CIEE Cusco, Peru

Course name: Ecology and Sustainability
Course number: ECOL 2001 CUPE
Programs offering course: Peruvian Studies
Language of instruction: English
Semester Credits: 3
Contact Hours: 45
Term: Spring 2020

Course Description
The course explores the most important challenges Peru is facing in achieving a sustainable development path. Based on an interdisciplinary approach, the participants will learn the basics about the ecological zones of Peru, the biodiversity potential and historical and actual exploitation patterns of natural resources in Peru. The course will analyze how the country, with its high population growth, is trying to implement sustainable development schemes in different sectors (ie. tourism sector) and how ancient knowledge and technology is helping to adapt to environmental and social challenges.

Learning Objectives
By completing this course, students will be able to:

- Students describe the natural resources and their potential in Peru and how their exploitation is causing social conflicts and negative environmental impacts.
- Students will be able to explain sustainability concepts and compare them with real-life proposals for sustainable development in Peru.
- Students will identify and analyze adaptation strategies based on ancestral knowledge and technologies.
- Students will be able to describe the modern world economic system and its impact on Peruvian society and environment.

Course Prerequisites
None.

Methods of Instruction
Each lesson will start with a news article related to the lessons main topic followed by a short discussion. With presentations and other audiovisual tools, the lessons topic will be explained, while readings shall further strengthen the understanding. Some lectures will include guest speakers from local institutions and projects related to our topics. One field trip will permit us to get a closer practical approach to one of the main topics.

Assessment and Final Grade
Group presentation about ancient civilizations and sustainability 15%
Tests (5) 25%
Mid-term exam 10%
Field trip presentation 15%
Final test: paper 20%
Class participation 15%

Course Requirements

Introductory Group Presentation
An introductory group presentation about sustainability will be asked of the students in week 2. This presentation should be between 15 and 20 minutes in duration. Students will choose one of the case studies from the book of Jared Diamond and relate it to an actual example of unsustainability of our society. 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.

Tests
There are five 5 tests (worth up to 100 points each) to evaluate knowledge of concepts (and required readings). Tests will take 15 minutes to respond and can be multiple choice and/or short open questions. Each test is worth 5% of the final grade. Tests will take place on weeks 3, 4, 5, 9 and 10.

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 another group presentation based on the work done during the field trip scheduled for week 12. This presentation should be between 10 and 15 minutes in duration. The topic will be chosen by the group from a list of options on week 9. Students will have time to look for further information that will help them elaborate a field guide (week 12). This guide will help narrow down the information to present to the class on week 13. 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.

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**
- 1.1 Introduction to class
  - Syllabus review and course requirements
  - basic terminology about Sustainability

- 2.2 Sustainability in past and in present societies (1)
  - What are sustainable societies?
  - Can we measure and how do we measure sustainability?
  
  **Readings:**
  - Diamond, Collapse, 2005 and 2011
  - Shepard and Marris, 2017

**Week 2**

- 2.1 *Sustainability in past and in present societies (2)*
  3 of 6 group presentations about selected chapters (preferably examples from the American continent) of “Collapse” by Jared Diamond

- 2.2 *Sustainability in past and in present societies (3)*
  - 3 of 6 *group presentations* about selected chapters (preferably examples from the American continent) of “Collapse” by Jared Diamond

**Week 3**

- 3.1 *Knowing Peruvian geography and environment-
  Ecological zones of Peru*
  - Biodiversity in Peru
  
  **Readings:**
  - Wilson, 1999

- 3.2 *Biodiversity in Peru – how to protect and how to exploit it sustainably*
  - Biodiversity potential of Peru
  - Case studies of plants
  - Labels
  - Carbon credits
  - Communitary Forestry Management

  **Readings:**
**Week 4**

**4.1 Historical and actual exploitation patterns in comparison (1)**
- Amazon Rubber Era
- Palmoil and other agroexport products
- Case studies

*Readings:*
- Bennett et al., 2018.
- Tello Imaina et Fraser, 2016

**4.2 Historical and actual exploitation patterns in comparison (2)**
- Gas and oil exploitation operations
- Mining operations
- International World Trade and Economic System
- Case studies (Madre de Dios)

*Readings:*
- Shepard et al., 2015

**Test 2 in session 8 (Shepard et. al. 2015, Bennett et al, 2018))**

**Week 5**

**5.1 Social conflicts and environment**
- Map of Social Conflicts Peru
- Indigenous peoples rights
- Case studies

*Readings:*
- Merino Acuña, 2015
- Monge, 2016

**5.2 Ecological footprint and biocapacity of Peru**
- Introduction to the concept of ecological footprint
- Peru’s ecological footprint in comparison
- Earth Overshoot day

*Readings:*
- Collins et al., 2018
- Andean Community

**Test 3 in session 10 (Monge, 2016)**

**Week 6**

**6.1 Climate Change impact in Peru**
- Impacts on tropical glaciers
- Impacts on Amazon forest
- Impacts on marine ecosistems

*Readings:*
- Drenkhan et al., 2015
- Vuille et al., 2008

6.2 Adaptation techniques based on ancestral knowledge
- Water harvest
- Kunka kunka
- terraces
- ethnoclimatology
- seeds exchange and conservation

Readings:
- Christina R. Saylor, Dr. Kamal A. Alsharif & Hannah Torres, 2017.
- Orlove, 2002

Week 7  Mid-Term Exam
Written exam on basis of all lectures, readings and topics covered thus far.

Week 8  8.1 Population growth and migration to the cities - Population growth in the mayor peruvian cities in the 20st century and its impacts
- Urbanization politics
- Lima - hotspot of climate change and other environmental impacts
- Case studies of adaptation proyects in peruvian urban environments

Readings:
- James, Paul et al., 2015

8.2 Environmental challenges (1)
- Water Supply
- Water Demand
- Case study Camino Real, Cusco

Readings:
- Crawford, 2008

Week 9  9.1 Environmental challenges (2)
- Waste generation and waste treatment
- Case study Cusco: land fill Jaquira

Readings:
- Worldbank, 2013

9.2 Environmental challenges (3)
Change of Land use and deforestation
- Impacts of roads in the Amazon forest with case study Interoceanica Sur
- Impacts of monoculture plantations
- Development schemes and programmes by the local and national governments for the Amazon regions

**Readings**
- Redwood, 2012

**Test 4 in session 16 (James et al. 2015, Redwood, 2012)**

---

**Week 10**

**10.1 Impact of the Tourism sector in Peru**
- economic impacts
- ecologic impacts
- social impacts

**Readings:**
- World Travel Tourism Council, 2017
- Knight et al. 2016

10.2 Sustainable tourism
- Case studies: Inka Trail, Comunal Machiguenga Reserve

**Test 5 in session 18 (Knight et al. 2016)**

---

**Week 11**

**Field Trip Week**

11.1 *Guest lecturer related to FT location*

11.2 *Field trip observation guide preparation*

*Field trip on Weekend*

---

**Week 12**

**12.1 Working groups**
- selection of topics for final paper of each student
- start of preparations for presentation about field trip
- accompanied by specialists related to the topics chosen

12.2 Cooperation and solution searching
- National and international institutions and organizations working in Peru on course related topics
- Realizing sustainable projects in Peru: what to take into account about intercultural and institutional aspects
Week 13

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

13.2 Groups continue to present.

Week 14

Final exam: Paper delivered by e-mail until 23:59 on the day of the second session of the class.

Course Materials

Readings


Online Resources


Merino Acuña, Roger. The politics of extractive governance: Indigenous peoples and socio-environmental conflicts. The Extractive Industries and Society


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]


Shepard, Glenn H. Jr. and Marris, Emma. Lessons From a Forgotten Amazonian Slaughter. 2015. [Available at :https://www.sapiens.org/culture/amazon-hunting-conservation/]


Tello Imaina, Leonardo & Fraser, Barbara. Rubber Barons’ Abuses Live On in Memory and Myth. 2016. [Available at: https://www.sapiens.org/culture/rubber-era-myths/]

