

Colorado Plateau: a Mirror of Mars

July 23, 25-29 2018

Colorado School of Mines Teacher Enhancement Program

3 semester credits

Ed Adams

Lecture will meet at the Colorado School of Mines on Monday, July 23, 2018

Field trip will be on the Green River, Moab UT July 25-29, 2018

Course objectives:

- ☐ To understand some of the elemental processes that shape the earth as we see it today and compare that to what we observe on the Martian surface
- ☐ To be able to identify the rock types in the field course area and compare that to what we observe on the Martian surface
- ☐ To visit sites that look similar to what we see on the Martian surface.
- ☐ Basically to see that geologic processes between the two planets are at least similar and that we can use what we see here to understand what we observe there.

Lecture topics:

- ☐ Rock cycle and basic geologic processes
- ☐ Work of water, stream processes, sorting
- ☐ Sedimentary rock types
- ☐ Lithification and cementing agents
- ☐ Rock type and topography
- ☐ Interpretation of past geology from topography
- ☐ Time, relative dating techniques
- ☐ Structural geology (faulting and folding)
- ☐ Use of geologic maps

Class conversation times:

We will use various times during our week together to discuss these topics including:

- ☐ Class in Golden
- ☐ Barging up on the river
- ☐ Camp fire* time at the end of the day
- ☐ At lunch each day
- ☐ There will be a hike each day up into a nearby canyon.

* the fire may be a flashlight stuck in the sand as there is often a fire ban in effect.

Course description

Field trips to Mars are still quite difficult, but travel to the Colorado Plateau is easy. As our observations of the Martian surface become more robust we are seeing structures that look tantalizingly familiar. It is possible that the desert of the Colorado Plateau has experienced a similar climate and geologic process. In this course, we will canoe down the Green River in central Utah looking at areas that seem to be analogous to what we are seeing on Mars.

This course travels down a 65-mile stretch of the Green River through spectacular canyon country and offers some of the best flat water canoeing on the Colorado Plateau.

Materials:

The outfitter will supply the canoes, group equipment and food. You should examine the gear list carefully.

Required for the class: Field journal with pen/pencil. Water proof paper is nice but not required.

Assessment:

- ☐ Thoughtful participation in class conversations, both in Golden and on the river. (20%)
- ☐ Stratigraphic column with interpretation (30%)
- ☐ A field journal (50%) that will include:
 - Examples of current geology in action (25%)
 - Description of stops and why they are important (20%)
 - A first person narrative of the trip (30%)
 - Geologic thoughts. (25%)

Grading Scale:

90-100..... A
80-89..... B
70-79..... C
60-69..... D
0-59..... F