



SUFFOLK
UNIVERSITY
MADRID CAMPUS

SCI L103 M1 - ENVIRONMENTAL SCIENCE LAB

Instructor Information:

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Course Information:

Catalog Description: An introduction to basic evolutionary, behavioral and ecological principles. With the exception of the introductory and final sessions, which will take place in a campus classroom, all the lab sessions are held outdoors during a three day field trip and it has additional fees. The class will require a certain level of physical activity such as sampling vegetation or walking in the countryside. Readings and discussions emphasize the ways that humans are affected by ecological processes and principles as well as how humans and their technology affect ecosystems. This course will not fulfill requirements for a major or a minor in Biology. Madrid Campus only.

Instructor's Additional Course Description: This lab is based on a three day field trip. In this lab students are introduced to the natural environment so that they can apply the knowledge acquired from the in-class session and reinforce it. However, additional topics such as environmental history, landscape ecology and field scale sustainability are also introduced based on particular case studies. An additional course-related fee is required for this lab to cover transportation, room, board and activity fees.

Prerequisites: SCI L103 must be taken concurrently with SCI 103.

Credit Hours: 1

This course follows the US Federal Government's Credit Hour definition: "An amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutional established equivalence that reasonably approximates no less than:

- (1) One hour of classroom or direct faculty instruction and a minimum of two hours of out of class student work each week for approximately fifteen weeks for one semester or trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or
- (2) At least an equivalent amount of work as required in paragraph (1) of this definition for other academic activities as established by the institution including laboratory work, internships, practical, studio work, and other academic work leading to the award of credit hours."

For full up-to-date statement:

https://cihe.neasc.org/sites/cihe.neasc.org/files/downloads/POLICIES/Pp111_Policy_On_Credits-And-Degrees.pdf

To complete this course, students will need to dedicate, at a minimum, the following amount of time to the listed activities:

Assignments/Activities	Engagement Estimate	Engagement Hours
Introductory class	1 day x 1 hour	1
Field trip attendance and sampling activities	3 days x 8 hours activity in the field	24
Field Guide reading	16 pag x 8 min	2
Class for the elaboration of the field notebook	1 day x 1 hour	1
Elaboration of field notebook and experiments	20 hours including the necessary office hours	20
TOTAL:		48 HOURS

Course Materials and required readings:

Class material include:

1. Lab Guide: provided for each student. It includes the information needed for the lab plus background information readings, itinerary and what is required from each lab activity.
2. Hardback notebook*: necessary for all the sessions (provided by each student). It will be used for note-taking, observations, sketches and illustrations relevant to the individual sessions. After the trip the students must complement it with extra information according to the Lab Guide information. The recommended notebook (model to be shown in class) can be bought in "Tiger" shops located at C/ Marqués de Urquijo 9 (metro: Argüelles), Bravo Murillo 120 (metro: Cuatro Caminos) C/ Alberto Aguilera, 1 (metro: San Bernardo) or C/ Alcalá 21 (metro: Sol).
3. Bird guide (to be lent to students for field research)
4. Guide to the sand dune plants of the Urdaibai reserve (to be lent to students for field research)
5. Binoculars (one pair per group, lent by SUMC).
6. Measurement instruments, to be provided by the instructor.

*The final dossier consists of the material to be submitted for grading (including the notebook plus additional notes and exercises):

- Individual research on the topics already covered during the lab sessions.
- Answers to the questions addressed during the lab sessions and the ones included in the lab guide.
- An explanation of methods used for the field exercises (if applicable).
- The results of the field exercises.
- A discussion about the results obtained on the field exercises.
- Pictures with captions reflecting the field work, key species found during the field trips or any relevant aspect of the lab.
- The sand dune paper.
- Reflections on the societal impact of the topics under discussion.
- The bibliography used to elaborate the dossier.

Further information about the material will be given to the students during the first lab session.

Logistics:

- The lab sessions are mainly outdoors, so appropriate clothing is required. This should include boots, trekking shoes or very sturdy sneakers; backpack; waterproof jacket and warm clothing; hat and gloves. Since field sessions are not cancelled in case of rainfall, an additional pair of socks is recommended.
- For some of the sessions students must take food and water along.
- If you have your own binoculars or a magnifying glass, bring them along.
- Photographic cameras may be useful to include illustrations in lab dossier.

Course Goals & Learning Objectives:

Upon successful completion of this course, students will know/understand	Upon successful completion of this course, students will be able to	How the student will be assessed on these learning objectives:
<ul style="list-style-type: none"> • That the STE disciplines involve a manner of inquiry and a process, and are not just content. 	<ul style="list-style-type: none"> • distinguish between hypothesis-driven and inquiry-based research. • recognize the flexibility of the discovery process and the scientific method. • analyze and solve a problem based upon information from the scientific/technical literature. 	<ul style="list-style-type: none"> • Inclusion of work illustrating these skills in the dossier.
<ul style="list-style-type: none"> • The skills required to locate and understand scientific/technical literature. 	<ul style="list-style-type: none"> • locate scientific or technical literature online and/or in the library. • differentiate between factual scientific/technical literature and news/stories/opinions that are intended to persuade or entertain an audience. • locate the definition of unknown vocabulary from a credible source and learn its meaning. • explain an article from the secondary and tertiary scientific/technical literature. • explain scientific/technical ideas in written or oral format. 	<ul style="list-style-type: none"> • Inclusion of the appropriate technical literature when elaborating their dossiers. • Assessment of vocabulary used by students in the dossier. • Description of the experiments with scientific bases that will be carried in the field and further elaborated in the last lab session. • Assessment of the ideas included in the dossier.
<ul style="list-style-type: none"> • The relationship between natural science and technology, the implications of scientific discoveries, and the potential of the STE disciplines to address problems of the contemporary world. 	<ul style="list-style-type: none"> • give examples of how the STE disciplines are relevant and applicable to daily life. • recognize that as we gather scientific information, our view of the world changes. • explain how the application of STE disciplines requires ethical considerations and responsibilities. • appreciate that society has a vested interest in STE discoveries. 	<ul style="list-style-type: none"> • In dossiers, appropriate analysis of societal impact of topics under discussion, as well as providing the scientific basis for each • A global point of view must be included in all the dossiers that the students must deliver. • Students' participation in the discussions on the field trips.
<ul style="list-style-type: none"> • The significance of a variety of environmental underlying mechanisms in the present with an historical perspective. 	<ul style="list-style-type: none"> • recognize the main environmental problems in different areas. • describe the landscape and its processes. • describe their ecological value and the most reliable solutions of environmental issues. • research on the environmental history of a region or landscape in order to analyze the current situation. 	<ul style="list-style-type: none"> • Field notebook entries annotating their work on particular ecosystems. • Field trips: Annotations on environmental indicators. Applying the scientific method to concrete case studies in the field. Analyses of the best available practices. • Specific assignment on detailed observations in the field with field notes and assessment of results and methods. • Descriptions of the methodology in real case studies in Environmental Restoration. • Assessment of an environmental situation through data collection and analysis. • Field notebook entries: reflection on the changes in the environment's natural characteristics over time through several case studies.

Upon successful completion of this course, students will know/understand	Upon successful completion of this course, students will be able to	How the student will be assessed on these learning objectives:
<ul style="list-style-type: none"> The opportunities for the student to understand different environmental realities in the countryside. 	<ul style="list-style-type: none"> apply the basic principles of environmental science to understanding the landscape. engage in bird-ringing and observation to understand migrations. explain the main actions taken in dune restoration. reflect on whale hunting and conservation. find the best location within the study area for the establishment of marine reserves. describe the steps in the process of rewilding. 	<ul style="list-style-type: none"> Dossier: Assessment of students' understanding of the different environmental realities studied during the lab sessions.

Grading/Evaluation:

The dossier with all the requirements that will be explained during the first lab session and will be will be evaluated according the next criteria:

- Field trip participation 20%

Each student will have the opportunity to participate in the field debate about the different environmental issues. The professor will evaluate the quality of students' participation in terms of the use of appropriate concepts and technical vocabulary and the degree of engagement.
- The remaining 70% of the dossier is further divided into:
 - Sand dunes. Sampling on the field and elaborating a scientific paper 30%
 - Rewilding. Explain the process of rewilding. 10%
 - Bird studies. Learning scientific research procedures on bird migration 10%

Paper describing the procedures.
 - Landscape and ecosystems analysis.

Explaining landscape changes (past-present). 20%

Paper
 - Marine reserves. Establishing a marine Reserve with scientific criteria. 10%

Lab Policies:

- Constructive participation in class discussions is required.
- Office hours are of special relevance for students that want to check the progress of the field notebook and the dossier that will be the main means of evaluating this lab.
- Departures for the lab field trips will leave on time, so if you are not at the set time, you will miss the lab session. Students are expected to remain throughout the lab meeting, except for reasonable emergencies.
- Students must attend the lab sessions with the proper footwear and gear for the activities described that day. A student who does not have the proper footwear or gear will not be allowed to participate in the trip that day.
- Students are responsible for bringing and taking care of the materials or instruments necessary for each lab. The instructor will facilitate the access to these materials from the science lab on request.
- Departure time for each session could change due to unexpected circumstances. In this case students will be informed in advance, so please always check your e-mails before a departure.
- Use of cell phones, laptops and other electronic devices is not allowed during trips except for the lunch time during the long trips. Special cases must be consulted with the professor ahead of time.
- Dates are set for the field trips and cannot be changed. Rainy or cold weather is not a reason to cancel the sessions.

- This lab includes activities in natural settings. Students are responsible for their own behavior and are required to follow all instructions given by the professor and/or posted for the area being visited, especially those related to their safety and to the protection of the environment. Suffolk University Madrid Campus will not be responsible for accidents or injuries resulting from any student's failure to follow such instructions or to respect the norms. The reckless attitude or behavior of a student can endanger the rest of the group.
- E-mails are answered from Monday 12:15h to Friday 10:00h.

Participation/Attendance Policy:

- Participation in discussion and a collaborative attitude towards the professor and fellow classmates when working in groups is essential for achieving a positive outcome.
- Students who legitimately miss a lab session due to illness, a doctor's visit or family emergency must provide written documentation of the circumstances and must do all that is possible to catch up with the rest of the students, regardless of the reason for the absence. A student who misses the main field trip without proper justification will not be able to pass the lab. A student who misses the main field trip because of a justified and documented reason (illness or emergency) must discuss with the instructor an alternative plan of field work in the Madrid region related to the lab content, to be undertaken independently.
- Absences will have a negative effect on the final grade: when a student is absent, the quality of his or her work in the lab deteriorates, since the material missed in the lab sessions can rarely be made up satisfactorily, even though the student remains responsible for that work. Please note that even when a student has a justified reason for missing class, such as illness, the negative academic impact on learning will be the same as if the absence were for spurious reasons. Therefore, students who miss either the introductory or the wrap-up session without proper justification will have their final grade lowered by one-third of a letter grade, i.e., from A to A-; A- to B+; B+ to B, etc.

Calendar:

Session & Date	Topic and Place	Contents
LAB 1	Introduction SUMC Room 2	Introduction/Methodologies/Observations/ Applying the Scientific Method to Environmental Sciences
LABS 2-11: Field Trip to Basque Country & Burgos		
LAB 2	Trip to Urdaibai with two visits	Focus on changes in the Landscape along the trip
LAB 3	El Vellón	Brief visit to Hedgerows Sustainable System in El Vellón
LAB 4	Hoces del Duratón	Visit to Juniper forest and Hoces del Duratón Vegetation Ecology – Watching vultures
LAB 5	Visit to San Juan de Gaztelugatxe.	Marine Reserves If time does not allow we will visit it Saturday morning
LAB 6	Bird Center	Bird Migration Scientific Ringing Bird observations
LAB 7	Landscape Ecology from Laida Urdaibai Biosphere Reserve	Understanding the Urdaibai Landscape and Environmental Problems Biosphere Reserves and the MaB
LAB 8	Laga Sand Dunes	Understanding the sand dune restoration process. Sampling sand dune vegetation for environmental restoration
LAB 9	Holm Oak Forest	Forest Ecology

Session & Date	Topic and Place	Contents
<i>Alternative activities in case the weather does not allow for any of the morning activities:</i>	<i>Oma Valley (Urdaibai) Farming and Deforestation</i> <i>Or/and port activity in Bermeo: fisheries impact on the environment</i> <i>Or/and visit to species recovery center.</i>	<i>Visit to the "Painted Forest"</i> <i>Visit to the Oma Valley</i> <i>Environmental enhancement</i> <i>Visit to native forest plantation</i> <i>The New Sustainable Forestry Investment</i> <i>Marine Reserve Management in San Juan de Gaztelugache and the fishermen port of Bermeo</i> <i>Species recovery center role and techniques.</i>
LAB 9	Trip to Atapuerca	Focus on changes in the Landscape along the trip
LAB 10	Atapuerca - Rewilding	Living Paleolithic. Visit to rewilding project.
LAB 11	Trip to Madrid	Notetaking: Opportunity for focus on changes in the landscape along the trip

Following the field trip, students are encouraged to attend the instructor's office hours to address any difficulties that they might be having in the elaboration of their dossiers.

Session & Date	Topic and Place	Contents
LAB 10	Draft dossiers and wrap-up session SUMC Room 2	Draft of dossier due
LAB 11	Dossiers SUMC Room 2	Lab Dossier due for final evaluation

Note: The above activities are subject to change on short notice if weather or other circumstances require it and alternative activities will be put into place. On the field trip, the students will be informed about any possible change in situ. Changes in sessions on Campus will be communicated by e-mail and on BlackBoard.