



CIEE Monteverde, Costa Rica

Course name:	Humans in the Tropics
Course number:	ECOL 3003 MVCR
Programs offering course:	Costa Rica: Monteverde - Tropical Ecology and Conservation
Language of instruction:	English
U.S. Semester Credits:	2 semester credits
Contact Hours:	60 hours
Term:	Spring 2020

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:

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

Learning Objectives

Upon completion of the course the students will:

1. Have enhanced understanding of how people use different ecosystems in the Tropics;
2. Be able to contextualize this behavior into larger systems intersecting with economics, sociology, anthropology and environmental science.
3. Will understand how environmental problems are generated through food production, settlement, commerce and industry.
4. Explore innovative approaches that are trying to reduce, mitigate or compensate this impact and approach sustainability.
5. Propose new approaches or solutions to the pressing environmental issues caused by humans

Learning Goals

Upon completion of the course, students will be able to:

1. Recount, from firsthand experiences and observations, the conversion of ecosystems by different productive activities of humans.
2. Connect how these activities have affected, and continue to affect, the natural environment.



3. Give concrete examples of how institutional changes are trying to reverse negative human impacts on the natural environment.
4. Explain examples of changes at the personal choice level that can help to reverse negative human impacts on the natural environment.

Course Prerequisites

None.

Methods of Instruction

Experiential learning will be encouraged through the combination of excursions, field activities, and guest talks with key stakeholders. Students will attend lectures, read relevant literature (peer-reviewed publications and grey literature), and participate in group discussions on topics related to the theme. Collectively, these learning experiences will be drawn upon when students individually write essays (position papers) on each of the five major themes: urbanization, energy production, tourism, ecosystem services and food production.

Assessment and Final Grade

Participation	10%
Quizzes (5 total)	40%
Essays (5 total)	30%
Oral presentation	10%
Final exam	10%

Course Requirements

Participation: 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: There will be a total of five 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, guest talks and from field visits.

Essays: Students will write a total of five essays, assigned at the end of each of the five 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. The specific requirements are listed in the Grading Rubric at the end of this document.

Oral presentation: Students will work in small groups (2-3) to research the course themes of urbanization, tourism, energy, forestry, and environmental conservation in Costa Rica. The group will focus on specific challenges that emerge at the intersection of the themes. (For instance, the challenge of providing renewable energy but at the expense of exploiting geothermal power in national parks.) They will make a presentation (oral) of the conflict/challenge and then propose realistic ways to go forward



in a sustainable way.

Final exam: 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.

Course Structure

Five full-day sessions will begin with an introductory lecture on the theme. The group then visits one or more sites, conducts interviews or holds conversations with stakeholders, professionals, experts on the topics, or other resource people. The students then engage in discussions, debates, and reflection. Students will be assigned a quiz and an essay topic at the end of the day on the specific theme of the day.

Week 1

Orientation; classes on location in San Jose

Topic: Impact of Population, Consumption, and Urbanization:

Lecture: Environmental impacts of population growth, consumption, and economic wealth; emphasis to developing countries.

Activities:

1. Because this will be your first encounter with Costa Rica, you will explore the capital city and experience aspects of urbanization directly for a concluding discussion.
2. You will estimate your own ecological footprints and conduct surveys to estimate the ecological footprints of urban residents in Costa Rica to gain insight into how impacts vary across different demographic groups.
3. Learn about the Urban Challenges in Costa Rica from a local organization working in Urban Sustainability.

Readings:

Fang *et al.* (2018)

Galli *et al.* (2014)

Assessments:

Essay 1

Quiz 1

Week 2

No classes for ECOL 3003 MVCR

Week 3

Topic: Impact of Food Production:

Lecture: how food production impacts people and the environment. The food we eat has impacts on the environment and all individuals 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.

Activities:

1. You will visit livestock and coffee farms and try their products.
2. Learn about the life cycle of two productions (coffee and livestock)
3. Learn about innovative practices to increase sustainability.

Readings:

Laurance *et al.* (2013)

Tayleur *et al.* (2017)

Assessments:

Essay 2

Quiz 2

Week 4 No class for ECOL 3003 MVCR

Week 5 Topic: Impact of Energy Production

Lecture: How (even renewable) energy impacts the environment. 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.

Activities:

1. You will learn about renewable energies currently used in Costa Rica
2. You will take a day trip to learn about the sustainability of the main source of energy production in this country (hydropower) and new alternatives such as wind.
3. Learn about the Government de-carbonization goal through a local organization.

Week 6 No class for ECOL 3003 MVCR

Week 7 Topic: How to interpret Costa Rica's "green energy"

Readings:

Anderson *et al.* (2006)

Media:

"Damnation"



Assessments:

Essay 3

Quiz 3

Week 8

No class for ECOL 3003 MVCR

Weeks 9

Topic: Ecosystem Services and the Impact of Forestry Production: Tropical forests have been deforested for different human activities since centuries ago. View, from an anthropocentric way, it is a problem, because our health and wellbeing depends upon the services provided by ecosystems and their components. We will learn about different ecosystem services (direct and indirect) and focus on the forestry production and learn about new alternatives to decrease tropical deforestation.

Activities:

1. Visit different initiatives to reduce pressure of deforestation (such as plantations and Reduce Impact logging forest) in Costa Rica.
2. Watch documentary “They Killed Sister Dorothy”

Readings:

Edwards *et al.* (2014)

Media:

“They killed Sister Dorothy”

Assessments:

Essay 4

Quiz 4

Weeks 10

Topic: Impact of Tourism: 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.

Activities:

1. You will visit different protected areas and initiatives in the Monteverde region, such as the Monteverde Cloud Forest Preserve and the Children Eternal Rainforest
2. You will watch “Cracking the Golden Egg” or “Gringo Trails”

Readings:

WRI 2000

Self *et al.* 2010

Davies, J. 2007

Gora, A. 2013



Media:

“Cracking the Golden Egg”
“Gringo Trails”

Assessments:

Essay 5
Quiz 5

Week 11 No class for ECOL 3003 MVCR
Week 12 Topic: Review of materials
Week 13 Topic: Challenges at the intersections

Assessment:

Oral Presentation

Weeks 14 Assessment:
Final Essay

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
- Davies, J. 2007. Evolution of protected area conservation in Monteverde, Costa Rica. Thesis presented to the graduated school of the University of Florida for the degree of Master of Science. 68 p
- Edwards, D., Tobias, J., Sheil, D., Meijaard, E., & Laurance, W. 2014. Maintaining ecosystem function and services in logged tropical forests. *Trends in Ecology & Evolution* 29: 511-520
- Fang, K., Q. Zhang, H. Yu, Y. Wang, L. Dong and L. Shi. 2018. Sustainability of the use of natural capital in a city: Measuring the size and depth of urban ecological and water footprints. *Science of the Total Environment.* 631-632: 476-484
- Galli, A., Wackernagel, M., Iha, K. & Lazarus, E. 2014. Ecological footprint: Implications for biodiversity. *Biological Conservation* 173: 121-132
- Gora, A. 2013, "Sustainable Tourism Norm Transfer and the Case of Monteverde, Costa Rica" Senior Theses. Lake Forest College. 138 p.
- Laurance, W., Sayer, F. & Cassman, K. 2013. Agricultural expansion and its impacts on tropical nature. *Trends in Ecology and Evolution* 29: 107-116
- Pirard, R., Dal Secco, L. & Warman, R. 2016. Do timber plantations contribute to forest conservation? *Environmental Science and Policy* 57: 122-130.
- 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
- Tayleur, C., A. Balmford, G. Buchanan, S. Butchart, H. Ducharme, R.Green, J.Milder, F. Sanderson, D. Thomas, J.Vickery & B. Phalan. 2017. Global Coverage of Agricultural



Sustainability Standards, and Their Role in Conserving Biodiversity. *Conservation Letters*. 10(5): 610–618

World Resource Institute. 2000. *A Guide to World Resources 2000–2001: People and Ecosystems: The Fraying Web of Life*. 1 Edition. Washington. 276 p.

Media Resources

Center for Responsible Tourism (Producers). (2010). *Cracking the Golden Egg* [Motion Picture]. United States: LocalFilms

Vail, P. (Director/Producer) & Estrella, M. (Producer). (2013) *Gringo Trails* [Motion Picture]. United States: Icarus Films

Just Media (Producers). (2008). *They Killed Sister Dorothy* (Documentary). Brazil

Felt Soul Media. (2014). *Damnation*. United States

Essay Grading Rubric

Directions: Your essay will be graded based on this rubric. Therefore, use this rubric as a guide when writing your essay and check it again before you submit it.

Criteria	Advanced	Proficient	Basic	Minimal	Undocumented	
	5 points	4 points	3 points	2 points	1 point	0 points
Content	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	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.

		informatio n.				
	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	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.

		addressed				
	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 idea. Sources are cited appropriately in the text and in the References. Use citation guidelines from Biotropica or Ecology.	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.
	Does it have a good conclusion and gives insightful recommendations?	The conclusion answers all questions with insight. It continues to stimulate	The conclusion answers all questions satisfactorily and may suggest questions	The conclusion answers most questions, but may be unclear or incomplete with	The conclusion answers most questions, but may be unclear or incomplete. No	The essay ends without concluding or giving any recommendations to improve

		<p>the reader's thinking and may suggest questions for further research. Original and insightful recommendations.</p>	<p>for further research, recommendations.</p>	<p>vague recommendations to improvement.</p>	<p>suggestion to improvement.</p>	<p>ent.</p>
<p>Quality of Writing</p>	<p>Voice, style, and audience awareness</p>	<p>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</p>	<p>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.</p>	<p>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.</p>	<p>The writer is not aware of the audience's needs. The essay is confusing. The writer is unable to sustain an appropriate voice.</p>	<p>The statement is very difficult to read because of its style and voice. It is not addressed to the proper audience.</p>

		interesting				
	Originality, clarity, and organization of the statement	Statement was clear, extremely clever and presented with originality. The essay is organized and 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.
	Mechanics, Grammar, and Spelling	All 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	Most sentences are poorly constructed. The author makes several errors in grammar, mechanics, and/or spelling, but they do not interfere	Most sentences are well constructed, but they have a similar structure and/or length. The author makes several errors in grammar,	Sentences sound awkward. They are distractingly repetitive or difficult to understand. The author makes numerous errors in grammar,



			s, and/or spelling, but they do not interfere with the understanding.	with the understanding.	mechanics, and/or spelling that interfere with the understanding.	mechanics, and/or spelling that interfere with the understanding.
Timeline	Submitted on due date.		Submitted no more than 24 after deadline.		Submitted more than 24 after deadline.	