

GEO143 Course Syllabus
The Geology of Pacific Northwest Rocks & Minerals
(4 units)

Spring 2015 Lecture CRN 79197, Lab CRN 79198
Tuesday 6:00 - 9:00 PM

Chemeketa Community College
Woodburn Campus
120 East Lincoln Street
Woodburn, OR 97071

Instructor: Jason Robert Patton

email: jason.patton@chemeketa.edu

Course Website: http://www.science.earthjay.com/?page_id=1695

Mailbox: Woodburn Campus

Office Hours: Woodburn Campus Faculty Lounge Monday 1:00 PM – 2:00 PM

Course Title: The Geology of Pacific Northwest Rocks and Minerals

Total Instructional Hours, for Course, per Term

33 Lecture Hours = 3 Credit(s)

33 Laboratory Hours = 1 Credit(s)

Prerequisite: None

Term(s) Offered: Fall ___ Winter ___ Spring ___ Summer ___ Offered as needed X

Required Text(s): Tarbuck, Lutgens, Tasa, Essentials of Geology, Prentice-Hall, 12th edition.
Bring your text to class for every class.

Required Supplies: three ring binder for class handouts including blank paper for drawing illustrations and notes during class; colored pencils for making illustrations, calculator

Contact: Please don't hesitate to email me with any questions, comments, or concerns. I welcome any feedback or suggestions. The best way to contact me for any reason is by sending an email directly to my Chemeketa Community College email jason.patton@chemeketa.edu

Course Description

Focuses on the description and identification of the principal rock-forming and economically valuable minerals, and the most important igneous, sedimentary, and metamorphic rocks of the Pacific Northwest. Covers natural processes that form rocks and minerals; relationships of rock types to environments of formation, including plate tectonic settings; classification and laboratory identification of minerals and rocks; important uses of minerals and rocks in society; the rock cycle; and the geologic time scale.

Statewide General Education (AAOT) Outcomes

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

1. Gather, comprehend, and communicate scientific and technical information in order to explore ideas, models, and solutions and generate further questions.
2. Apply scientific and technical modes of inquiry, individually, and collaboratively, to critically evaluate existing or alternative explanations, solve problems, and make evidence-based decisions in an ethical manner.

GEO143 Course Syllabus

The Geology of Pacific Northwest Rocks & Minerals

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Tuesday 6:00 - 9:00 PM

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.

Performance Based Learner Outcomes

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

1. Describe the science of Geology, including its foundational principles and theories of Earth's formation and plate tectonics.
2. Name the criteria that define a mineral and distinguish the physical properties that vary among minerals.
3. Identify minerals of the Pacific Northwest in hand samples by use of laboratory and field tests.
4. Explain how minerals are classified and assign common minerals to their mineral groups.
5. Define an ore and explain the processes that form them.
6. Recognize the important uses of minerals and rocks in modern society.
7. Define rocks, including the three major types, and explain the rock cycle.
8. Identify igneous rocks in hand samples and explain the formation of volcanic and plutonic rocks, including identification of important volcanic centers in Oregon and Washington.
9. Explain the changes that silicate magmas undergo during crystallization including Bowen's Reaction Series.
10. Identify sedimentary rocks in hand samples and describe the sedimentary processes that formed them. Recognize the importance of stratigraphy and fossils in Oregon's geologic history.
11. Identify metamorphic rocks in hand samples and explain the various processes of metamorphism, including their relationship to the mountains in the Pacific Northwest.
12. Recognize the importance and types of rocks used as decorative and construction materials in Oregon's city and state buildings.

Course Content Outline

- I. Introduction to Geology
- II. Minerals and Mineral Properties
- III. Classification of Minerals
- IV. The Rock Forming Minerals
- V. Economic Minerals and Ore Deposits
- VI. Rocks, the Rock Cycle and Plate Tectonics
- VII. Igneous Rocks and Intrusive Processes
- VIII. Volcanic Igneous Rocks and Processes
- IX. Sedimentary Rocks and Processes
- X. Sedimentary Processes and Environments
- XI. Metamorphic Rocks and Rock Alteration Processes
- XII. Significance and Uses of Rocks and Minerals in Today's Society

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Tuesday 6:00 - 9:00 PM

Tentative Class Schedule*

<u>Time</u>	<u>Face-to-Face</u>	<u>Online/Activity</u>	<u>Reading</u>
Week 1	Lecture 1: Introduction to Geology Quiz & Lab 1: <u>Geologic Time Scale</u>	Geologic Time OA 1: <u>Geologic Time</u>	1 & 18
Week 2	Lecture 2: Plate Tectonics Quiz & Lab 2: <u>Plate Tectonics</u>	Plate Motions OA 2: <u>Plate Rates</u>	2
Week 3	Lecture 3: Matter and Minerals Quiz & Lab 3: <u>Atoms and Molecules</u> Sunday Field Trip 4/19/15: Mt. St. Helens and Columbia River Gorge	Radioactive Decay OA 3: <u>Half Lives</u>	3
Week 4	Field Trip Salem (6 hours during the week or weekend)	Mineralogy and Bowen	
Week 5	Lecture 3: Rock Forming Minerals Quiz & Lab 4: <u>Minerals</u>	Magma Chambers OA 4: <u>Differentiation</u>	3
Week 6	Mid Term Exam Lecture 4: Igneous Rocks Lab 5: <u>Igneous Rocks</u>	Intrusive Activity OA 5: <u>Volcanoes</u>	4
Week 7	Lecture 5: Sedimentary Rocks Quiz 5 & Lab 6: <u>Sedimentary Rocks</u>	Oregon Stratigraphy OA 6: <u>Fossils</u>	7
Week 8	Metamorphic Rocks Quiz 6 & Lab 7: <u>Metamorphic Rocks</u> Sunday Field Trip 5/17/15: Coast of Oregon	Metamorphism OA 7: <u>Foliation</u>	8
Week 9	Lecture 6: Economic Geology Quiz 7 & Lab 8: <u>Economic Geology</u>	Rock Cycle OA 8: <u>Bowen's Reaction Series</u>	1 & 6
Week 10	Lecture 8: Student Presentations Quiz 8 & Lab 9: <u>Peer Review</u>	Online Presentations OA 9: <u>Peer Review</u>	
Week 11	Final Monday 6/08/2015 from 8:00 – 9:50 PM		

*** Note: Instructor reserves the right to make changes to course schedule as deemed necessary. The dates for the lectures are listed on the website**

GEO143 Course Syllabus

The Geology of Pacific Northwest Rocks & Minerals

(4 units)

Spring 2015 Lecture CRN 79197, Lab CRN 79198
Tuesday 6:00 - 9:00 PM

Grading

Late Assignments are NOT ACCEPTED

Your final grade will be comprised of:

<u>Summary</u>	<u>Points</u>
Participation	100
Course Notes and Illustrations	100
Nine Labs (20 points)	180
Nine Online Labs (20 points)	180
Quizzes	40
Mid Term	100
Presentation (in class/online)	50
Field Trip Salem	50
Field trip Assignments	100
<u>1 Final Exam</u>	<u>100</u>
Total	1000

There are 1000 points available and grades are assigned by the percentage of total points as follows:

1000-940=A	939-900=A-	899-870=B+	869-830=B	829-800=B-
799-770=C+	769-700=C	699-670=D+	669-600=D	<599=F

Hybrid Nature

This course is being taught as a hybrid course. This means that some part of the class includes direct instruction and part of the course is to be completed online. The schedule above lists the subjects and labs that will be completed during direct instruction and during online instruction. Each in class assignment must be completed during that class, unless otherwise discussed in class. Each online assignment must be completed prior to the following in class meeting.

Online and hybrid activities and labs are intended to compliment in-class labs and activities. Materials that need not be reviewed during valuable face-to-face time are posted online so that materials that need to be reviewed as a group are held for the face-to-face time (direct instruction). The instructor will follow the online activities and will be available sometimes for online interaction. For the first online activity, students will introduce themselves (and list their email address) to the rest of the class.

Communication

The instructor will send announcements via email to the student's my.chemeketa.edu email addresses. Please contact the instructor only via the email listed above. The instructor will respond at their earliest convenience. Students will exchange contact information with their peers on the first day of classes. This is important so that if anyone misses a class, they can contact more than one of their peers to go over the notes and lab materials. Also, students will need to interact during the online portion of this course and having other student's email addresses will facilitate this.

GEO143 Course Syllabus

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Spring 2015 Lecture CRN 79197, Lab CRN 79198
Tuesday 6:00 - 9:00 PM

Classroom Conduct

Side conversations among classmates are disrespectful and disruptive to the instructor and your fellow students. Questions or comments about the course material are welcome at all times but should be approached in a respectful manner.

The use of cell phones, iPods, or other items that may distract you, your instructor, or your classmates are not permitted during class. All such devices must be turned off.

You may not leave the room during an exam or quiz unless you are ready to turn in your finished exam.

Diversity

We are a college community enriched by the diversity of our students, staff, and community members. Each individual and group has the potential to contribute in our learning environment. Each has dignity. To diminish the dignity of one is to diminish the dignity of us all.

Academic Honesty

You are encouraged to work together to review notes from lectures, to work on problems from the text, and to formulate ideas for any take-home assignments. However, all work you turn in must be your own independent, original work.

In the event that any work is copied from another student, zero credit will be given to all students involved (regardless of who copied from whom).

Any sources of information used in your written work must be referenced (regardless of whether the material was copied word-for-word). This includes your text book and all internet sources (reference these by including the name and URL). Any work including un-referenced material from another source (regardless of whether it was copied word-for-word) will be given zero credit.

More information is available at:

<http://www.chemeketa.edu/catalog/academichonesty/index.htm>

Academic Misconduct: Cheating, plagiarism, collusion, abuse of resource materials, computer misuse, fabrication or falsification, multiple submissions, complicity in academic misconduct, and/ or bearing false witness will not be tolerated. Violations will be dealt with according to the procedures and sanctions proscribed by the College of the Redwoods. Students caught plagiarizing or cheating on exams will receive an "F" in the course.

Chemeketa Community College is committed to equal opportunity in employment, admission to the college, and in the conduct of all of its programs and activities.

GEO143 Course Syllabus

The Geology of Pacific Northwest Rocks & Minerals

(4 units)

Spring 2015 Lecture CRN 79197, Lab CRN 79198
Tuesday 6:00 - 9:00 PM

Disability

Accommodations are collaborative efforts between students, faculty, and the Disability Services' office. Students with accommodations approved through Disability Services are responsible for contacting the faculty member in charge of the course, ideally prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through Disability Services should contact V/TTY 503.399.5192 or disability@chemeketa.edu.

Affirmative Action

It is the policy of Chemeketa Community College and its Board that there will be no discrimination or harassment on the basis of race, religion, color, sex, age, national origin, ethnic origin, sexual orientation, gender identity, marital status, citizenship status, pregnancy and related conditions, family relationship, veteran's status, disabilities and tobacco usage in any educational programs, activities or employment. Persons having questions about equal opportunity/affirmative action should contact the Affirmative Action Officer at 4000 Lancaster Dr. NE, Salem, Oregon 97309-7070, or call 503.399.4784. To request this publication in an alternative format, please call 503.399.5192.

Advising and Counseling

Recent research indicates that community college students who seek out academic advising are more likely to meet their educational goals. Meeting with an advisor can help:

- clarify your academic and life goals
- choose classes that prepare you for a career
- ensure whether your credits will transfer to another institution

Advising and counseling appointments are available by making an appointment at the Salem campus, 503.399.5120. In addition, you may want to explore My Game Plan, an electronic educational planning system at <http://my.chemeketa.edu>

Instructors are also available to discuss class, degree, and career options. Start planning now.

- Career Center: Bldg. 2, Rm.115, 503.399.6544
- Library Services: Bldg. 9, Rm. 200, 503.399.5043
- Math Learning Center: Bldg. 3, Rm. 277, 503.399.3998
- Open computer labs: Bldg. 6, Rm. 218 and in Bldg. 9/Library
- Study Skills Center: Bldg. 2, Rm. 212, 503.399.5162
- Tutoring Services: Bldg. 2, Rm. 210, 503.399.5190
- Writing Center: Bldg. 9/Library, 503.399.7179

Chemeketa Community College
The Geology of Pacific Northwest Rocks & Minerals
GEO143 Course Information

Mid-Term/Final Exams: The midterms and final are worth 100 points each. The exams are a mix of multiple choice, true/false, short answer, and essay questions based on the lectures, activities, homework, and course reading. Mid-term exams cover the material since the beginning of the course. The final is cumulative.

Quizzes: There are eight quizzes. These quizzes will cover the reading material that is assigned for the class. For example, quiz #2 will cover material found in Chapter 2. These quizzes are worth 5 points each.

Participation: Students will be given up to 100 points for participating in class. Full credit will be given if students attend regularly, ask and answer questions in class, and participate in class discussion. When students conduct in behavior that is not respectful (as outlined in the syllabus), they jeopardize their participation grade. Check your phone regularly in class and you won't get these points.

Missing an exam: All make-up exams should be arranged for in advance. In the event of an emergency or sudden illness that prevents you from attending the exam, you must contact me as soon as possible and arrange a time for the exam to be completed before our next regular class time. If you miss an exam (and do not contact me to make it up) or if you arrange a makeup that you do not take, you will receive a zero for that exam.

Course Notes and Illustrations: Each lecture may include handouts (of the presentation for that day) and several on-board illustrations that relate to the specific topic being discussed for that day. You will use your notebook to copy and label any illustrations. You are **required** to have a **three-ring binder** containing these handouts and your notes taken during every class. The notebooks will also contain all your course materials (labs, syllabus, exams, etc.). You will turn in your notebooks along with your activities and homework that has been completed through the semester. Your material must be well organized within the notebook. These will be evaluated during the final. Credit of 100 points is given for careful reproduction of the illustrations including any notes, labels, and graphs.

Labs: Each week we will have a lab exercise which is intended to support our learning for the material covered in the lecture, activities, and reading. Each lab is due at the end of class and is worth 20 points.

Chemeketa Community College
The Geology of Pacific Northwest Rocks & Minerals
GEO143 Course Information

Online Participation: Each week there is an online assignment. There is material that you will need to watch or review. This participation is a required part of the course. Students need to complete this participation promptly, especially if the participation requires interaction with other students (in many cases, it will). Pay attention to the deadlines listed on the website for each online assignment.

Online Labs: There are nine online labs during the quarter. These are associated with the online participation in the week that they are listed in the syllabus. These online labs must be completed prior to the next class. For example, OA 1 needs to be completed prior to the Week 2 Lecture. There will be some tasks to complete and turn in electronically. Some online labs will require the student to complete and turn in at the next class. Pay attention to the details on the website for that week's online participation.

Field Trips: We will have two day-long field trips. These will occur on Sundays and are listed in the syllabus. These are mandatory. The student is required to supply their own food, water, clothing, and note taking materials for each field trip. Each student will turn in a field trip report. The reports will be typed in Times New Roman font size 12, double spaced, and turned in electronically prior to the following class. The reports will be three to five pages. There may be additional field trip material to turn in for full credit. The filename needs to include the course number, the subject, and your last name (e.g. GEO142_field_trip_coast_your_name.docx). These reports are due prior to the following class and are worth 25 points each. There is also a handout that we will complete during each field trip. These are worth 25 points each. The total points for the two reports and two handouts is 100 points

There is a self-led field trip to downtown Salem. The details for this assignment are on the website. This assignment can be completed at any time, as long as the report is submitted electronically before the deadline, which is listed on the website. This report is worth 50 points. Please try to do the field trip with a classmate. You are encouraged to work together on this project, but everyone needs to write their own report. Make sure that you do not plagiarize your class mate! I will be reading all the reports, so will be able to tell if you did your own report writing.

Reading: In this syllabus I provide a list of required reading in the Lutgens et al. text *Essentials of Geology* textbook for each week. The student is expected to read the assignment before class. This reading is essential to your comprehension of the material in this course and will be a key

Chemeketa Community College
The Geology of Pacific Northwest Rocks & Minerals
GEO143 Course Information

to your success. Periodically I will ask you questions from the reading at the beginning of class, before we have covered the material in lecture. These answers will count towards your activity grade for the day and can count towards the “active attendance grade boost.”

Student Presentations: Students will make a presentation to the class on the last day of class. We will discuss the subject of these presentations throughout the course. Students need to start on these presentations prior to the Mid Term Exam in order to be successful. Doing this assignment during the last week of class is not a wise use of your time. Students will also post their presentation online so others will be able to review it as their Online Lab OA 9. Students get 25 points for the in class presentation and 25 points for the online presentation.

Electronic Presentations: All electronic presentations will be posted to the website for this course. Please use these presentations to review course material and to prepare for your exams and reports.

*** Please note that this document is informational and subject to change.**

Chemeketa Community College
The Geology of Pacific Northwest Rocks & Minerals
GEO143 Course Expectations

Class will start on time at 6:00 PM. You are responsible to be present for and be attentive to all the material covered in class. If you need to leave the class early, please let me know before the class starts.

This is a college-level science class, and will require a commitment of your time outside of class. This at-home time will enable you to digest the material we cover in class and help when you are asked on the exams to apply these concepts to different problems and applications.

You will spend 12 to 18 hours per week on course material outside of class. You are encouraged to set aside a specific time each week outside of class devoted solely to each course:

- Reviewing lecture notes and in-class exercises each week
- Reading the textbook
- Working on the recommended exercises from the textbook
- Studying for exams

Note that 12 hours per week at home is the average minimum to pass. Some students may require more time at home just to pass; for some in this course that may be enough to get an A. A student who is very attentive in class, asks questions, and takes careful notes will need less at-home time.

Absences: It is extremely difficult to do well in this class without attending all the lectures. I understand there will be an occasional absence due to illness or emergency, however I consider more than two absences per semester excessive. If you do miss a class:

1. Obtain the course material online (PowerPoint slides, extra reading, and handouts). The slides will include information about any homework or in-class exercises that were assigned. Most assignments and handouts referenced by the slides will be in your handouts.
2. Next, try to obtain a copy of lecture notes from a classmate since there are many things we cover that are not spelled out directly on the slides or handouts. This is the most important step.
3. Read the required reading covering the material you missed.
4. After this, feel free to contact me by email with any questions.

Final grade active attendance boost: If your final course grade after rounding to the nearest whole number is within 1 point of a grade transition (C to C+, D to C, A- to A, etc.) I will give you

Chemeketa Community College
The Geology of Pacific Northwest Rocks & Minerals
GEO143 Course Expectations

the boost needed to obtain the higher grade if you have actively attended most classes and succeeded in many of the in-class pop quiz questions. More than 2 unexcused absences is considered excessive and will disqualify you from this opportunity. Conduct not in accordance with that outlined below will also prevent you from receiving this bonus.

Computer skills: This class will require computer use outside of class. Activities involving the 4 skills listed below will be included throughout the semester. In addition, you will be expected to check blackboard and your email regularly for announcements.

1. Send and receive email from your Chemeketa Community College email account.
2. Open a web browser and access a web page if you are given the web address.
3. Access course material (handouts, slides, announcements, etc.).
4. Open Microsoft word (.doc or .docx), Microsoft Excel (.xls or .xlsx) and Adobe .pdf documents to read their contents.

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