



CIEE Monteverde, Costa Rica

Course name:	Humans in the Tropics
Course number:	ECOL 3003 MVSU
Programs offering course:	Tropical Ecology and Conservation
Language of instruction:	English
U.S. Semester Credits:	2 semester credits
Contact Hours:	60 hours
Term:	Summer 2019

Course description

In the course Humans in the Tropics, we focus on the environmental impacts of major, contemporary trends or activities involved in the transformation of tropical landscapes. These include urbanization, food production, energy generation, and tourism. We explore them in the developing nation Costa Rica, internationally renowned for its environmental protection, and therefore may represent a “best case scenario”. Students will learn about innovative ways to mitigate or minimize human footprints on tropical ecosystems and biodiversity but will also learn about the complexity and challenges of environmental protection faced by developing nations. Through lectures, readings, field excursions, interviews, discussions, and essay-writing, we will explore the following:

- a) The environmental impacts of urbanization, food production, energy generation, and tourism for Costa Rica
- b) Principal drivers behind the trends
- c) Initiatives by the private and public sectors to eliminate or mitigate human impact on ecosystems.

Learning Objectives

In the completion of this course, students will:

1. Have firsthand experiences with the principal forms of anthropogenic land conversion, ecosystem transformation, and biodiversity management as practiced in the Tropics (including urbanization, agriculture, energy production, forest management and protection).
2. Understand how human economic activities, population growth, and mechanisms of resource extraction and use drive land conversion and ecosystem transformation.
3. Have an enhanced understanding of how globalization (including global commerce through trade in agriculture, international tourism) drives anthropogenic impacts on tropical ecosystems and climate systems.
4. Have a greater appreciation of the sociological and cultural dimensions of human impacts on the environment.
5. Critique efforts by individuals, organizations (national and international institutions; governmental and nongovernmental), and different sectors of society aimed at mitigating human impacts on the tropics.
6. Produce written work (essays) that offers new ideas on how to mitigate better the impacts of humans on tropical biodiversity.
7. Generate plans for how they, as global citizens, will take responsibility and action for the protection of the environment, and especially the tropics.



Course Prerequisites None.

Methods of Instruction

Experiential learning will be encouraged through the combination of excursions, field activities, and interviews with key stakeholders. The course consists of four 8-hour sessions. Prior to the session, students will have read relevant literature (peer-reviewed publications and grey literature). During the session, students will attend an introductory lecture on the day's theme. They will visit one or more sites, conduct interviews or hold conversations with stakeholders, professionals, experts on the topics, or other resource people. The students then engage in discussions, debates, and reflection. Collectively, these learning experiences will be drawn upon when students individually write essays on each of the four major themes: urbanization, energy production, tourism, and food production. For each topic, there will be a quiz, which the students take after the session is over.

Assessment and Final Grade

1. Discussion and class participation:	10%
2. Quizzes (4)	40%
3. Essays (4)	40%
4. Final comprehensive essay	10%

Course Requirements

Discussion and class participation (10%)

Students are expected to attend all lectures and activities, hand in all assignments, as well as ask questions and participate in discussions and field visits. Only students who are active participants and fully engaged with the subject will receive full credit.

Quizzes (40%)

There will be a total of 4 quizzes, with a format that includes short answers (a few words) and long answers (a few sentences or a paragraph). The quizzes will cover content and concepts from material covered in lectures, readings, and from field visits.

Essays (40%)

Students will write a total of four essays, assigned at the end of each of the four classes. The essay will address a question related to the specific theme of the day and be expressed as an opinion, justified with facts and figures drawn from lectures, readings, and field visits for the specific theme.

Final, comprehensive essay (10%)

Students will write a final, comprehensive essay on a broad topic that is assigned on the final field day. The essay will address a question related to a broad and overarching theme for the course Humans in the Tropics. The essay will be written as an opinion piece, justified with facts and figures drawn from lectures, readings, and field visits.

Weekly Schedule

Week 1



Lectures

Lecture 1: Environmental Impacts of Population, Consumption, and Urbanization: We will review the environmental impacts of population growth, consumption, and economic wealth, giving emphasis to developing countries.

Activity

Ecological Footprints: Students estimate their own ecological footprints, as well as those of urban residents in Costa Rica, to gain insight into how impacts vary across different demographic groups. Students explore the capital city for firsthand experiences with urbanization in Latin America.

Readings

Galli *et al.* 2014. Ecological footprint: Implications for biodiversity.

Nekola *et al.* 2013. The Malthusian-Darwinian dynamic and the trajectory of civilization.

Evaluations

Discussion and class participation

Week 2

Evaluations

Quiz 1 due

Essay 1 due

Weeks 3

Lectures

Lecture 2: Impacts of Food Production on the Environment and Beyond: The food we eat impacts the environment and all individuals who are invested in biodiversity and ecosystem conservation should understand them. Meat, dairy, and egg production systems are sources of employment and supply animal protein for human diets. But they are associated with negative impacts on the environment, public health, and animal welfare. The vegetarian part of our diet is not exempt of these negative impacts. Coffee and pineapple are important sources of revenue for Costa Rica but leave their own ecological footprints.

Activity

Visit livestock, coffee, and other farms to learn about their impacts from the producers themselves, but also hear about innovative practices to increase agricultural sustainability.

Readings

Laurance *et al.* 2013. Agricultural expansion and its impacts on tropical nature.

Pollan. 2007. *The Omnivore's Dilemma: the search for a perfect meal in a fast-food world.*

Evaluations

Discussion and class participation

Week 4

Evaluations

Quiz 2 due

Essay 2 due

Week 5



Lectures

Lecture 3: Impact of Energy Production: Energy has become a crucial element for sustainable development and wellbeing of any country in modern era. In Costa Rica, renewable energies are important in energy security, they supply alternatives to fossil fuels, and can lower greenhouse gas emissions. But renewables also come with a host of environmental impacts. This lectures highlights the principal energy sources used in Costa Rica (hydropower, wind, geothermal and solar),and their impacts on tropical ecosystems.

Activities

Visit northwestern Costa Rica where you will see wind and hydropower production sites. It will also allow views of the volcanic ranges where the nation's geothermal energy is sourced.

Readings

Anderson *et al.* 2006. Transforming tropical rivers: an environmental perspective on hydropower development in Costa Rica.

Evaluations

Discussion and class participation

Week 6

Evaluations

Quiz 3 due
Essay 3 due

Week 7

Lectures

Lecture 4: Impacts of Tourism on Conservation of Biodiversity: Tourism is one of the world's largest industries and it is still expanding. It can have different impacts on conservation. Done carelessly, it can alter ecosystems, but properly managed it can incentivize the protection of forest and natural resources. In this lecture, the pro's and con's of tourism for conservation of Costa Rica's ecosystems and biodiversity are presented.

Activity

You will visit different protected areas and initiatives in the Monteverde region, such as the Monteverde Cloud Forest Preserve. You will have conversations and interviews with long-term residents to learn from locals what works for conservation, and what does not work, in the business of tourism.

Readings

Blackman & Rivera. 2013. Does Tourism Eco-Certification Pay? Costa Rica's Blue Flag Program.

Self *et al.* 2010. Marketing Tourism in the Galapagos Islands: Ecotourism or Greenwashing?

Evaluations

Discussion and class participation

Week 8

Evaluations

Quiz 4 due
Essay 4 due



Course Materials

Required readings

The following assigned articles should be read prior to the start of class. During the class, additional readings will be assigned for discussion.

- Anderson, E., Pringle, C. & Rojas, M. (2006). Transforming tropical rivers: an environmental perspective on hydropower development in Costa Rica. *Aquatic Conserv: Mar. Freshw. Ecosyst.*, 16, 679–693
- Blackman, A & Rivera, J. (2013). Does Tourism Eco-Certification Pay? Costa Rica's Blue Flag Program. *World Development*, 58, 41-52
- Galli, A., Wackernagel, M., Iha, K. & Lazarus, E. (2014). Ecological footprint: Implications for biodiversity. *Biological Conservation*, 173, 121-132
- Laurance, W., Sayer, F. & Cassman, K. (2013). Agricultural expansion and its impacts on tropical nature. *Trends in Ecology and Evolution*, 29, 107-116
- Nekola, J., Allen, C., Brown, J. *et al.* (2013). The Malthusian-Darwinian dynamic and the trajectory of civilization. *Trends in Ecology and Evolution*, 28, 127- 130
- Pollan, M. (2007). *The Omnivore's Dilemma: the search for a perfect meal in a fast-food world.* Bloomsbury Publishing.
- Self, R., Self, D., & Bell-Haynes, J. (2010). Marketing Tourism in the Galapagos Islands: Ecotourism or Greenwashing? *International Business & Economics Research Journal*, 9, 111 -126

Additional readings

Here is a selection of readings that can be valuable for essays and further insight:

- Bush, M. B. 2000. *Ecology of a Changing Planet.* 2nd ed. Prentice-Hall, New Jersey.
- Daily, G. C. & Ellison, K. (2002). *The new economy of nature. The quest to make conservation profitable.* Island Press, Washington D. C.
- Evans, S. (1999). *The green republic. A conservation history of Costa Rica.* University of Texas Press.
- Farley, J. (2012). Ecosystem services: The economics debate. *Ecosystem Services*, 40–49.
- Halweil, B. (2004). *Eat Here: Reclaiming homegrown pleasures in a global supermarket.* W.W. Norton & Company, NY.
- Imhoff, D. (2010). *The CAFO Reader: The tragedy of industrial animal factories.* Watershed Media, University of California Press.
- Lankao, P. (2007). Are we missing the point? Particularities of urbanization, sustainability and carbon emissions in Latin American cities. *Environment & Urbanization: International Institute for Environment and Development (IIED)*, 19, 159–175.
- Phalan, B., Bertzky, M., Butchart, S. H. M., Donald, P. F., Scharlemann, J. P. W., *et al.* 2013. Crop Expansion and Conservation Priorities in Tropical Countries. *PLoS ONE*, 8, e51759



Grading Rubric

Directions: Please use this rubric as a guide when writing your essay.

Content	Advanced	Proficient	Basic	Minimal	Undocumented
	5 points	4 points	3 points	2 points	1 point
Purpose statement: Does it answer the prompt?	The statement is complete, clear, logical, consistent, elaborated, and skillfully designed.	The statement does not fulfill completely one or two of the requirements.	The statement does not fulfill completely three of the requirements.	The statement does not fulfill completely four of the requirements	The statement is not answering the prompt, it is not defined or it is incoherent and unrealistic.
Does it contain the proper background information?	Well-developed introduction, engages the reader, and creates interest. Contains detailed background information.	Introduction creates interest. Sufficient background information is provided.	Introduction adequately explains the background, but may lack detail.	Background details are a random collection of information	There is no background information or it is unclear and not related to the topic.
Does it include key terms?	All key terms are established and well defined and they are used with confidence and sophistication.	Not all key terms were clear, but the ones that were, were well defined. Or they were not explicitly defined.	Key terms are established but have not been consistently used or were not clearly defined.	Key terms are unclear.	Key terms are not established or they are inappropriate.
Does it support the main ideas with illustrative examples?	The essay has information that is clearly related to the main topic. Details are persuasive, interesting, and insightful; they contextualize and inform the argument. Examples from fieldtrips or personal experience are given. When necessary, evidence countering the main argument is also effectively addressed.	The essay has enough information that is clearly related to the main topic. Good argument with sound evidence. Examples from personal experience are given.	The essay has information related to the main topic, but it does not support arguments adequately or completely.	The essay has inappropriate, insufficient or unclear details to support the main statement.	The essay has no details to support the main statement.
Does it have a proper use of sources and documentation ?	Went above and beyond to research information; used sources (at least two new references) to support, extend, and inform, but did not substitute the writer's own development of	One of the requirements was not fully completed. For example, not properly cited in the text.	Besides the material provided, only one new reference was used and/or all sources were not cited properly.	Used the material provided in an acceptable manner, but did not consult any additional resources. Sources are generally inappropriately cited or not cited.	Did not utilize resources effectively; did little or no fact gathering on the topic. If sources were used, they were not cited.

	idea. Sources are cited appropriately in the text and in the References. Use citation guidelines from Biotropica or Ecology.				
Does it have a good conclusion and gives insightful recommendations?	The conclusion answers all questions with insight. It continues to stimulate the reader's thinking and may suggest questions for further research. Original and insightful recommendations.	The conclusion answers all questions satisfactorily and may suggest questions for further research, recommendations.	The conclusion answers most questions, but may be unclear or incomplete with vague recommendations to improvement.	The conclusion answers most questions, but may be unclear or incomplete. No suggestion to improvement.	The essay ends without concluding or giving any recommendations to improvement.
Voice, style, and audience awareness	The sense of audience, the voice and the style are fulfilling beyond expectations. Sentences are mature and parallel. The essay is written in a style and tone that is appropriate to the audience, topic, and purpose. The writer seems to be speaking in an authentic voice. Paper is enjoyable and interesting.	One of the following characteristics does not apply: Sentences are mature and parallel. The essay is written in a style and tone appropriate to the audience, topic and purpose. The writer seems to be speaking in an authentic voice.	Two of the following characteristics do not apply: Sentences are mature and parallel. The essay is written in a style and tone appropriate to the audience, topic and purpose. The writer seems to be speaking in an authentic voice.	The writer is not aware of the audience's needs. The essay is confusing. The writer is unable to sustain an appropriate voice.	The statement is very difficult to read because of its style and voice. It is not addressed to the proper audience.
Originality, clarity, and organization of the statement	Statement was clear, extremely clever and presented with originality. The essay is organized, well structured, and exhibits a clear pattern of development (chronological order, spatial order, comparison/contrast, etc.). Transitions help the paper flow smoothly.	Statement is somewhat original, clever at times, and fairly clear. Transitions were mostly appropriate, but sequence of ideas could be improved.	Predictable. Statement is not creative enough. Ideas are vague with some signs of logical organization. Transitions were not always smooth.	Ideas are unclear. There are few original touches to enhance the project, but did not incorporate them throughout. Format was difficult to follow and transitions of ideas were abrupt.	Essay is not clear, original nor organized.



Syntax, Grammar, and Spelling	Sentences are well constructed and vary in structure and length. The author makes no errors in grammar, mechanics, or spelling.	Most sentences are well constructed and vary in structure and length. The author makes a few errors in grammar, mechanics, and/or spelling, but they do not interfere with the understanding.	Most sentences are poorly constructed. The author makes several errors in grammar, mechanics, and/or spelling, but they do not interfere with the understanding.	Most sentences are well constructed, but they have a similar structure and/or length. The author makes several errors in grammar, mechanics, and/or spelling that interfere with the understanding.	Sentences sound awkward. They are distractingly repetitive or difficult to understand. The author makes numerous errors in grammar, mechanics, and/or spelling that interfere with the understanding.
	Submitted on due date.		Within 24 hours after deadline.		Submitted more than 24 hours after deadline.