



UNIVERSIDAD SAN FRANCISCO DE QUITO
SCHOOL: CIENCIAS BIOLÓGICAS Y AMBIENTALES
COURSE: ECL 0324E 1 – MARINE ECOSYSTEM BASED MANAGEMENT
Semester: 201910 - First Semester 2019/2020 - NRC: 3726
Schedule: MTWTHF 09:00 - 11:50 (Aula 2 - GAIAS)

PROFESSOR INFORMATION:

Name: DIANA PAZMIÑO

E-mail: dapazmino@usfq.edu.ec

Office:

Office hours: please send me an email to set up an appointment

COURSE INFORMATION:

Credits: 4

Prerequisites: None

COURSE DESCRIPTION:

This class offers students the opportunity to learn about the complex issues around the protection of the marine realm. I offer a multidisciplinary approach to deal with the complexity of managing humans by understanding their actions and impacts and how these impacts interact and affect the natural world and the ecosystem services we get from the ocean.

We will explore the most important human threats that affect the Galapagos marine realm. We will take into account the connections and interactions among different impacts and factors (social, economic, natural, land vs. sea) that affect the marine realm.

The ultimate goal of this class will be to understand how we can secure the long-term sustainable use of ecosystem services and goods provided by nature, as well as provide an insight on genetics/genomics as a conservation tool to address threats affecting the Galapagos. We will explore what is working in other parts of the world to create ecosystems that are resistant and resilient to human and natural perturbations.

SPECIFIC COURSE LEARNING OUTCOMES:

Number	Learning Outcome	Level
1	Learn the basic and advance principles that are the cornerstone of ecosystem based management (EBM)	Advanced
2	Understand what are the most pressing issues affecting the Galapagos Marine Environment	Intermediate
3	Learn different tools (i.e. GIS) to design an spatial explicit approach using EBM principles, and applied	Advanced



	tools for conservation (genetics/genomics)	
4	Discuss the most recent literature about EBM in the format of a graduate advance course	Advanced

COURSE CONTENT:

The class will include lectures about the principles and the implementation of EBM, as well as issues that affect marine systems in Galapagos and around the world. With this purpose we will discuss the most recent literature about EBM and the problems that affect the Galapagos Marine Environment and other marine systems. We will also learn from the local actors (NGOs, stakeholders) about their perceptions and the strategies that local authorities are using to protect the Galapagos. We will also have debates with the presence of stakeholders. At the end of the class students will produce a spatial explicit approach that integrates the principles of EBM to manage Naufragio Bay around San Cristobal Island.

METHODOLOGY FOR THE INTEGRATION OF THEORETICAL AND PRACTICAL CONTENT

The teaching methodologies used to teach USFQ courses, following the philosophy of Liberal Arts, foster dialogue and facilitate the construction of knowledge through the continuous exchange of ideas and experiences between professors and students. It is expected that in all courses the theoretical concepts will be linked to the professional practice and work contexts where students will perform in the future, with the intent to integrate activities and simulations of a diverse nature that promote the understanding of practical and realistic contexts.

COURSE EVALUATION:

Category	Number	Percentage of the final grade
1. Class participation	1	15
2. Debates	3	20
3. Paper	1	15
4. Final Exam (15 points)	1	15
5. Quizzes	3	15
6. Discussion of papers	10	10
7. Homework (3 assignments)	3	10

GRADING SCALE

Percentage	Grade	Consideration	Points
91-100%	A	Excellent	4
81-90%	B	Good	3
71-80%	C	Intermediate	2
61-70%	D	Deficient	1
-60%	F	Failed	0



Descriptions of the evaluation categories:

GUIDELINES

- (1) **Participation in class and in the field (15 points)** Participate in class is a must do: the idea is to create an atmosphere of discussion where students can share their knowledge about their local reality and their perceptions about the reality of the Galapagos. I expect each student to contribute with their point of view to the learning process of the group as a whole. Read the chapters and papers before the class, a quiz might happen at any time about the material for the class, this includes lectures, readings and debates.
- (2) **3 debates about environmental problems (20 points)** The idea of this exercise is to recreate a meeting of the Participatory Management Board of the Galapagos Islands where important decisions about the management and conservation of marine resources are made based on consensus. These meetings include the local authorities, NGOs, stakeholders. As scientist we have to advise authorities, stakeholders and managers about important and controversial issues around the management of marine resources and their conservation such as minimum quotas, regulations for fisheries, fisheries closures, marine protected areas, etc. Our role as scientist is to ground our advice and arguments on scientific facts and discuss it with sectors with opposing views or interest.

There will be 3 debates in class. A group of 7 students will direct each debate; they will be responsible for distributing the pertinent literature (one paper that support and one paper that opposes a particular view), news or facts with supporting or opposing views with **three days in advance prior to their debate**. It is highly desirable to invite local actors for each one of the debates. Please talk to me about this before each debate so that I can provide names or contacts for this purpose.

The day of the debate the leading group will present a case for 10 minutes, including arguments that support or opposed a particular position from the literature. Leading students must facilitate and stimulate discussion during the debate. After the presentation we will divide the class in different groups of stakeholders. Depending on the topic: fishermen, tourist operators, conservation organizations, government, etc.

Topics for debates

Topic	Students	Date of Debate	Max Day to Send Paper to Class
1.			
2.			
3.			
4.			

- (4). **Essay on EBM strategies (15 points)**



Students are expected to develop a strategy to implement a spatial explicit ecosystem-based management approach to protect the Rocky Shore communities around Naufragio Bay, San Cristobal Island. We will focus on charismatic species such as marine iguanas and sea lions as ecosystems services that we must protect. Students will be divided in groups of 5. Each group will focus on a particular issue that affects marine iguanas and sea lions (i.e. invasive species, fisheries, oil pollution, habitat destruction, climate change, tourism, diseases, cross scale interactions between these).

The objective of each group is to search for the primary literature, gather knowledge from locals and assemble a conceptual framework to analyze each particular issue from the perspective of EBM. Your report should be based on scientific information (please cite all your sources), traditional and local knowledge, using interviews for some cases will be desirable.

The report should have the format of an essay. The objective of an essay is to develop a logical argument in response to a particular question. Essays should include an introduction, discussion and conclusion. The first paragraph should express how you intend to answer the question. Each paragraph should be a step in developing those arguments and should deal with a single point. It is better if you use sub-headings to subdivide an essay. The conclusion should be a summary of the main steps that lead you to respond your particular question. Cite the work of others accordingly, following the format of the journal ecology (<http://esapubs.org/esapubs/journals/ecology.htm>). Limit your essay to no more than 7 pages, double space, with a size font of 12.

Tables and figures in the form of diagrams or chart flows should be used to build conceptual frameworks and summarize key information that describe threats, magnitude of those threats and how they change at different spatial and temporal scales. Furthermore, management scenarios should be proposed to maintain and restore degraded ecosystem services (i.e. water quality, food) and strategies to make this system more resilient from human environmental perturbations. We will focus on ecosystem services to link social-ecological systems. The report should include a map that shows the distribution of marine iguanas and sea lions and the human threats that affect them. Based on this map I expect students to propose a new management strategy to tackle those threats, such as relocation of fishing activities, establishment of no take zones, etc.

Topic	Students	
Invasive species		
Fishing		
Pollution		
Climate change		
Diseases		

(5) **Final Exam** at the end of class, includes all material cover during this topic (15 points)

(6) **Quizzes** any time worth 5 points each (3 of them)



(7) Discussion of papers (10 points): Each student is expected to discuss one paper in class from the list of readings. We will discuss 15 papers during this class in total. This will include at least 6 papers assigned for the debates.

(8) Homework: (10 points) Students will need to complete 3 homework that will be specified during class. One of these will include a class presentation.

REFERENCES

You don't need to buy any of these texts. They are available in the library

- Roff, J and Zacharias M. 2011. Marine Conservation Ecology 320 pages EarthScan
- McLeod, K. and H. Leslie 2009. Ecosystem based management for the oceans. Island Press Washington DC. USA 368 pp
- Bertness, Bruno, et al 2014. Marine Community Ecology
- PISCO (Partnership for Interdisciplinary Studies of Coastal Oceans). <http://www.piscoweb.org/publications>

POLICIES:

All courses are governed by the USFQ Student Manual which can be downloaded at [Manual del Estudiante](#)

ABOUT ELECTRONIC EQUIPMENT: Cell phones, I pods and other devices have to be switched off in class. You're allowed to use IPAD/computers only for taking notes.

ASSISTANCE: Come to class on time. Plus, field excursions are mandatory. In the case of illness or any other justified cause, students can be relieved from the excursion and cover the qualification with additional tasks.

MATERIALS

For excursions bring notebooks/slates, snorkeling gear, camera, hat, sunblock

SCHEDULE OF ACTIVITIES:

Date	Topic	Readings
Monday 28 th Oct	General plan for the class, syllabus revision What is EBM and how it is being implemented Group activity	Papers 1 and 2
Tuesday 29 th Oct	The Galapagos Islands (history and EBM implementation) EBM actors in the Galapagos Invited speakers	Paper 3 and 4



Wednesday 30 th Oct	Ecosystem Services The importance of marine spatial planning Monitoring and Evaluation of Success	Paper 5 and 6
Thursday 31 th Oct	GIS Lab 1 Field trip to collect data on iguanas and sea lion distribution around bahía naufragio relate distribution with multiple human impacts	
Friday 01 st Nov	snorkel trip to isla lobos	
Monday 4 th Nov	Cumulative impacts Resilience Invasive species Papers discussion	Paper 7 and 8
Tuesday 5 th Nov	Debate 1 (topic to be defined) Introduction to Conservation Genetics and genomics	Papers selected by the group in charge of the debate
Wednesday 6 th Nov	Diving trip to Española	
Thursday 7 th Nov	Debate 2 (topic to be defined) Documentary	Papers selected by the group in charge of the debate
Friday 8 th Nov	GIS Lab 2 Data entry (assisted by Daniela Alarcon)	
Monday 11 th	GIS Lab 2 Data entry (assisted by Daniela Alarcon)	
Tuesday 12 th	Debate 3 (topic to be defined) Group activity	Papers selected by the group in charge of the debate
Wednesday 13 th	Conservation genetics and invasive species Conservation genetics and forensics (illegal fishing) Paper discussion	
Thursday 14 th	Paper discussion Student presentations (homework)	Paper 10 and 11
Friday 15 th	Final Exam	

This syllabus was reviewed and approved by the academic coordinator of the major/department, such that all sections should follow this syllabus. If it is necessary to make



changes/adjustments to the syllabus, please ask the academic coordinator so that the approved changes/adjustments are reflected in the Curriculum Design system.