

Virtual Field Trip to UH Campus Building Stones

Physical Geology - Fall 2020

Name:

myUH ID number:

Professor's Name:

Class Time:

Academic Honesty (Acknowledgement Required)

The Virtual Field Trip of campus building stones is to be completed by yourself; you should not work with a partner or group. Do not search for answers on the internet because 1) it is cheating; 2) answers that are posted are incorrect, and we'll know where you got them from, and; 3) the questions change every semester. Be careful if you watch the videos with closed captioning because the spelling of geologic terms is often incorrect or misinterpreted by the captioning software, so you may end up with a wrong answer. If you are unfamiliar with a word or geologic concept, it is okay to look it up online to find the correct spelling and definition. If you find yourself needing help, physical geology teaching assistants staff the Geoscience Learning Center team on Microsoft Teams. Use join code **p5twxy8** to add yourself to the GLC team, then go to the physical geology channel for assistance. A teaching assistant monitors the channel Monday to Friday from 8:30 am to 6:30 pm.

By submitting this work, I, _____ attest that I have not violated the UH Academic Honesty code. I completed this assignment by myself and did not copy any portion of my answers from another student, a website, or any other source.

Instructions

The buildings on the University of Houston campus use a number of geologic materials. This tour takes you to twelve stops on campus to learn about them. At each stop you will need to read about the rocks, look at images, and answer questions in this PDF. You will need to view and work on this PDF in [Adobe Acrobat Reader](#), the free version; do not use a web browser or any other program because the fillable boxes may not work correctly. Advanced versions of Adobe Acrobat will work too. If you want, the University of Houston provides students with access to Adobe Acrobat Pro DC 2017 by going to the [UH software download page](#). You will need to sign in with your cougarnet ID to download. Adobe can be found in the "Utilities" section.

Accessing the Trip

This virtual field trip has been built in Google Earth. [Click here to access the trip](#). The first thing you will see is an overview of campus, and the field trip stops. In the menu on the left side, click on "Present" to

begin the tour. The first page that comes up is a summary of building stones. Use the menu on the bottom left to move between stops. At each location a box will appear on the right side of the screen with information about each stop and images. Click on the images to make them larger.

Written Answers

All answers should be written in complete sentences and typed in the supplied boxes. Your responses will appear in a green-colored font, do not change this. Any answers not written in complete sentences will be marked as incorrect and will not receive credit.

Each stop has several questions, but you only need to answer one question for each stop, for a total of twelve questions. You can choose which of the available questions you want to answer.

Assignment Submission

Save your completed PDF assignment as “yourlastname_firstname_VFTCampusTour”. Email your completed PDF file to eas.uh.physical.geology@gmail.com. Teaching Assistants will begin grading submissions after the deadline. After your work is graded, you will receive a confirmation email from the TA. If your assignment requires resubmission, you will have 48 hours to do so.

Stop 1 (Answer one of these nine questions)

Sedimentary Rock

1. What causes the sedimentary layering?
2. Why is this rock red colored?
3. Is this a good rock for building stone?

Igneous Rock

4. The description lists one mafic mineral, what other mafic minerals might you find in gabbro?
5. In what type of tectonic environment might you find a gabbro?
6. What is the equivalent volcanic (extrusive) rock?

Metamorphic Rock

7. Since the chemistry of this rock is mostly composed of calcite, what could you infer was the protolith to this rock?

8. When do you think the fractures formed: before, during or after metamorphism to marble?
9. Marble is not foliated. Explain.

Stop 2 (Answer one of these three questions)

1. How is cross stratification produced?
2. What kind of environment can produce opposite directions of cross-stratifications? (Hint: Tide and Ebb)
3. What are oolites?

Stop 3 (Answer one of these four questions)

1. In addition to bivalves, can you identify any other fossils?
2. Do these fossils represent the original remains of ancient shelly organisms?
3. How does a fossil mold form? What are fossil casts?

4. What type of depositional environment does this limestone represent? What were the water conditions (i.e. temperature, depth, oxygen abundance, etc.) within which these ancient shelly organisms thrived?

Stop 4 (Answer one of these three questions)

1. What is the mineralogy of granite?
2. Is this a mafic or felsic rock?
3. What causes crystal zoning?

Stop 5 (Answer one of these three questions)

1. Are the fake fossils in this concrete similar those in Stop 3? Describe the similarities and differences.
2. Why would UH use this building material?
3. What was used as aggregate for this concrete? Hint: take a close look at the grain size of particles.

Stop 6: (Answer one of these three questions)

1. What is a trace fossil?
2. What types of organisms may have produced the burrows in the ancient sediment?
3. Click on the image to see the burrows. These burrows are no longer hollow but filled a different material. What is its color and grain size?

Stop 7: (Answer one of these four questions)

1. Explain how marble forms.
2. Why are the marble blocks angular?
3. When did the cross-cutting calcite veins form relative to the large marble blocks?
4. Have you seen any other marble at UH beside here and stop 1? If so, where?

Stop 8: (Answer one of these three questions)

1. What was the original orientation of the rock from which the panels were cut?
2. Compare and contrast this travertine with what you saw on Stop 1.
3. What caused all the porosity in this travertine? Do you think it formed during deposition or afterwards during lithification of this rock?

Stop 9: (Answer one of these three questions)

1. You have seen a similar rock on another stop. Observe any differences or similarities between these two occurrences. For example, compare the abundance of the different minerals between these two.
2. Do you know another building that has Llano granite building stone?
3. If you have a granite countertop at home, describe how it is similar or different from these blocks.

Stop 10: (Answer one of these three questions)

1. What is the main composition of a stalactite?

2. What is a unique property of calcite that makes it easy to identify?
3. Why are these forming on this ceiling?

Stop 11: (Answer one of these three questions)

1. Although the minerals in slate are too small to be seen without a microscope, what platy minerals do you think are present?
2. Along what type of plate boundary would slate most likely form?
3. At higher metamorphic grades, slate transforms into _____ *then* _____ *and finally* _____? (Fill-in, complete sentence not required)

Stop 12: (Answer one of these three questions)

1. What type of metamorphism forms serpentinite? Burial (pressure increase), Hydrothermal (hot water), Impact (pressure and temperature increase due to collision with a meteorite), Regional (both pressure and temperature increase during convergence) or Contact (temperature increase when an igneous intrusion cools)?
2. In which two tectonic settings would you likely find serpentinite: divergent, convergent, transform? Explain your answer.

3. Why is this called serpentinite?

Extra credit (Answer one of these to replace one of the above that you cannot answer)

1. Use the measuring tool in the lower left of the tool sidebar and create a path between each stop. How far would you have walked if you were going on this tour with a teaching assistant.

2. Since this is the first time we have offered this trip in a virtual mode, did you like it? Any suggestions for how to improve it. Thanks.