

**Clackamas Community College**  
Online Course/Outline Submission System

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### Section #1 General Course Information

**Department:** Science

**Submitter**

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**Course Prefix and Number:** G - 148

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**# Credits:** 4

**Contact hours**

Lecture (# of hours): 33

Lec/lab (# of hours):

Lab (# of hours): 33

Total course hours: 66

For each credit, the student will be expected to spend, on average, 3 hours per week in combination of in-class and out-of-class activity.

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**Course Title:** Volcanoes and Earthquakes

**Course Description:**

A lab course that examines the geological processes that create volcanoes and earthquakes and the hazards associated with them. Examines basic geologic features, monitoring techniques, hazards, prediction methods, and future events, using historic episodes of volcanic eruptions and earthquakes.

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**Type of Course:** Lower Division Collegiate

Is this class challengeable?

**No**

Can this course be repeated for credit in a degree?

**No**

Is general education certification being sought at this time?

**Yes**

**Check which General Education requirement:**

**✓ Science & Computer Science**

Is this course part of an AAS or related certificate of completion?

**No**

Are there prerequisites to this course?

**No**

Are there corequisites to this course?

**No**

Are there any requirements or recommendations for students taken this course?

**Yes**

**Recommendations:** None

**Requirements:** Two Saturday field trips

Are there similar courses existing in other programs or disciplines at CCC?

**No**

Will this class use library resources?

**Yes**

**Have you talked with a librarian regarding that impact?**

**No**

Is there any other potential impact on another department?

**No**

Does this course belong on the Related Instruction list?

**No**

**GRADING METHOD:**

A-F or Pass/No Pass

**Audit: Yes**

When do you plan to offer this course?

✓ **Summer**

✓ **Not every year**

Is this course equivalent to another?

If yes, they must have the same description and outcomes.

**No**

Will this course appear in the college catalog?

**No**

Will this course appear in the schedule?

**Yes**

Student Learning Outcomes:

Upon successful completion of this course, students should be able to:

1. predict volcanic/earthquake activity that would occur at different plate boundaries and explain why, based on scientific information gathered from these different geological systems, these types of activity occur in these locations; (SC1) (SC2)
  2. apply information gathered about tectonic plate interactions in the Northwest United States to hypothesize about volcanic activity and hazards that affect Oregon and Washington, (SC1) (SC3)
  3. explain how the interior of the Earth is structured and identify what the physical and chemical properties are for each region, (SC1)
  4. explain the theory of plate tectonics and why this model of plate interaction is an underlying foundation for the science of geology, (SC1)
  5. gather data through experimentation to explain how earthquakes happen, hazards associated with them, and how they affect society; (SC1) (SC3)
  6. identify volcanic rock types, discuss the geological/volcanic setting that produced the rocks and evaluate the hazards associated with particular types of volcanism. (SC1)(SC2)(SC3)
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**AAOT/ASOT GENERAL EDUCATION OUTCOMES  
COURSE OUTLINE MAPPING CHART**

**Mark outcomes addressed by the course:**

- Mark "C" if this course completely addresses the outcome. Students who successfully complete this course are likely to have attained this learning outcome.
- Mark "S" if this course substantially addresses the outcome. More than one course is required for the outcome to be completely addressed. Students who successfully complete all of the required courses are likely to have attained this learning outcome.
- Mark "P" if this course partially addresses the outcome. Students will have been exposed to the outcome as part of the class, but the class is not a primary means for attaining the outcome and assessment for general education purposes may not be necessary.

***As a result of completing the AAOT/ASOT general education requirements, students will be able to:***

**WR: Writing Outcomes**

1. Read actively, think critically, and write purposefully and capably for academic and, in some cases, professional audiences.
2. Locate, evaluate, and ethically utilize information to communicate effectively.
3. Demonstrate appropriate reasoning in response to complex issues.

**SP: Speech/Oral Communication Outcomes**

1. Engage in ethical communication processes that accomplish goals.
2. Respond to the needs of diverse audiences and contexts.
3. Build and manage relationships.

**MA: Mathematics Outcomes:**

1. Use appropriate mathematics to solve problems.
2. Recognize which mathematical concepts are applicable to a scenario, apply appropriate mathematics and technology in its analysis, and then accurately interpret, validate, and communicate the results.

**AL: Arts and Letters Outcomes**

1. Interpret and engage in the Arts & Letters, making use of the creative process to enrich the quality of life.
2. Critically analyze values and ethics within range of human experience and expression to engage more fully in local and global issues.

**SS: Social Science Outcomes**

1. Apply analytical skills to social phenomena in order to understand human behavior.
2. Apply knowledge and experience to foster personal growth and better appreciate the diverse social world in which we live.

**SC: Science or Computer Science Outcomes**

- S** 1. Gather, comprehend, and communicate scientific and technical information in order to explore ideas, models, and solutions and generate further questions.
- S** 2. Apply scientific and technical modes of inquiry, individually, and collaboratively, to critically examine the influence of scientific and technical knowledge on human society and the environment.

**S**

3. Assess the strengths and weaknesses of scientific studies and critically examine the influence of scientific and technical knowledge on human society and the environment.

**CL: Cultural Literacy Outcome**

1. Identify and analyze complex practices, values, and beliefs and the culturally and historically defined meanings of difference.

**Outcomes Assessment Strategies:**

✓ **General Examination**

✓ **Writing Assignments**

✓ **Multiple Choice Test**

✓ **Journal Writing**

✓ **Other Assessment Tools:** Laboratory activities and practical laboratory quizzes

**Major Topic Outline:**

1. Introduction to earth's structure and plate tectonics.
  - a. Faults and crustal deformation.
2. History of seismology.
  - a. Quake types, locations and seismic waves.
3. Intensity and magnitude of earthquakes.
4. Earthquake hazards and mitigation.
  - a. Monitoring and prediction.
  - a. Local potential.
5. Introduction to volcanoes.
  - a. Physical structures and characteristics.
6. Types of volcanoes.
  - a. Rheology and volcanic products.
7. Silicic volcanism and hazards.
8. Basaltic volcanism and hazards.
9. Monitoring and mitigation.
10. Prediction and local volcanic development.

**Laboratory Schedule:**

1. Plate tectonics, earthquakes and volcanoes.
2. Volcanic minerals.
3. Mafic volcanic rocks.
4. Felsic and intermediate rocks.
5. Seismographs, faults and earthquakes.
- 6-10. Two Saturday fieldtrips: 9hrs each.
  - a. Portland volcanic features.
  - b. Cascades and Mt. St. Helens OR one full weekend trip (Saturday & Sunday).
  - c. Central Oregon volcanic features.

**Does the content of this class relate to job skills in any of the following areas:**

- |                                      |           |
|--------------------------------------|-----------|
| 1. Increased energy efficiency       | <b>No</b> |
| 2. Produce renewable energy          | <b>No</b> |
| 3. Prevent environmental degradation | <b>No</b> |
| 4. Clean up natural environment      | <b>No</b> |
| 5. Supports green services           | <b>No</b> |

Percent of course: 0%

**Section #2 Course Transferability**

Concern over students taking many courses that do not have a high transfer value has led to increasing attention to the transferability of LDC courses. The state currently requires us to certify that at least one OUS school will accept a new LDC course in transfer. Faculty should communicate with colleagues at one or more OUS schools to ascertain how the course will transfer by answering these questions.

1. Is there an equivalent lower division course at the University?
2. Will a department accept the course for its major or minor requirements?
3. Will the course be accepted as part of the University's distribution requirements?

If a course transfers as an elective only, it may still be accepted or approved as an LDC course, depending on the nature of the course, though it will likely not be eligible for Gen Ed status.

Which OUS schools will the course transfer to? (Check all that apply)

- OSU (Oregon State University)  UO (University of Oregon)  
 OSU-Cascade

Identify comparable course(s) at OUS school(s)

OSU: GEOLDT UO: G120T

How does it transfer? (Check all that apply)

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Provide evidence of transferability: (minimum one, more preferred)

Other. Please explain.

transfer information is from OSU and UO Transferable course information web page

First term to be offered:

Next available term after approval

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