



CIEE Global Institute - Paris

Course name:	Marine Biology & Ecology
Course number:	(GI) ECOL 2001 PAFR
Programs offering course:	Paris Open Campus
Open Campus Track:	STEM and Society
Language of instruction:	English
U.S. semester credits:	3
Contact hours:	45
Term:	Spring 2020

Course Description

Life on Earth began in the ocean 3.9 billion years ago. It is still by far the largest coherent ecosystem, and life conditions are different compared to living in air on land. Light only penetrates a few hundred meters down, below is total darkness. This course will provide knowledge about the physical and chemical properties of seawater, and how it affects life. Students will study and compare the dynamics of the major habitats, such as deep sea, open waters, coastal regions, estuaries, coral reefs, polar regions, etc. The course will present the dominating organisms in each compartment and contrast the flows of energy, carbon and nutrients. The course will also study the hydrodynamics of oceans, a key factor in understanding weather and climate changes. Students will be presented to different marine sampling and measuring techniques, and will visit research facilities.

Learning Objectives

By completing this course, students will be able to:

- Understand the origin, biological history, and hydrography of the oceans.
- Compare the various habitats that are present in oceans and how they differ.
- Critically evaluate the essential characteristics of the pelagic zone.
- Recognize food webs, nutrient cycles, and feeding mechanisms.
- Understand the biology of selected groups of marine invertebrates and vertebrates.
- Assess the complexity and fragility of the oceans; analyze the impact of human behavior on environmental systems.

Course Prerequisites

Students should have completed one semester course in biology and one semester in chemistry.

Methods of Instruction

The teaching will consist of introductory lectures using PowerPoint and short films. The students write a paper on individually selected topics, finalized by an individual presentation.



The instructor will frequently ask questions during the lectures, and the students are expected to engage in discussions about what they are learning as well as their ongoing projects. Co-curricular activities will be designed around marine biology research centers in Paris, as well as during our study tour in Marseilles. Guest speakers will share expert knowledge in the form of presentations of various subjects within marine biology. Occasionally there will be allocated time to work on the individual assignments.

Assessment and Final Grade

Students will be assessed according to the following criteria:

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|------------------------------|-----|
| 1. Homework: | 30% |
| 2. Individual Project Paper: | 25% |
| 3. Lab Work Report: | 15% |
| 4. Presentation: | 10% |
| 5. Class Participation: | 20% |

Course Requirements

Important: all course assignments must be turned in on time. While students will not be penalised for submissions up to and including 1 hour late,

- **Students submitting work from 1 hour and 1 minute late up to and including 24 hours late will be penalised 15% from the assignment;**
- **Student work submitted from 24 hours and 1 minute late onwards will receive a zero (0%) grade.**

Homework

At the end of weeks 2, 4, and 6 the students will be given three essential questions on topics covered in class that week to be completed at home in a time limited assessment through Canvas. Questions are short essay type, and students will be expected to demonstrate comprehensive knowledge of the reading assignments.

Individual Project Paper

At the start of Week 2 the students select a topic for a 2,000 (total) word paper. The paper has to consist of an introduction, discussion, conclusion, literature list and an abstract. Students will meet weekly in small groups during class time and present how their project is developing. The paper will be graded by how thorough and appropriately it covers the entire subject. Students will first receive their grade after they have made their presentation of the paper, which should be no longer than 5 minutes in length. 80% of the assignment grade will be based on the written form of the paper, and 20% on the presentation.

Lab Work Report

Following the field trip the students will write a 1,500 word report on an individually selected organism, found during the field trip. The students are expected to report any interesting



traits (morphology, ecology, behavior, feeding mechanism, etc.). The assignment will be graded based on how thorough and detailed its analysis of the lab work, experiments, and results is.

Presentation

Each student will deliver a 10-minute presentation about their Individual Project Paper topic. The presentation will be graded on how well they present their subject to the class, in a manner so everyone not being familiar with the subject will understand it. The presenter should be prepared to answer questions about the paper, to the best of their ability.

Participation

Participation is valued as meaningful contribution in the digital and tangible classroom, utilizing the resources and materials presented to students as part of the course. Meaningful contribution requires students to be prepared in advance of each class session and to have regular attendance. Students must clearly demonstrate they have engaged with the materials as directed, for example, through classroom discussions, online discussion boards, peer-to-peer feedback (after presentations), interaction with guest speakers, and attentiveness on co-curricular and outside-of-classroom activities.

Course Attendance and Punctuality

Regular class attendance is required throughout the program, and all unexcused absences* may result in a *lower participation grade* for any affected CIEE course. Due to the intensive schedules for Open Campus and Short Term programs, unexcused absences that constitute more than 10% of the total course will result in a written warning and the final grade for the course will be lowered by 3 percentage points.

*Students who transfer from one CIEE class to another during the add/drop period will not be considered absent from the first session(s) of their new class, provided they were marked present for the first session(s) of their original class. Otherwise, the absence(s) from the original class carry over to the new class and count against the grade in that class.

For CIEE classes, *excessively tardy (over 15 minutes late) students will be marked absent. Attendance policies also apply to any required co-curricular class excursion or event*, as well as to Internship, Service Learning, or required field placement.*

*With the exception that some class excursions cannot accommodate any tardiness, and students risk being marked as absent if they fail to be present at the appointed time.

Students who miss class for personal travel, including unforeseen delays that arise as a result of personal travel, will be marked as absent and unexcused. *No make-up or re-sit opportunity will be provided.*

An absence in a CIEE course will only be considered excused if:



- a doctor's note is provided
- a CIEE staff member verifies that the student was too ill to attend class
- satisfactory evidence is provided of a family emergency

Unexcused absences will lead to the following penalties:

<i>Percentage of Total Course Hours Missed</i>	<i>Equivalent Number of Open Campus Semester classes</i>	<i>Minimum Penalty</i>
Up to 10%	1	Possible reduction of weekly participation grade
10 – 20%	2	Reduction of final grade by 3%; written warning
More than 20%	3 content classes, or 4 language classes	Automatic course failure, and possible expulsion

Weekly Schedule

NOTE: this schedule is subject to change at the discretion of the instructor, to take advantage of current experiential learning opportunities.

Week 1 Orientation Week

Class 1:1 Introduction and Origin of the Ocean

Introduction and the origin of the ocean, as well as its chemical and biological history.

Reading:

Levinton (2017) Chapter 1 (p.1-11), 2 (p.12-32), 3 (p.33-45) and 4 (p.46-73).

Class 1:2 Co-curricular outing.

Visit to the Aquarium of the Porte Dorée, a site of the National Museum of Natural History.

Week 2

Class 2:1 Hydrography

An introduction to the hydrography of the ocean: salinity, temperature, depth, currents, tides, stratification, hydrological cycle and surface/air interactions.



Reading:

Levinton (2017) Chapter 5 (p.74-97) & 6 (p.98-108).

❖ Individual Project Paper topic due

Class 2:2 Habitats

The typical habitats present in the oceans are coastal waters, estuaries, hard bottom, soft bottom, pelagic life and benthos. Students will compare this to marine life and ecosystems in the Mediterranean during our study tour in Marseilles.

Reading:

Levinton (2017) Chapter 16 (p.317-364), 17 (p.365-408), 18 (p.409-433) & 19 (p.434-444).

❖ Homework #1 due

Week 3

Class 3:1 Life in the Pelagic

Insight into the phytoplankton, species and seasonal cycles, primary production and zooplankton and larvae.

Reading:

Levinton (2017) Chapter 7 (p.109-144), 8 (p.145-158), 10 (p.189-210) & 11 (p.211-288).

Class 3:2 Feeding Methods

Introduction to the various feeding methods: filter feeding, detritivores, carnivores and secondary production.

Reading:

Levinton (2017) Chapter 15 (p.297-316).

❖ Presentations

Week 4

Class 4:1 Food Webs

Exploration of the different food webs: microbial food web, nutrient recycling, energy transfer in coastal waters and the deep sea. Students will visit the Parisian Institute of Oceanography to deepen their understanding.

Reading:



Levinton (2017) Chapter 12 (p.239-254).

❖ Individual Project Papers due

Class 4:2 *Invertebrates*

An introduction to the biology of some of the most common invertebrates in the ocean: Cnidarians, Polychaetes, Crustaceans and Echinoderms.

Reading:

Levinton (2017) Chapter 14 (p.268-295).

❖ Homework #2 due

Class 4:3 *Co-curricular outing.*

Visit to the research laboratory Integrative Biology of Marine Organisms (Sorbonne Université). To be confirmed.

Week 5

Class 5:1 *Vertebrates*

Introduction to the biology of fish, sea birds and mammals.

Reading:

Levinton (2017) Chapter 9 (p.158-188).

Class 5:2 *Marine Sampling and Measuring*

An introduction to the monitoring and measuring methods used in the oceans. Guest lecturer from a specialist in marine conservation and studies from the Université Paris Diderot.

Week 6

Class 6:1 *Conservation*

Insight into speciation, invasion, extinction and how to conserve the marine biodiversity.

Reading:

Levinton (2017) Chapter 20 (p.445-470).

Class 6:2 *Human Impact on the Environment*

Introduction to some of the impacts we have on the ocean: pollution, fisheries, runoff, human activities at sea and climate change.



Reading:

Levinton (2017) Chapter 21 (p.471-503) & 22 (p.504-529).

- ❖ Lab Work Report due
- ❖ Homework

Course Materials

Readings

Levinton, Jeffrey S. *Function, Biodiversity, Ecology*. Fifth Edition. Oxford: Oxford U.P., 2017.

<http://www.bluemarinefoundation.com/>

<https://www.sciencedaily.com/releases/2017/10/171012103704.htm>

Academic Integrity

CIEE subscribes to standard U.S. norms requiring that students exhibit the highest standards regarding academic honesty. Cheating and plagiarism in any course assignment or exam will not be tolerated and may result in a student failing the course or being expelled from the program. Standards of honesty and norms governing originality of work differ significantly from country to country. We expect students to adhere to both the U.S. American norms and the local norms, and in the case of conflict between the two, the more stringent of the two will prevail.

Three important principles are considered when defining and demanding academic honesty. These are related to *the fundamental tenet that one should not present the work of another person as one's own*.

The first principle is that *final examinations, quizzes and other tests must be done without assistance from another person, without looking at or otherwise consulting the work of another person, and without access to notes, books, or other pertinent information* (unless the professor has explicitly announced that a particular test is to be taken on an “open book” basis).

The second principle applies specifically to course work: *the same written paper may not be submitted in more than one course. Nor may a paper submitted at another educational institution be submitted to satisfy a paper requirement while studying abroad*.

The third principle is that *any use of the work of another person must be documented in any written papers, oral presentations, or other assignments carried out in connection with a course. This usually is done when quoting directly from another's work or including information*

told to you by another person (the general rule in U.S. higher education is that if you have to look something up, or if you learned it recently either by reading or hearing something, you have to document it).

There are three levels of escalation establishing the seriousness of the plagiarism in question.

- **Level one plagiarism:** minor or unintentional plagiarism; leading to passable grade/failing grade on the assignment, depending on perspective of lecturer. No opportunity for resubmission.
- **Level two plagiarism:** significant plagiarism, but potentially due to poor referencing rather than intellectual property theft. This leads to a failing grade (potentially zero points) on the assignment. No opportunity for resubmission.
- **Level three plagiarism:** significant plagiarism, requiring investigation by the Center/Resident/Academic Director, and subsequent disciplinary panel.

Faculty will report any suspected circumstances of plagiarism to the Center/Resident/Academic Director immediately. Faculty can, if they deem it appropriate, require students to submit the Plagiarism Declaration Form (Appendix D) with each assignment as it is submitted.

In any case where Academic Honesty is in question while the student is still onsite at the program, and will impact the grade for the assignment in question, the CIEE Academic Honesty form (Appendix E) will be completed by the Center/Resident/Academic Director, signed by the professor, delivered to the student for signature and added to the student's permanent records. For any Level three violation, or repeated lower level violation, the Center/Resident/Academic Director will inform the student's home institution of the infraction and subsequent penalty.