

**Hawaii – Volcanoes Born of Fire
Coral Reefs – Life Extravagancia
June 18-27, 2012 4 semester hours credit
Cost: \$2970. does include airfare and credit. \$2800. without credit.
Price may vary slightly depending upon airfare costs.**

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Winners of International Paper Environmental Education Award

Day 1: Meet at airport and fly to the Big Island of Hawaii. On airplane, participants need to read Hawaii overview material and general coral reef ecology packet.

Day 2: Pick up vans and check into hotel in Kona. We will have class time to discuss the geology of the Big Island's 5 volcanoes and study maps and orientation of Kailua-Kona and Big Island. As we travel from the airport to Kona, we will cross lava flows from the Hualalai Volcano. Our class time will also include an orientation to coral reef ecology and general fish identification, the dynamics behind plate tectonic geology, the Pacific Ring of Fire, and the Hawaiian Hotspot. We will learn about native customs of the kapu system, where strict laws were punishable by death. Kapu included laws such as women could not eat together or with men; your shadow could not fall upon a chief; you could not walk upon the same trails as the chiefs. We will buy groceries for the day and travel to White Sands Beach State Park, where we will snorkel and begin coral reef fish and invertebrate identification research. We will conduct species biomass and biodiversity studies along the west side of the Big Island. After snorkeling, we will have class time to study indigenous Hawaiians, local language patterns and dialects.

Day 3: Today we will travel along Alii Drive to and tour Ku'emanu Heiau Church, the only church dedicated to surfing. Learn how native Hawaiian chiefs used this church to pray for good surf and how common folks were punished by death for surfing. Learn more about native customs of the kapu system, where strict laws were punishable by death. Kapu included laws such as women could not eat together or with men, your shadow could not fall upon a chief, you could not walk upon the same trails as the chiefs. Snorkel at Kahalu'u Beach and continue the research on coral reef biodiversity. During this time, we will access the coral reef databanks to help identify both vertebrates and invertebrate species. During the return trip to Kona, we will tour a Kona Coffee Factory and learn about the modern economy and exports of Hawaii.

Day 4: Today, we will travel to Napo'opo'o Beach Park. and learn the history of the voyages of Captain Cook, who explored much of the Pacific including Australia and Hawaii. This is the site where natives first thought Captain Cook was the returning God, Lono. They later killed Captain Cook on this site when they discovered that his crewmembers were not gods but mortals. Touring Kikiau Heiau, we will see the temple where human sacrifices were conducted. During the afternoon, we will rent kayaks and kayak across Kealakekua Bay. This is a great time to study the geology of the landslide

that created Kealahou Bay and continue biodiversity research of coral reefs. Upon our return from kayaking, we will tour Pu'uhonua o Honaunau National Historical Park, which was formerly the City of Refuge. When kapu breakers were convicted, they could flee for their lives. Hotly pursued by the people, they tried to reach Pu'uhonua o Honaunau, where they could live safely as a slave.

Day 5: After checking out of hotel, we will drive over Saddle Road. This is a 6,578 foot pass between the volcanoes of Mauna Kea and Mauna Loa. Mauna Kea is snow covered at 13,796 feet. With its base 17,000 feet below sea level, this is the largest and tallest mountain in the world if you count the whole mountain. The geology of volcanic calderas, crater cones, and astronomical observatory on the top of Mauna Kea is a fascinating study. We will tour the observatory that houses 2 dozen of the world's best telescopes and was built here because of low air turbulence. Some of these telescopes can observe objects that are 12 billion light years away. During lunch near the summit, we will have a lecture on indigenous Hawaiian legends about the formation of the volcanoes and the war between the sister gods of Poli-ahu, the snow goddess and Pele, the fire goddess and then continue our journey to the wet side of Hawaii at Hilo. The Big Island has a very dry and a very wet side due to ocean currents and prevailing winds. Check into our hotel on the Hilo side of Hawaii. During class time for information on the life cycle of a volcano and why the other Hawaiian Islands do not have active volcanoes.

Day 6: Hilo is a wet side of the Big Island, with waterfalls and rainforests. We will tour Rainbow Falls, Boling Pots, and Pe'epe'e Falls. We will also tour Mauna Loa Visitor Center, which is the processing plant of the now very important crop of macadamia nuts. We will discuss the changing Hawaiian economy from sugar cane to mac nuts. Touring the Hawaii Tropical Botanical Gardens, we will learn about local flora. Traveling north, we will tour the site of the deadly 1960 tsunami that killed 38 people in a small fishing village and learn the geology of the Alaskan earthquake that started it and the dynamics of tsunamis. We will start the drive to Volcano National Park and stop to tour Lava Tree State Park, where lava flows from Kilauea flowed so rapidly that trees did not have time to burn before they left lava molds. We will sleep at Volcano House on the rim of the caldera of Kilauea.

Day 7: Today we will experience the 2 types of lava: pahoehoe and a'a and study the different types of volcanoes. We will hike through the caldera of Kilauea and study the vegetation types, the formation of calderas, the types of lava, fumaroles, steam vents, and plant succession. We will then tour the scenic circular drive through Volcano National Park and study the geology that formed it, including sulfur vents and museums.

Day 8: We will explore the rest of Volcano National Park, including Thurston Lava Tube, villages buried in lava, Chain of Craters Road, hike Old Crater Rim Road (the part that did not fall into the rim in 1983), Pu'u Loa Petroglyph Trail, the road to Mauna Ulu, and Holei Sea Arch. We will study the geology of the flows, the maps, the recent lava flows, the native culture, and hopefully if Pelle, Goddess of Fire, is willing, we will see an active lava flow.

Day 9: If Darwin had landed on the Hawaiian Islands instead of the Galapagos Islands, he would come to the same conclusion about evolution. We will study how each island has its own endemic species of birds, reptiles, and amphibians. WWII had a devastating effect on these endemic populations, as the ships brought rats to the islands. Even the coral reef organisms evolved in the Philippines and spread out from there through ocean currents. Today we travel back to Kona along the southern road on the island. Along the way, we will stop to study the Green and Black Sand Beaches and their geology. There is actual green sand, which has eroded from the mineral olivine. These beaches are the home of many Green Sea Turtles. We will study more ocean ecology with over fishing, ocean acidity and pollution problems.

Day 10: Fly back to the mainland.