CIEE Cusco, Peru

Course name: Climate Change
Course number: ENVI 2001 CUPE
Programs offering course: January in Cusco
Language of instruction: English
U.S. Semester Credits: 3
Contact Hours: 45
Term: January 2020

Course Description

Using an interdisciplinary approach, this course analyses the impact of climate change on the Peruvian territory, with a special focus on the Andean ecosystem. The course takes into consideration the natural biodiversity of the region, while utilizing different scientific, cultural and biological perspectives on the issue. It also analyses different ancient technologies located in the Andes that can help people adapt to new climate scenarios.

Learning Objectives

By completing this course, students will be able to:

- Students understand the concepts related to climate change terms and theory from different disciplines, taking into consideration the environmental, economic, social and political interconnections across the globalized world.
- Students relate the causes and consequences of climate change pertaining to the course topics.
- Students recognize the different conditions in which climate change operates in the highly diverse Peruvian context and how they differ, in terms of biodiversity, ecosystems and cultural aspects, such as ancient technologies.

Course Prerequisites

None.

Methods of Instruction

Lessons will include weekly readings to promote class debates. These readings will be evaluated in quizzes in order to evaluate student comprehension of the tests. The use of PowerPoint and other audiovisual tools will strengthen the learning as well as the fieldtrip, which will take a practical approach to the theoretical content of the course. There will be one guest lecturer, related to the fieldtrip. During the fieldtrip group work will promote a deeper peer discussion.
Assessment and Final Grade

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Readings quizzes</td>
<td>40%</td>
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<tr>
<td>Mid-term exam</td>
<td>10%</td>
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<tr>
<td>Fieldtrip presentation</td>
<td>15%</td>
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<tr>
<td>Final test: paper</td>
<td>20%</td>
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<tr>
<td>Class participation</td>
<td>15%</td>
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Course Requirements

Readings quizzes
There are 5 reading quizzes (worth up to 100 points each) to evaluate knowledge of concepts (and required readings). Quizzes will take 15 minutes to respond and can be multiple choice and/or short open questions. Each quiz is worth 5% of the final grade.

Midterm exam
There will be a Midterm exam (worth up to 100 points) testing all the contents of first half of the semester. This exam equals 15% of the final grade and will consist of 4 open-ended questions and one section of multiple choice questions.

Field Trip and Group Presentation
There will be one group presentation based on the work done during the field trip scheduled for week 3. This presentation should be between 10 and 15 minutes in duration. The topic will be chosen by the group from a list of options during week 3. Students will have time to look for further information that will help them elaborate a field guide (week 3). This guide will help narrow down the information to present to the class during week 4. Expositions will be worth up to 100 points and will have 5 minutes for peer questions, that are worth up to an additional 5 points to this grade.

Final Test: Paper
The final grade will be a paper based on one of the weekly topics from weeks 2-11 and related to at least two other class topics and/or the field trip. The paper will be turned in during week 14 by e-mail before 11:59 pm. The paper will be between 1500 and 3000 words length and is worth 20% of the final grade (1-100 points).

Attendance and Class Participation
Attendance will be taken within 15 minutes from scheduled class start and will be taken as a criterion for the “Attendance and Participation” grade. Tardiness will be noted, and two accumulative tardis will qualify as one truancy. Students with unexplained absences exceeding 10% of classes will result in a lower grade and those exceeding 20% will fail the course. Class participation will be graded according to constructive participation, taking on consideration analysis from situations presented on class, relation to weekly and other readings and contribution to class discussions keeping focus on the main topic.
Weekly Schedule

**Week 1**

Orientation Week
(Session 1) Introduction to class. Syllabus review, course requirements and basic terminology on Climate Change (climate variability, possibility, probability, confidence, baseline, detection and attribution, modeling, projection).

(Session 2) Oil dependency - Green House Gases (GHG) - Air pollution - Peak oil. Global warming - 2°C limit

(Session 3) Ice Melt at the Poles – Oceans pollution and acidification
Reading: NOA N/D. (Online)
**Reading quiz 1 session 4** (IPCC - Synthesis Report 2014, 43-53)
Water systems and human systems

(Session 4) River Basins-Agriculture – Urban and Rural livelihood – Health Risks

Risk and vulnerability
(Session 5) Risk management – Vulnerability
**Reading quiz 2 session 6** (Cai et al. 2015, 439-451)

(Session 6) Climate justice – Environmental defenders
Readings: FAQs in Environmental Justice Atlas
Watts 2018. (Online)
Navas et al. 2018 (1-12)
**Reading quiz 3 in session 8** (Navas et al 2018, 1-12)

**Week 2**

Negotiations and agreements
(Session 7) Rio Conference and UNFCCC history

(Session 8) COPs – Intended Nationally Determined Contributions (INDC) - ¿False solutions? Carbon bonds case.
(Shrestha 2017, 13-23)
Mitigation and adaptation

(Session 9) **Mid-Term**
Written exam, taking on consideration all lectures, readings and topics covered thus far.

(Session 11) Extractivism – Emission reduction – Mitigation
(Session 12) Adaptation and importance of a transdisciplinary approach
Reading quiz 4 in session 13 (Orlove 2002, 428-435)

Latin America and Peruvian context

Week 3

(Session 13) Specific data and predictions for Central and South America and the Andes region according to IPCC – Field Trip groups and topic selection.
Reading: IPCC 5th Report – Chapter 27, pp. 1506-1516

(Session 14) Andean ancient technologies (qochas, waruwarus, terraces)
Reading: Earls N/d (Online)
High mountain, glaciers and water systems -High mountain, tropical glaciers and permafrost

(Session 15) (Session 19) Guest lecturer related to FT location
Field trip observation guide preparation
Field trip on Weekend (Saturday 16, from 6 am. to 2 pm. - required).

(Session 16) River Basins in the Andes – Water systems
Reading quiz 5 in session 17 (Carey 2005, 122-132)

Amazon and biodiversity
(Session 17) Amazon – Deforestation – Land use and land-use change and forestry -Biodiversity – ecosystems – monoculture tree plantations instead of forests – threats – protections
(Nobre et. al. 2016, 10759-10768)

Coast and oceans
(Session 18) Desert areas – Fisheries - El Niño South Oscillation (ENSO) – Marine Torrents
(WMO 2014, 2-8)

Field Trip Group Presentation
(Session 19) Groups will share their insights on the specific topic they have chosen to observe during field trip.

Final exam: Paper delivered by e-mail until 23:59 on the day of the last class.
Course Materials

Readings


Nobre et al. “Land-use and climate change risks in the Amazon and the need of a novel sustainable development paradigm”. *Proceedings of the National Academy of Sciences* (Sep. 2016) 113 (39) 10759-10768. [Available at: www.pnas.org/content/113/39/10759.short]


Online Resources


Mountain Research Initiative. Advancing Global Change Research in Mountains. [Available at: www.mountainresearchinitiative.org/en/]

Smithsonian National Museum of Natural History. Ocean Portal. Ice Melt Poles. [Available at: ocean.si.edu/ocean-photos/ice-melt-poles]

