suggested topics could include: Clear-cutting of the Amazon Rainforest, Melting Icecaps, Climate Change, Urban Sprawl, Endangered Species, Threatened Oceans, etc. The project should involve internet research by students, and then the application of their research with Google Earth.

Submit the following to your instructor, as a WORD document, which you can upload in the online assignment response box using the "Share A File" option:

- A description of the exploratory project.
- The student learning outcomes.
- An annotated bibliography of websites that your students will visit.
- A description of how your students will then use Google Earth to enhance their understanding of the topic.
- A list of 5-7 "rich questions" that your students will be asked as a means of measuring the results of their involvement.

### **C. INTEGRATION PAPER**

Assignment #10: (Required for 400 and 500 Level)

#### **SELF REFLECTION & INTEGRATION PAPER**

**(Please do not write this paper until you've completed all of your other assignments)**

Write a 400-500 word Integration Paper answering these 5 questions:

1. What did you learn vs. what you expected to learn from this course?
2. What aspects of the course were most helpful and why?
3. What further knowledge and skills in this general area do you feel you need?
4. How, when and where will you use what you have learned?
5. How and with what other school or community members might you share what you learned?

#### **INSTRUCTOR COMMENTS ON YOUR WORK:**

Instructors will comment on each assignment. If you do not hear from the instructor within a few days of posting your assignment, please get in touch with them immediately.

#### **QUALIFICATIONS FOR TEACHING THIS COURSE:**

Glenn Monahan, B.S.: BS. in Geology from Montana State University ; junior high earth science teacher for 15 years; park ranger in Yellowstone for 5 years; member Geological Society of America. Glenn's interests include outdoor activities, natural and human history, mapping and remote sensing, and advocating for wild places and wildlife.

Nancy Schultz, M.Ed.: Elementary teacher and reading specialist for 30 years; park ranger in Mt. Rainier N.P. Nancy is an outdoor enthusiast. She has interests in sustainability; she is involved as an advocate for native wildlife in the Northern Rocky Mountain bioregion.

Both instructors have been teaching for The Heritage Institute since 1992. They live in Bozeman, Montana in a home with a 2400 watt photovoltaic solar system, and a 1600 square foot solar hot water system.

#### **BIBLIOGRAPHY**

##### **GOOGLE EARTH BASICS**

Creative Commons *26 Interesting Ways to Use Google Earth in the Classroom*

<http://googleearthgoods.pbworks.com/w/page/15008577/FrontPage> This is a good website to quickly learn some of the ways that Google Earth can be used in the classroom, and can get you thinking about ways that the program can be applied to your curriculum.

Carelton College, *Teaching With Google Earth* [http://serc.carleton.edu/sp/library/google\\_earth/index.html](http://serc.carleton.edu/sp/library/google_earth/index.html) A website from Carleton

College Department of Education, with emphasis on using Google Earth to teach Geosciences.

Science Education ResourceCenter at Carleton College, *Pedagogy in Action: How to Teach with Google Earth*

[http://serc.carleton.edu/sp/library/google\\_earth/how.html](http://serc.carleton.edu/sp/library/google_earth/how.html) Carleton College has made a robust commitment to promote the use of Google Earth as a K-12 teaching/learning tool. This website, which focuses on science education, is an excellent resource, with abundant links to a wealth of ideas for educators who wish to utilize Google Earth in their classrooms.

National Social Science Association, *Taking Student Learning Out of This World: Integrating Google Earth in the Elementary*

*Classroom*, [http://www.nssa.us/tech\\_journal/volume\\_1-2/vol1-2\\_article5.htm](http://www.nssa.us/tech_journal/volume_1-2/vol1-2_article5.htm), The purpose of this article is to discuss the usefulness of Google Earth as an educational tool in the elementary classroom curriculum.