Basic Information:
-The trip will be part of a new 3-credit EES course.
-Pre-requisites are EES 104 or 110 and EES 130.
-The course will be an elective, not a core requirement for the major.
-Course themes will be geological processes, materials, landforms and crustal evolution, environmental science, and sustainability.
-It will therefore be interdisciplinary and complementary to many other EES courses.
-We will meet during the semester before the trip and there will be assigned reading.
-Assessment will comprise a report, a presentation during the trip about a topic relevant to the trip (we will all learn from each other), exercises carried out during the trip, and a short final exam.
-The trip will involve some short hikes and an average of 2 hours driving/day.
Arizona Geology
3 Major Physiographic and Geological Provinces
<table>
<thead>
<tr>
<th>Day</th>
<th>Destination</th>
<th>Means of Travel</th>
<th>Overnight Accommodation</th>
<th>Academic Site Visits</th>
<th>Cultural Sightseeing</th>
<th>Amount of Driving</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hartford-Phoenix</td>
<td>Flights</td>
<td>Phoenix Motel 6</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>Phoenix-Sedona</td>
<td>Van</td>
<td>Sedona Super 8</td>
<td>Red Rock State Park</td>
<td>Montezuma Castle NM</td>
<td>2.5 hours</td>
</tr>
<tr>
<td>3</td>
<td>Sedona-Flagstaff</td>
<td>Van</td>
<td>Flagstaff Motel 6</td>
<td>Sunset Crater NM</td>
<td>Wupatki NM</td>
<td>2 hours</td>
</tr>
<tr>
<td>4</td>
<td>Flagstaff-Grand Canyon</td>
<td>Van</td>
<td>Flagstaff Motel 6</td>
<td>Grand Canyon NP</td>
<td>none</td>
<td>3 hours</td>
</tr>
<tr>
<td>5</td>
<td>Flagstaff-Holbrook</td>
<td>Van</td>
<td>Holbrook Motel 6</td>
<td>Meteor Crater, Petrified Forest NM</td>
<td>none</td>
<td>2 hours</td>
</tr>
<tr>
<td>6</td>
<td>Holbrook-Globe</td>
<td>Van</td>
<td>Globe Motel 6</td>
<td>Salt River Canyon</td>
<td>none</td>
<td>4 hours</td>
</tr>
<tr>
<td>7</td>
<td>Globe-Tucson</td>
<td>Van</td>
<td>Tucson Motel 6</td>
<td>Biosphere 2</td>
<td>Biosphere 2</td>
<td>2.5 hours</td>
</tr>
<tr>
<td>8</td>
<td>Tucson environs</td>
<td>Van</td>
<td>Tucson Motel 6</td>
<td>Sabino Canyon, Saguaro NP (east)</td>
<td>none</td>
<td>2 hours</td>
</tr>
<tr>
<td>9</td>
<td>Tucson environs</td>
<td>Van</td>
<td>Tucson Motel 6</td>
<td>Tucson Mts, Saguaro NP (west), Sonora Desert Museum</td>
<td>none</td>
<td>1.5 hrs</td>
</tr>
<tr>
<td>10</td>
<td>Tucson-Sahuarita</td>
<td>Van</td>
<td>Tucson Motel 6</td>
<td>Asarco Mine and Discovery Center</td>
<td>none</td>
<td>1.5 hrs</td>
</tr>
<tr>
<td>11</td>
<td>Tucson – Mt Lemmon, then drive to Phoenix</td>
<td>Van</td>
<td>Tucson Motel 6</td>
<td>Mt Lemmon geology tour</td>
<td>none</td>
<td>4 hrs</td>
</tr>
<tr>
<td>12</td>
<td>Phoenix-Hartford</td>
<td>Flights</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Day 1:
Fly to Phoenix

Day 2:
Montezuma Castle and Sedona’s Oak Creek Canyon
Montezuma Castle National Monument
Day 3:
San Francisco Volcanic Field
and Wupatki National Monument
Wupatki National Monument
Day 4: The Grand Canyon
An optional hike into the canyon
Day 5: Meteor Crater and Petrified Forest National Park
The Painted Desert
Day 6:
Salt River Canyon
Geological Transect
Through the Transition Zone
We will rest in the afternoon
Day 7: A Visit to Biosphere 2
Mission
To serve as a center for research, outreach, teaching, and life-long learning about Earth, its living systems, and its place in the universe.
Day 8: Sabino Canyon and Saguaro National Park
Day 8 Sabino Canyon and Saguaro National Park
Day 9:
Tucson Mtns and Sonoran Desert Museum
The Sonoran Desert
Day 10: Asarco Mission Mine Tour and Mineral Discovery Center
Asarco Mineral Discovery Center

Welcome to the ASARCO Mineral Discovery Center where you can make your own discoveries about copper and the mining industry. The menu on your left will guide you around the website, and below is some useful information in a nutshell...

Discover
Our award-winning exhibit center, video theater, cactus garden, and picnic area.

Explore
Experience a tour of the ASARCO Mission Mine. Stand at the edge of an active open-pit mine.

Shop
The Company Store gift shop for Southwestern arts & crafts by local artisans, silver, copper and Native American jewelry.

Discovery Center Hour of Operation Gift Shop and Exhibit Center:
Tuesday through Friday - 9:00 A.M. to 3:00 P.M.
Saturday – 9:00 A.M. to 5:00 P.M.

Mine Tours:
Saturday ONLY
Tours: 9:30 A.M., 11:00 A.M., 12:30 P.M., 2:00 P.M., 3:30 P.M.
(Tour schedule is subject to change. Please call for reservations.)
Day 11: Geological Tour of Mt Lemmon and then Return to Phoenix
Day 12: Fly Home to Boston
Cost Considerations

22 participants

Arizona Field Course – Possible Budget: for 22 attendees (20 students, 2 faculty) as of 9/23/13

1) Flights: Boston-Phoenix return = $270
2) Baggage = 22 x $25 x 2 = $1100
3) Motels = 22 x 12 nights x $45/dbl room = $5940
4) Food = 22 x 12 days x $20/day = $5280
5) 2 x 12-seat or 15-seat van rental 12 days = $4300
6) Estimated gas costs = $600
7) Park fees = $300
8) Estimated spending money = $100 x 22 = $2200

Total $19990 $20,000

Multiply x 1.4 for fees related to CIS program support and organizational costs

Equals approximately $1300/person for 22 people.

Note: food estimated at $20/day/person, all double rooms = double occupancy with 2 beds, park fees include educational discounts, one checked bag/person. Above costs are minimum costs as of September, 2013. Maximum capacity = 26 people using two 15-seater vans, or 22 people using two 12-seater vans.

Excluded costs:
- travel to and from Boston
- travel insurance
- maps/handouts
- personal items bought during trip

The final cost will be dependent on the number of participants. We have not yet decided on the minimum number needed to run the trip. See next slide.
Cost Considerations

18 participants

Arizona Field Course – Possible Budget: for 18 attendees (16 students, 2 faculty) as of 9/24/13

1) Flights: Boston-Phoenix return = $270

2) Baggage = 18 x $25 x 2 = $900

3) Motels = 18 x 12 nights x $45/dbl room = $4860

4) Food = 18 x 12 days x $20/day = $4320

5) 2 x 12-seat or 15-seat van rental 12 days = $4300

6) Estimated gas costs = $600

7) Park fees = $300

8) Estimated spending money = $100 x 18 = $1800

Total $17350 ≈ $17,500

Multiply x 1.4 for fees related to CIS program support and organizational costs

Equals approximately $1375/person for 18 people.

Note: food estimated at $20/day/person, all double rooms = double occupancy with 2 beds, park fees include educational discounts, one checked bag/person. Above costs are minimum costs as of September, 2013. Maximum capacity = 26 people using two 15-seater vans, or 22 people using two 12-seater vans.

Excluded costs:
- travel to and from Boston
- travel insurance
- maps/handouts
- personal items bought during trip
Benefits to You

- Geology and environmental science come to life in the field.
- Your experience will be educationally valuable in many ways and will further develop you as an environmental earth scientist. What you learn will help you in other courses. You will be investing in your future.
- You will add the trip experience to your resume which will give you an advantage in a competitive job market. Travel experiences often become major conversation topics in interviews. Many employers will be looking for candidates with field and travel experience.
- You will see a beautiful part of America.
- You will further develop your friendships with other participants.
- We will have loads of fun.
“We must go beyond textbooks, go out into the bypaths and untrodden depths of the wilderness and travel and explore and tell the world the glories of our journey.” – John Hope Franklin