Course Description: GHY 3530 introduces students to global climate change and the complex interactions among climate variability, climate change, and cryospheric response, with a specific focus on the tropical Andes Mountains.

Objectives: In this course students will acquire the scientific background and develop the skills necessary to understand elements of global climate change. We will focus on the components of atmospheric science, the detection and attribution of past and present climate change, and projections for future climate change. In a series of field-based and laboratory activities, students will first develop scientific hypotheses, collect data relevant to the hypotheses, examine the data using quantitative and graphic techniques, and reach conclusions about their stated hypotheses. Students will also be introduced to controversial issues in global climate change and discuss the methods, findings, and results supporting these opposing viewpoints. Upon completion of this field course, students should also have a better understanding of the linkages between climate and tropical glacier behavior, particularly related to ENSO, precipitation variability, and climate change. Students will also develop an understanding of glacier retreat and water resources in the Andes, with special emphasis on trends in glacier mass balance, glacier length, and glacier area and the associated relationship to climate.

Grading:

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<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Field and Lab Activities</td>
<td>40%</td>
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<td>Discussion</td>
<td>10%</td>
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<td>Participation</td>
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<td>Response Paper</td>
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<td>Final Exam</td>
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Field and Lab Activities: Completion of the field and lab activities, including interpretations of the results, consists of 40% of your final grade in this course.

Discussion: Facilitating a discussion on one of the readings is 10 percent of your final grade in this course. Outside research to provide additional information on the topic is expected. The student discussant should provide a general overview of the topic, introduce the authors of the article, briefly summarize the major findings and conclusions, and come up with several questions to guide group discussion.

Participation: Participating in all aspects of the study abroad program, including pre-trip meetings, discussions, and field activities is 10% of your final grade.

Response Paper: A response paper will comprise 20 percent of your final grade. Papers should be between three and five pages in length and respond to one of the issues discussed in the readings, seminars, or field visits. Students should meet with the instructor to choose an appropriate topic. The response paper is due on July 24.

Exam: The exam will be administered at the conclusion of the program and is worth 20 percent of your grade.

Reading List: GHY 3530: Climate and Tropical Glaciers

Background Readings (In Chronological Order)

Discussion Articles (In Chronological Order)


Statement of Student Engagement with Courses

In its mission statement, Appalachian State University aims at “providing undergraduate students a rigorous liberal education that emphasizes transferable skills and preparation for professional careers” as well as “maintaining a faculty whose members serve as excellent teachers and scholarly mentors for their students.” Such rigor means that the foremost activity of Appalachian students is an intense engagement with their courses. In practical terms, students should expect to spend two to three hours of studying for every hour of class time. For this study abroad course, students should expect to spend the bulk of that time, or approximately 50 to 75 hours, completing the readings and other assignments prior to departure. Approximately 25-38 hours of reading and study will be expected during the time abroad, and an additional 25-38 hours of research and writing will be expected in order to complete the final paper for the course upon return.