The high Andes of Ecuador are renowned for their active volcanism, the beauty of their mountains, and the diverse cultures that inhabit this range. Rich in biodiversity and history, the Andes are also crucial in terms of regulating the water supply of millions of people that live under the shadow of these mountains, a feature that generates intense social and environmental conflicts that challenge the long-term conservation of the high Andean ecosystems. With this program on Mountain Studies the GAIAS Institute of USFQ offers a unique academic and learning opportunity to students interested in exploring the outstanding geological and ecological systems of the northern Andes, and how these systems have shaped cultures and societies of these fragile mountain ecosystems. Combining lectures and discussions in the Quito and Riobamba campuses of the USFQ, field and climbing trips to the Galápagos volcanoes and to some of the most beautiful peaks in Ecuador, the students will have a full immersion into the geomorphology, the ecological functioning, and the social and cultural factors that define the complex nature of the high altitude environments in Galápagos and the Tropical Andes.

**Brief Program Description**

The objective of this program is to help the students to develop a deeper understanding of the relationships between society and natural environments, and the role of conservation efforts, in shaping these relationships. The students will participate in a wide range of hands-on activities including small interdisciplinary research projects in the field, observational climbing and hiking trips, and a week-long experience in a experimental hacienda dedicated to the sustainable production of Andean crops. The program is divided in four modules intended to provide the students with a complete picture of the biophysical features of the tropical mountain environments and the cultural and social dynamics that have shaped their past and current condition.

**Module 1. Geology and Volcanology in the Tropical Andes and the Galápagos Islands (3 credits):** During this module we will analyze the geodynamic origins and development of the Ecuadorian volcanoes both in the Galápagos Islands...
and continental Ecuador. Students will develop an understanding about the history and main geological features of volcanic centers with different ages, and the evolution of the Andes as part of the active continental margin of Western South America.

**Module 2: Ecology of Tropical Andean Environments (6 Credits):** Days at the USFQ Campus in Quito and Riobamba will be used for lectures and discussions on different topics related to the ecology of terrestrial and aquatic ecosystems in the high Tropical Andes. We will also have day-trips to the nearby páramos where we will develop and implement short research projects intended to reinforce and further explore concepts reviewed in class, while gaining the acclimatization needed for our optional weekend trips to the mountains. During the last week we will spend five days at the Hacienda Palugo—an experimental hacienda dedicated to organic agriculture and mountain culture—where we will work the land and help with the cattle, while we prepare for our attempt at climbing Cotopaxi (19,186 ft).

**Module 3: Cultural and Social Dynamics in Tropical Andean Environments (3 Credits):** This module will explore the different forms in which people have adapted to the Andean environments, including the use of crop zonation along the altitudinal gradient of the mountains, in order to diversify crop production, while minimizing the risk of shortages. We will also look at the way in which social productive strategies, political organization, and cultural systems interact with the changing and complex environment of the Andes, conditioning the development of local communities.

**Module 4: Management and Conservation in the Andean Páramo Ecosystems (3 Credits):** With the context provided by the first three modules, the students will spend the last weeks of their semester discussing and learning about the main factors that are threatening mountain ecosystems, and the approaches that scientists, managers, and local people are exploring to promote the conservation of the fragile mountain environments. Students will also develop short field projects related to the mitigation of human impacts on the páramo ecosystems, using the infrastructure of the USFQ in Paluguillo and Riobamba.

**Other Issues to Consider:**
Although the hiking and climbing trips that we have planned for this program are optional, they will be a formidable opportunity to fully experience the Andean environments that we will be learning about during classes. Accordingly, students interested in taking full advantage of the field and hiking trips that we will have during this program should be in a good physical condition and must be ready to enjoy the unpredictable and sometimes very cold climate of the Andes.

For more information visit: http://www.usfq.edu.ec/gaias/program/mountain_studies/index.html

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