SUMMER EARTH STUDIES
2022

"Nature is not a place to visit. It is home."

Gary Snyder

2021 SUMMER EARTH STUDIES
Spring and May 29 – June 15, 2021

COURSE DESCRIPTION

Summer Earth Studies is a non-profit educational company that offers an experiential, honors-level, elective science course for rising sophomore and junior high school students. Students will study topics in geology, meteorology, astronomy, and ecology through actual experiences. The teacher/student ratio will be less than 6 to 1. The goals of the course are to give top science students a real-world hands-on experience in their education, to give them insight to the possibilities of the earth sciences as a vocation, and to develop a sense of environmental stewardship for the future. Students will have 3 weekend field trips during the spring in Georgia. In Late May, SES will travel on a 19-day trip through Utah, Idaho, Montana, Wyoming, and Colorado. Students will travel in cars on weekend trips and Chevrolet Suburbans on the summer trip and stay in hotels or lodges. We will do various activities including hiking, rafting, swimming, guided caving, and general sight-seeing.

COURSE COST

The actual cost of the course depends on our ability to find sponsors. Course tuition covers ground transportation, lodging, some meals, most activities, and instruction. Depending on sponsorship and student enrollment, tuition will cost between $1800-$2200. Parents will supply meal money to their students and pay for round-trip airfare to Salt Lake City, UT. Parents of accepted students will make an initial down payment of $500 with 2 more payments due in April and May. Course payments are only refundable in the event of serious student illness or serious family complications and ultimately decided by the Director. Initial down payment is due within one week of acceptance.

COURSE ACCEPTANCE

Acceptance into the course is solely at the discretion of the Director. Criteria to be used will be two teacher recommendations, physical and academic student qualification, student essay, and a balance of gender, grade level, and schools.

COURSE EVALUATION AND CREDIT

This honors course exceeds 120 contact hours and earns 1 Carnegie Unit. Student grades and weights will have 10-15 evaluated field problem solutions (50%), 2-3 notebook grades (10%), 3 oral tests (20%), a final field problem (10%), and an oral final exam (10%).

COURSE CONTENT

SES meets the Georgia Dept. of Education standards for Earth Science and Geology courses. The content below is presented through a series of field problems that students solve cooperatively in small groups.

I. Astronomy
- A. Earth in space
- B. Earth, moon, sun relationships
- C. Observation and measurement in space
- D. Solar system
  1. Sun
  2. Inner planets
  3. Outer planets
- E. Beyond the solar system
  1. Red shift / Big bang
  2. Stellar evolution
  3. Galaxies and constellations
  4. Quasars, pulsars, black holes

II. Meteorology
- A. Weather's "ingredients" and their properties
- B. Wind
- C. Water in the atmosphere
- D. Air masses, fronts, pressure areas, weather maps
- E. Severe weather: thunderstorms, tornados, hurricanes
- F. Climate

III. Cartography
- A. Orientation
  1. Grid system
  2. Reference point
- B. Types of maps
- C. Highway maps
- D. Latitude / longitude
- E. Compass and paces
  1. Magnetic field
  2. Triangulation
- F. Topographic maps

IV. Physical Geology
- A. Earth Composition
  1. Rocks
  2. Minerals
- B. Earth processes
  1. Weathering
  2. Erosion
  3. Sedimentation
  4. Stratigraphy
  5. Caves and cave formation
- C. Depositional environments
- D. Earth forces and structure
  1. Tension, compression, shear
  2. Folding
  3. Fracture / joints
  4. Faults
  5. Earthquakes
  6. Volcanoes
- E. Plate tectonics
- F. Fossil fuels

V. Historical Geology
- A. Geologic Time Scale
- B. Absolute age dating
- C. Relative age dating
- D. Biological evolution / fossils
- E. North American events

VI. Life Science
- A. Classification
- B. Ecology
  1. Ecosystems
  2. Organisms
  3. Populations
  4. Species interactions
  5. Communities
- C. Field identification
- D. Human impact

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TENTATIVE COURSE ITINERARY

DAY	DATE	EOD LOC.	ACTIVITY
1	*TBD*	*Home*	*Climb and explore Stone Mountain*
2-3	*TBD*	*Columbus, GA*	*Hike along Chattahoochee R. and Providence Canyon*
4-5	*TBD*	*Cloudland, GA*	*Hike and explore Lookout Mountain area*

DAY	DATE	EOD LOCATION	ACTIVITY
6	*Sunday, May 29*	*Rexburg, ID*	*Explore Great Salt Lake Basin, Wasatch Mountains, and Snake River Plain*
7	*Monday, May 30*	*Rexburg, ID*	*Explore Snake River Plain*
8	*Tuesday, May 31*	*Yellowstone NP, WY*	*Explore Island Park, Madison River Canyon, and Yellowstone NP*
9	*Wednesday, June 1*	*YNP*	*Hike and explore YNP*
10	*Thursday, June 2*	*YNP*	*Hike and explore YNP*
11	*Friday, June 3*	*Teton NP, WY*	*Explore Jackson Hole and Grand Teton NP*
12	*Saturday, June 4*	*TNP*	*Hike and explore GTNP*
13	*Sunday, June 5*	*TNP*	*Hike and explore GTNP*
14	*Monday, June 6*	*Kemmerer, WY*	*Explore Hoback Mountains and Green River Basin*
15	*Tuesday, June 7*	*Vernal, UT*	*Explore Uinta Mountains and Flaming Gorge*
16	*Wednesday, June 8*	*Moab, UT*	*Explore Dinosaur NM, Rangely CO, and the Colorado Plateau*
17	*Thursday, June 9*	*Moab*	*Hike and explore Colorado River Valley, LaSal Mountains, Colorado Plateau*
18	*Friday, June 10*	*Moab*	*Hike and explore Canyonlands and Colorado Plateau*
19	*Saturday, June 11*	*Moab*	*Hike and explore Canyonlands and Colorado Plateau*
20	*Sunday, June 12*	*Moab*	*Hike and explore Arches NP and Colorado Plateau*
21	*Monday, June 13*	*Lehi, UT*	*Explore Colorado Plateau and Wasatch Mountains*
22	*Tuesday, June 14*	*Lehi*	*Explore Salt Lake Basin and Wasatch Mountains*
23	*Wednesday, June 15*	*ATL*	*Explore Salt Lake Basin and Wasatch Mountains*