
WATER RESOURCE MANAGEMENT & SUSTAINABLE PRACTICES

COURSE SYLLABUS | THE GREEN PROGRAM – PERU

SUMMER 2020 | DISTANCE LEARNING EDITION

PREPARED FOR: THE GREEN PROGRAM

PREPARED BY: UNIVERSIDAD SAN IGNACIO DE LOYOLA

I. COURSE DESCRIPTION

Growing demands on resources and increasing management challenges are driving communities throughout the world to become more sustainable. Climate change concerns are driving the desire for carbon dioxide reduction, energy conservation, and reduction in urban heat. Changes in flooding and drought patterns are pushing the communities to assess vulnerabilities and take action to become more resilient. Water scarcity and water quality concerns caused by changing population and land use pressures are forcing communities to think beyond traditional water management approaches, while at the same time apply indigenous knowledge on the process.

The high cost of aging infrastructure maintenance and replacement has many communities seeking alternatives. Increasing concern over energy cost and energy security and reliability has increased the public pressure for sustainability. Additionally, the increase in public preference for sustainable agriculture is leading to revised field practices and more environmentally friendly technology.

II. GENERAL COMPETENCIES

The objective of this course, beyond providing a basic introduction to water resource management and sustainable development concepts, is to bridge the gap between textbook learning and real-time field experience by taking students behind the scenes of the world's leading renewable energy and sustainability initiatives.

III. TEACHING METHODS

This course provides knowledge of the theory and practice of this concept, investigating urban and rural water issues from the environmental management perspective by using an interdisciplinary approach. Topics aim to stimulate a critical examination of historical and conceptual antecedents; provide experience in the complex challenges of sustainable use of renewable energy focusing on water resource management. It will review the ecosystem

approach to understanding water as a resource and how science, policy, decision-making, ethics, and corporate approaches play out in the management of water in the urban setting. Peru will be examined through case studies.

The methodology used includes a combination of tools in order to facilitate the enhancements of knowledge, promote debate in class and increase students' ability to formulate proposals, such as presentation-debate classes and case studies.

The structure of each topic includes a compulsory reading, followed by oral presentations by the students which will lead to class debates, group works, and other practical activities. Field Trips are essential to the course, which are programmed on a daily basis. All these activities will be complemented by lectures.

Registered students are provided online content on USIL's Online Portal in the form of a seven-part Lecture Series. This series is sequential and modularized. Each module contains:

- Specialized learning outcomes
- Seven virtual lectures distributed in 10-days (recorded for future reference)
- Associated lecture slides
- Reading material
- A short opinion-based exam

Each lecture serves as a platform for accelerated learning. After participating in the lecture and studying the lecture slides, students are expected to be able to read and understand the main points discussed in related scientific literature. Accompanying each lecture are a short list of articles detailing present-day developments on the respective subject matter. Students are then examined on their comprehension of this material.

IV. LECTURE SERIES

A. INTRODUCTION (01-hour lecture):

Monday, August 10, 2020 @ 5:00-6:00 PM EDT / 4:00-5:00 PM Peru Time

This lecture will outline the contents and learning outcomes of the GREEN Program.

Lecture Content

- Introduction to the course
- Review Syllabus
- Day-by-Day Description
- Course Planning and Deadlines

B. CULTURE & CONTEMPORARY SOCIETY (02-hours lecture)

Tuesday, August 11, 2020 @ 5:00-7:00 PM EDT / 4:00-6:00 PM Peru Time

This course allows students to explore and understand Peruvian society today as the result of a series of historical, anthropological and sociological processes and transformations.

This fascinating journey through Peru's past and present begins with the historical background (pre-Inca and Inca cultures, European colonization and independence), providing a pathway to a better understanding of current Peruvian society.

Lecture Content

- Peruvian History
- Peruvian Society
- Religion
- Governance in Peru
- Gastronomy

C. PERUVIAN GEOGRAPHY AND DIVERSITY (02-hours lecture)

Wednesday, August 12, 2020 @ 5:00-7:00 PM EDT / 4:00-6:00 PM Peru Time

This lecture focuses on understanding why Peru has such a high diversity of ecosystems and how this impacts economic activities.

Lecture Content

- Peruvian Geography
 - ✓ The Three Geographical Regions
 - ✓ The Eight Natural Regions
- Main Economic Activities

D. WATER RESOURCES (INCA TIMES VS MODERN TIMES) (02-hours lecture)

Thursday, August 13, 2020 @ 5:00-7:00 PM EDT / 4:00-6:00 PM Peru Time

With students knowledgeable about Peruvian Diversity, this lecture focuses on distribution and use of water resources. The objective is to underscore the evolution of technology in the use of water from ancient times to today, understanding the issues and solutions as part of water management.

Lecture Content

- Peruvian Hydrography
 - ✓ Hydrological Cycle
 - ✓ Watershed structure and morphological characteristics
 - ✓ Water resources in Agriculture
- Water Consumption
- Water issues in Peru - Urban and Rural realities
- Social background
- Current Peruvian Policy
- Water Management technology
- Pre-Columbian Technology compared to modern times

E. CLIMATE CHANGE IN PERU (02-hours lecture)

Friday, August 14, 2020 @ 5:00-7:00 PM EDT / 4:00-6:00 PM Peru Time

In this module, students are presented with the main causes and consequences of climate change in Peru, learning about this issue and what the different adaptive mechanisms used by the Peruvian society and the importance of using energy properly and finding new renewable sources.

Lecture Content

- Basic Concepts
- Causes and Consequences
- El Niño–Southern Oscillation (ENSO)
- Impact on urban and rural areas of Peru
- Impact on water resources in agriculture
- The feasibility of using Renewable Energy
- Hydrological Energy
- Peru's Hydroelectric Production

F. Sustainable Development (04-hours lecture)

Monday, August 17, 2020 @ 5:00-7:00 PM EDT / 4:00-6:00 PM Peru Time

Tuesday, August 18, 2020 @ 5:00-7:00 PM EDT / 4:00-6:00 PM Peru Time

These two lectures provide knowledge of the theory and practice of Sustainable development based on the premise that human well-being should advance without irreparable harm to ecosystems and the vital services they provide, without depleting essential resources, and without posing risks to future generations. This section aims to stimulate a critical examination and help students understand the present and imagine alternative futures facing complex issues of development as they relate to the interactions of the natural, economic and social systems

Lecture Content

- The Price of Human Development
- Sustainability as a Concept
- The Three Pillars of Sustainability
- Indicators and Challenges
- Principles and Sustainability Goals
- The Whole System Approach

G. Project Proposal (02-hours lecture)

Wednesday, August 19, 2020 @ 5:00-7:00 PM EDT / 4:00-6:00 PM Peru Time

This lecture will focus on the development of proposals for a Capstone Project as the final output of the course.

Lecture Content

Students will need to create a short, five-page summary detailing a solution to a modern water sustainability problem. A full feasibility study is not required here. Instead, each report will approach a specific water related niche, detail a proposed sustainable solution with reference to modern scientific literature, and will be hypothetical in nature. Students should consider the social, environmental, technical and economic challenges their proposal might present.

Each report should answer the following questions:

- WHAT problem do you want to address?
- HOW could it be fixed?
- WHY are you interested in it?
- Scale of the Project?
- Sustainable Development Goals approached?

All sources used must be reputable and may include peer-reviewed journal articles, conference papers, articles or papers from government agencies sources such as the MINEM, MINSA, OEFA or reputable NGO sources. Sources should be referenced using APA referencing style. Consult the APA style guide if you have any questions regarding formatting.

We invite students to reach out during the process of putting together the proposals. The open office hours are mentioned in the Schedule and Office Hours section below.

This proposal will be the basis for development of a Capstone Project during the on-site portion of The GREEN Program.

V. SCHEDULE AND OFFICE HOURS

Students are expected to attend the Virtual Lecture Series via a Video Conference Software as scheduled which will be distributed in 10 days as of the start date of their GREEN program. The start date for their respective programs will be announced by their GREEN coordinator.

The Video Conference Software link and login information will be listed under the Syllabus in The GREEN Program course, GREEN Peru, on the USIL online learning management system.

VI. GRADING AND EVALUATION

Evaluation will be ongoing and will take in consideration the competencies and in their use by each student. Readings, tasks, class work and written reports are evaluated.

- ✓ 20% - Reading sessions and discussions
- ✓ 10% - Forums for debate
- ✓ 10% - Participation in Class
- ✓ 10% - Quiz (Opinion based)
- ✓ 50% Capstone Project