The Great Unconformity in The Grand Canyon represents missing time in the rock record between the older Mesoproterozoic rocks and the younger Cambrian rocks.

Description

This syllabus is meant to accompany an introductory geology course to teach the missing social contexts from earth sciences and create a classroom that holds many pathways through the material. As the title suggests, this syllabus doesn’t stray from the geologic concepts, but aims to engage with them to refocus and challenge. Unconformities denote missing time and information in the rock record. Sediment, information, erodes away from powers stronger than the rock—winds and water—and is reburied by new deposits. But, we can fill in the gaps with the larger context, the missing stories and perspectives.

Science classrooms, as a whole, often forgo the historical and social contexts in which the science is rooted. Western science finds these roots in colonialism and imperialism, and still taints our interactions and observations of the world. Scientific objectivity, of course, has shielded us as learners from letting truly critical thought into our work. We will use a framework of strong objectivity, which aims to create a more balanced science, one that invites more voices to the table and listens to their theories. This is the framework that allows us to keep our science accountable.

In earth sciences we will focus on the geo- in geopolitics and the nuances of energy, labor practices in resource extraction, and how to use an environmental justice lens. We will enter those new layers of analysis through historical context, and also art, literature, and social movements.
Course Topics

A geologist’s perspective of the world
How did you get here? // Personal pathways into geosciences
Connection concepts: students will explore their own connections to geology and be welcomed to the classroom with excitement for the vast pathways we take to get to earth science. Students will be introduced to this topic by reading and interacting with geologic concepts and wonders through literature and art.

- Assignment: Guiding Questions & Thoughts on *An Essay on Rocks*.
- Optional: Field-trip to art gallery exhibit on volcanoes

Coastlines and Hurricanes
Science of storms & environmental justice // Natural disasters & disaster capitalism // The topography of environmental racism
Connection concepts: students will engage with the intersections of storms and society to see the principles of environmental justice in action. This lesson will begin to unpack the ways in which systems of power, specifically racism, colonialism, capitalism, are linked and use the environment and its associated science and technology to their advantage.

Geology concepts: readings from section 15.1 through 15.6 will cover Coriolis effect, ocean temperatures, hurricane formation, storm surge

  - Pair with this: *Hurricane Florence Blows Open Harsh Realities of American Inequality* [https://www.democracynow.org/2018/9/20/hurricane_florence_blows_open_harsh_realities](https://www.democracynow.org/2018/9/20/hurricane_florence_blows_open_harsh_realities)
- Think about this: Environmental Justice Principles from the People of Color Environmental Leadership Summit: [http://www.ejnet.org/ej/principles.html](http://www.ejnet.org/ej/principles.html)
- Assignment: guiding questions through Solnit’s essays and maps.

Energy Resources: Fossil Fuels
Extraction & exploitation // Labor rights in energy production through time
Connection concepts: students will explore the working-class struggle for better labor conditions in the coal industry, as well as the history of oil as a continuing settler colonial force in the United States. An emphasis on historical context will be used to also make aware the intricacies of politics and fossil fuels. Students will think critically about green technology and geoengineering.
Geology concepts: readings from section 12.1 through 12.6 will cover fossil fuel deposit formation and locations of fossil fuel resources around the world, as well as ways we extract these fuels.


- Listen to this: Miner’s rights and union songs of the 1950s
  - Pete Seeger, Banks of Marble [https://www.youtube.com/watch?v=x-o3C]erIPF
  - Pete Seeger, Miners Lifeguard [https://www.youtube.com/watch?v=x-o3C]erIPF
  - Pete Seeger, Come All You Hardy Miners [https://www.youtube.com/watch?v=]Z2RR2bgNk
  - Victor Jara, Canción del Minero [https://www.youtube.com/watch?v=u50YP7VVdr8]

- Watch this: Documentary on organizing/labor rights in mining industry: Harlan County, USA [https://www.youtube.com/watch?v=fLT]16LP4ACQ

- Look at this: *The True Cost of Coal* by The Beehive Collective [http://beehivecollective.blogspot.com/]

- Think about the future: Geoengineering and Environmental Capitalism [https://magazine.scienceforth](http://people.org/geoengineering/geoengineering-environmental-capitalism/)

**Energy and Mineral Resources**

Extraction & exploitation // Outsourcing U.S. control of energy // Health implications of mining

Connection concepts: students will begin to understand the ways the U.S. outsource our energy needs to continually displace indigenous people here and abroad and create overwhelming health conditions.

Geology concepts: sections 12.7 through 12.12 will cover mineral resources as finite materials and various types of economic minerals, like metals, nonmetallic and minerals used for nuclear power.

- Organizing miners: An Interview with a Mexican Copper Miner by Science for the People (1979, v.11, n.5) [http://science-for-the-people.org/wp-content/uploads/2015/07/SftPv11n5s.pdf]

- Explore this: Click on ‘Mineral Ores and Building Extractions’ [https://ejatlas.org](http://ejatlas.org)