

Geology of the California's Volcanoes: Geology 185



The southern part of the Cascades Range contains some of the most striking examples of volcanism to be found anywhere in the world. We will see evidence of relatively calm eruptions of basalt lavas that flowed across the landscape forming pahoehoe and aa flows and lava tubes that extend for miles underground. We will see the remains of unimaginable large explosions that caused whole mountains to disappear. You will have the opportunity to understand the causes of these eruptions and their potential for future activity.

This trip will be a **rigorous** test of your patience and health. There will be several long driving days, and conditions may become harsh. **Rain, snow, and extreme cold** are serious possibilities. The success of the trip will depend on your amiability and willingness to put up with inclement conditions.

Date: September 22-26, 2016

Leave Thursday, Sept. 22 at 4:00 pm (north side Science Community Center) –Arrange for off-campus parking
Return Monday, Sept. 26 at about 8:00 pm

***Note:** you will be missing two days of school. Make arrangements **now** to make up any missed work.

Cost: \$90.00, payable in the MJC Business Office. This fee **must be paid** prior to the trip in the MJC Business Office (currently on west campus).

Academics: 2 units. Add cards available from Garry Hayes, SCC 336. **Space is limited.**

Recommended Text: *Fire Mountains of the West* by Stephen Harris

Academic Requirements:

BEFORE THE TRIP:

- You must attend the organizational meeting on Thursday, Sept. 8 at 5:30 PM in Science Community Center Room 326 (west campus).
- You must complete a short 2-3 page synopsis of the geology of one of the places visited on the trip. Suggestions include the following:
 - Lassen Volcanic National Park
 - Lava Beds National Monument
 - Mount Shasta region (not actually a park)
 - Medicine Lake Highland
 - MacArthur-Burney Falls State Park

DURING THE TRIP:

- You will be expected to take complete lecture notes
- You will be expected to complete the worksheet provided at the beginning of the trip

AFTER THE TRIP:

- Notes and worksheets are to be submitted by Tuesday, October 4
- Final exam on Tuesday, October 4 at 5:30 PM in Science Community Center Room 326



Logistics:

You will be responsible for your own meals for this trip. I strongly recommend getting together with others to save money and space. Keep meals as simple as possible. For breakfast, it is best to use meals requiring only milk or hot water for their preparation. Lunches should consist of snacks that can be eaten all day. Dinners are easiest when they're out of a can! Expect to bring or buy dinner on Thursday evening. You will need 4 dinners, lunches and breakfasts.

It is not possible to get advance reservations for most of our expected campsites. It is possible that we will have to stay in primitive conditions with no facilities if our planned campgrounds are full when we arrive. Please be ready for that possibility. **Cold temperatures** are highly likely. Snow and cold rain are possibilities. Please be prepared to be comfortable in these conditions. We will be doing some moderate hiking, so please bring adequate walking shoes as well.

No booze, alcohol, drugs allowed at school functions.

Itinerary:

Thursday, September 22: (leave at 4:00pm from north side of Science Community Center)

Drive to north end of Sacramento Valley

Campsite: Woodson Bridge State Park (916) 839-2112

Friday, Sept. 23:

Stops: Castle Crags State Park

Mt. Shasta

Shasta Debris Avalanche

Lava Beds National Monument

Campsite: Lava Beds National Monument Campground (530) 667-2283

Saturday, Sept. 24:

Stops: Lava Beds Petroglyph Point

Captain Jack's Stronghold

Painted Cave, Valentine Cave, Skull Cave

Campsite: Lava Beds National Monument Campground (530) 667-2283

Sunday, Sept. 25:

Stops: Medicine Lake Highlands

Little Mount Hoffman

Tree Molds

Jean Dot Ice Caves

McArthur-Burney Falls

Tentative Campsite: McArthur Burney Falls State Park

Monday, Sept. 26:

Stops: Lassen Volcanic National Park

Devastated Area

Mt. Lassen

Bumpass Hell

Sulfur Works

Brokeoff Mountain

Return to MJC, approximately 8:00pm



Suggested Equipment

SPACE IS AT A PREMIUM: PLEASE PACK AS COMPACTLY AS POSSIBLE!

Personal:

Warm Sleeping Bag
Personal Toilet Kit
Eating utensils, cup, plate
Warm jacket or coat
Walking shoes
Changes of clothes
Sunglasses
Sunscreen
Clipboard, Pen, Pencils
Hardhat or bicycle helmet (for caving)

Foam Pad
Day Pack
Poncho or rainsuit
Warm hat
Gloves or mittens
Flashlight (bring two)
Extra batteries
Toilet Paper
Paper
Knee pads for caving (optional)

Group:

Tent
Cooking utensils
Stove

Cleaning supplies
Ice Chest
Lantern

Optional:

Camera
Rock hammer
Pillow and/or extra blanket
Folding Chair (if room available)
You may wish to bring some extra cash for junk food, maps, books, etc.

No alcohol, or drugs.

Objectives (Student Learning Outcomes):

By the end of the course, the student will be able to

1. Compare and contrast landscapes formed by mass-wasting, river erosion, glaciation, and volcanism.
2. Recognize the features produced by glacial activity
3. Discuss the role of convergent and divergent tectonic boundaries in the formation of a magmatic arc, and in the construction of mountain ranges such as the Cascades.
4. Distinguish between the major types of igneous plutonic and volcanic rocks.
5. Explain the process by which calderas are formed, and how Medicine Lake caldera developed.
6. Compare and contrast shields, composite cones, cinder cones, plug domes and basalt plateaus, as seen in or near Crater Lake and Lassen Volcanic National Parks, Lava Beds National Monument, and Mt. Shasta.
7. Describe the consequences of interactions between humans and the natural environment at each of the parks we will visit, including the causes and resolution of the Modoc Indian War of 1872-73

