

Degree	Type	Year
Interdisciplinary Studies in Environmental, Economic and Social Sustainability	OB	0

Contact

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Teachers

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Teaching groups languages

You can view this information at the [end](#) of this document.

Prerequisites

No prerequisites

Objectives and Contextualisation

This is a 15 ECTS introductory and compulsory module which is shared by all the Master's specialisations.

Every environmental issue must be tackled considering natural as well as economic and social aspects in order to guarantee a sustainable solution for future generations. In this vein, this module aims to ensure that all Master's students are familiar with interdisciplinarity of environmental studies, offering at the same time some basics concepts and tools of all Master's specialisations.

From this interdisciplinary approach, a review of the essential concepts related to the three itineraries of this Master's program is conducted. Altogether, new concepts related to ongoing research conducted at ICTA and partner Departments are introduced. The participation of several teachers with diverse backgrounds and research experience enriches the module, as different and complementary perspectives will be discussed.

The module is divided in 5 parts:

- Part 1: Theory and Practice of interdisciplinarity in environmental science.
- Part 2: Introduction to ecological economics.
- Part 3: Introduction to Industrial Ecology.
- Part 4: Introduction to Global Change (a training stay in a natural space).
- Part 5: Communication and academic dissemination.

Parts 1 and 5 are broadly focused on interdisciplinarity either from a theoretical (part 1) or writing methods perspectives (part 5). In-between, parts 2 to 4 offer a basic introduction to each one of the Master's itineraries - Ecological Economics (part 2), Industrial Ecology (part 3) and Global Change (part 4) - without missing the module's interdisciplinary approach.

As this is an introductory module, most of the lectures take place during the first weeks of the Master, including a fieldtrip to the Planes de Son (Pyrenees). Nevertheless, the practical part of part 5 is carried out in March and April. As this is a practical part, students will be organised in two sub-groups. In this part basic issues related to communication and scientific dissemination will be practiced, developing some very useful skills for developing the Final Master's Thesis (TFM).

Competences

- Analyse how the Earth functions on a global scale in order to understand and interpret environmental changes on the global and local scales.
- Analyse, summarise, organise and plan projects related to the environmental improvement of product, processes and services.
- Apply knowledge of environmental and ecological economics to the analysis and interpretation of environmental problem areas.
- Apply knowledge of environmental engineering to purification and decontamination in different environments.
- Apply the acquired knowledge and methodologies of environmental, economic and social sustainability to the planning and control of environmental management policies and projects.
- Communicate orally and in writing in English.
- Seek out information in the scientific literature using appropriate channels, and use this information to formulate and contextualise research in environmental sciences.
- Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.

Learning Outcomes

1. Apply a multi-criteria analysis to a system.
2. Communicate orally and in writing in English.
3. Compare and make an objective selection from among the different possible techniques in an industrial process, applying criteria of environmental sustainability.
4. Distinguish the Earth's subsystems and know its interactions.
5. Know the different options for waste treatment.
6. Know the economic tools that can be applied to problems of environmental policy.
7. Know the main systems for purifying water and gases.
8. Know the processes of prevention, re-use, recycling and valorisation of waste.
9. Know the two fundamental tools for evaluation problems: Cost-benefit analysis and multi-criteria analysis.

10. Seek out information in the scientific literature using appropriate channels, and use this information to formulate and contextualise research in environmental sciences.
11. Use acquired knowledge as a basis for originality in the application of ideas, often in a research context.

Content

PART 1 - THEORY AND PRACTICE OF INTERDISCIPLINARITY IN ENVIRONMENTAL SCIENCES

- Instructor: Eduard Ariza
- Dates: September 15, 16, 17, 18 and 19 (15:00-18:00)

09/15 Course Introduction

- Introduction to the module
- Introduction top part 1
- Key definitions

09/16 History and theory of interdisciplinarity and transdisciplinarity in sustainability research

- Philosophical concepts and recent evolution
- The need to clarify hidden assumptions: the reflexive approach
- Sustainability science as a value laden research
- The difficult task of framing wicked problems
- Epistemological pluralism

Required Reading:

Lélé, S., and R. B. Norgaard. 2005. "Practicing Interdisciplinarity." *Bioscience* 55 (11): 967-975.

09/17 Transformative Adaptation

- Transition from Environmental Education and Sustainability to Integrated Systems Thinking
- Theory of transformative learning
- Practice of transformative learning
- Spheres of transformation

Required Reading:

O'Brien, K. 2018. Is the 1.5°C target possible? Exploring the three spheres of transformation. *Current Opinion in Environmental Sustainability* 31: 153-160

09/18 Different Approaches to Co-Production in Global Change Research

- Descriptive motivation and normative motivation
- Learning, empowerment, institutions, interactions, deconstruction, complexity, dialogue, and societal integration

Required Reading:

Bremer, S. and Meisch, S. 2017. Co-production in climate change research: re-viewing different perspectives. *WIREs Clim Change*, 8: e4822

09/19 Practical Experiences in Co-Production

- Description of transdisciplinary research process: design, methodology, data collection, treatment, and analysis
- Limitations in prior knowledge, progress, and future research

Required Readings:

Zanotti, L., Carothers, C., Apok, C. A., Huang, S., Coleman, J., & Ambrozek, C. (2020). Political ecology and decolonial research: co-production with the Iñu-piat in Utqiagvik. *Journal of Political Ecology*, 27(1), 43-663.

Anna Marín-Puig, A. Ariza, E., and A. Casellas. 2022. "Unattended gap in local adaptation plans: The quality of vulnerability knowledge in climate risk management." *Climate Risk Management*, 38, 2022, 100465.

PART 2 - INTRODUCTION TO INTERDISCIPLINARY CONCEPTS: ECOLOGICAL ECONOMICS BLOCK

The sections led by Sergio Villamayor-Tomas (SVT) and Arnim Scheidel (AS) provide an introduction to Ecological Economics as understood by the so-called Barcelona School. Their sessions begin with an overview of the conceptual and historical foundations of heterodox economics and ecological economics (2 sessions, SVT), followed by the concept of social metabolism and its links to environmental justice (2 sessions, AS), the role of commons-based alternatives to development and the pluralism of values and knowledge systems (2 sessions, SVT), and finally, degrowth and the political applications of ecological economics principles (2 sessions, AS).

The sessions will be organized as follows:

September 22: Basic Concepts of Ecological Economics (SVT)

- Objectives: Contextualize ecological economics within the field of heterodox economics and introduce fundamental concepts.

Required Reading:

- Martinez-Alier, J., & Muradian, R. (2015). "Taking stock: the keystones of ecological economics." In J. Martinez-Alier & R. Muradian (Eds.), *Handbook of Ecological Economics*, Edward Elgar Publishing (pp. 1-26).

September 23: The History of Ecological Economics and the Barcelona School (SVT)

The objectives of this session are twofold:

1. Familiarize participants with the process through which scientific norms and programs evolve, using the example of ecological economics.
2. Provide a firsthand introduction to research on climate behavior economics conducted by one of the Ecological Economics research groups at ICTA (Institute of Environmental Science and Technology).

Required Reading:

- Walker, T. C. (2010). "The perils of paradigm mentalities: Revisiting Kuhn, Lakatos, and Popper." *Perspectives on Politics*, 433-451.
- Villamayor-Tomas, S., Roy, B., Muradian, R. (2022). "The Barcelona School of Ecological Economics and Political Ecology: Building bridges between moving shores." In S. Villamayor-Tomas & R. Muradian (Eds.), *The Barcelona School of Ecological Economics and Political Ecology: A Companion in Honour of Joan Martinez-Alier*, Springer.

September 25: Social Metabolism (AS)

The session aims to:

1. Introduce the theoretical foundations of social metabolism.
2. Examine whether variations in social metabolism are linked to environmental conflicts and explore how.
3. Understand the biophysical roots of the economic process, the feasibility (or lack thereof) of circular economy, and its implications for growth and social justice.
4. Feature presentations by guest speakers representing research groups at ICTA.

Required Readings:

- Haberl, H., Wiedenhofer, D., Pauliuk, S., Krausmann, F., Müller, D.B., Fischer-Kowalski, M., 2019. Contributions of sociometabolic research to sustainability science. *Nat. Sustain.* <https://doi.org/10.1038/s41893-019-0225-2>
- Scheidel, A. (2023). Does the Social Metabolism Drive Environmental Conflicts?. A The Barcelona School of Ecological Economics and Political Ecology: A Companion in Honour of Joan Martinez-Alier (pp. 181-193). Cham: Springer International Publishing.

September 29: Environmental Justice (AS)

The objective of this session is to understand how both extractive projects and nature conservation efforts can contribute to environmental conflicts. Additionally, we will analyze the nexus between climate, health, and immigration. The session will also feature presentations by guest speakers representing research groups at ICTA.

Required Reading:

- Scheidel, A., Temper, L., Demaria, F., Martínez-Alier, J., 2018. Ecological distribution conflicts as forces for sustainability: an overview and conceptual framework. *Sustain. Sci.* 13, 585-598. <https://doi.org/10.1007/s11625-017-0526-1>

September 30: Degrowth (AS)

The objective of this session is to introduce the concept of "degrowth" and reflect on its theoretical and empirical impact in various geographical contexts. The session will also include presentations by guest speakers representing research groups at ICTA.

Required Reading:

- Kallis, G., et al. (2018). "Research on Degrowth." *Annual Review of Environment and Resources*, [43, 4.1-4.26.](#)

October 1: Plurality of Values and Knowledge (SVT)

The objective of this session is to explore firsthand the work on evolutionary economics, environmental psychology, and local ecological knowledge carried out by two of the Ecological Economics research groups at ICTA. The session will also include presentations by guest speakers representing research groups at ICTA.

Required Readings (TBC):

- Langemeyer, J., Baró, F., Roebeling, P., & Gómez-Baggethun, E. (2015). "Contrasting values of cultural ecosystem services in urban areas: The case of Montjuïc Park in Barcelona." *Ecosystem Services*, 12, 178-186.
- Reyes-García, V., García-del-Amo, D., Benyei, P., Fernández-Llamazares, Á., Gravani, K., Junqueira, A. B., ... & Soleymani-Fard, R. (2019). "A collaborative approach to bring insights from local observations of climate change impacts into global climate change research." *Current Opinion in Environmental Sustainability*, 39, 1-8.
- van den Bergh, J. (2023). "Climate policy versus growth concerns: Suggestions for economic research and communication." *Journal of Behavioral and Experimental Economics*, 107, 102125

October 2: Alternatives and Commons (SVT)

The goal of this session is to provide a firsthand introduction to the concept of "alternatives" and its connection to the commons paradigm, as practiced in both the Global South and North. The session will also include presentations by guest speakers representing research groups at ICTA.

Required Readings:

- Temper, L., Walter, M., Rodriguez, I., Kothari, A., & Turhan, E. (2018). "A perspective on radical transformations to sustainability: resistances, movements and alternatives." *Sustainability Science*, 13, 747-764.

- Villamayor-Tomas, S., & García-López, G. A. (2021). "Commons movements: Old and new trends in rural and urban contexts." *Annual Review of Environment and Resources*, 46(1), 511-543.

October 6: Political Applications (AS)

The goal of this session is to understand the political applications of ecological economics through the study of real-world cases. The session will also include presentations by guest speakers representing research groups at ICTA.

Required Reading:

- Muradian, R., & Pascual, U. (2020). Ecological economics in the age of fear. *Ecological Economics*, 169, 106498.

PART 3 - INTRODUCTION TO INDUSTRIAL ECOLOGY

- Instructors: Laura Talens and Carles Gasol
- Dates: October 7, 8, 9 and 13 (15:00-18:00)

The sessions will be structured as follows:

Block 1. Introduction to the circular economy, and the main tools of Industrial Ecology.

1. Introduction to Circular Economy:

1. Introduction to the different schools of thought, with special emphasis on industrial ecology.
2. Description of the EU action plans in Circular Economy.
3. Linking the plans in Circular Economy with other EU strategies such as ecodesign regulations and critical materials.

Introduction to Ecodesign

1. Introduction to ecodesign and their application to products
2. Review of EU environmental product legislation (EU Ecodesign regulation and Sustainable Product Policy)
3. Discussion on existing implementing measures

Overview on LCA tools

1. Introduction to LCA as a tool for evaluating products, services and projects.
2. Introduction to Carbon footprint of organizations, products and services.
3. Environmental qualitative tools: Strategic Environmental Valuation.
4. Environmental certification systems for products and organisations.

Introduction to the carbon footprint applied to waste management.

1. Introduction to municipal waste management systems and their relationship with carbon footprint and impact savings.
2. Use of the CO2ZW tool.

PART 4 - INTRODUCTION TO GLOBAL CHANGE

Professors: Miquel Ninyerola and Jordi Cristóbal

Dates: October 15, 16, and 17 → Excursion to the Alt Pirineu Natural Park.

This part of the program will take place outside the UAB and far from its campus (250 km) and will last 2.5 days. The experience will offer the opportunity to get an integrated view of the socio-ecological aspects that operate in the high mountains and to learn about projects being carried out in the area, while the participating students get to know each other better and begin to collaborate and work together.

The activities will take place in one of the natural spaces that the Fundació Catalunya-La Pedrera (FC-LP) dedicates to teaching and research, [MónNatura Pirineus inPlanes de Son](#).

Examples of activities and debates:

- Introduction to the visited space: climatology, geomorphology, biodiversity, and biogeography.
- Identification of the main environmental pressures (livestock and pasture management, fires, climate change, urbanization).
- Valuation of natural elements (habitats).
- Interaction with prominent actors (scientists and technicians from the Natural Park, cooperative organization initiatives, etc.).
- Sustainable use of the local environment and practical interpretation of the landscape from a socio-ecological perspective.

PART 5 - ACADEMIC COMMUNICATION AND DISSEMINATION

- Instructor: AProf Ricard Morén-Alegret
- Dates and Group/Subgroup Distribution:
 - Full group: February 20 and 27 from 14:30h to 17:30h
 - Subgroup A (last names A to L): March 13, 20, 27, and April 10 from 10:30h to 13:30h
 - Subgroup B (last names M to Z): March 13, 20, 27, and April 10 from 14:30h to 17:30h

Course Objectives: This part of the course introduces students to key aspects of writing and oral presentations in an academic context in English. The main goal is to help students improve their knowledge of writing articles, reports, theses, and preparing oral presentations and PowerPoint files. Students will specifically work on research design, critical summaries, synthesis, and presentations.

Course Contents: The sessions include:

1. Readings: Students will read academic articles selected by the instructor and themselves. Some readings will be discussed in class.
2. Short writing and/or dissemination and communication exercises: Students will complete various short exercises during class.
3. Academic debates: Collective discussions will take place in the classroom and/or other spaces.
4. Exams (March 27, 2026): Students will take two individual exams in person on campus:
 - Exam 1: Basic definitions related to academic dissemination and communication.
 - Exam 2: Problem-solving, focusing on academic dissemination and communication.
6. Individual oral presentation and PowerPoint (April 10, 2026).

Mandatory* and recommended^ readings

- *Boncori, Ilaria (2023) *Researching and Writing Differently*. Bristol, UK: Policy Press. See: https://bibcercador.uab.cat/permalink/34CSUC_UAB/1eqfv2p/alma991010817743806709
- *Eco, Umberto (2015) *How to Write a Thesis*, Cambridge, Massachusetts, USA: MIT Press. See: https://bibcercador.uab.cat/permalink/34CSUC_UAB/avjcib/alma991010481837706709
- *Freiermuth, Mark R. (2023) *Academic Conference Presentations: A Step-By-Step Guide*, London: Springer. See: https://bibcercador.uab.cat/permalink/34CSUC_UAB/1c3utr0/cdi_proquest_ebookcentral_EBC7168715
- ^Hsu, Hua (2015) A Guide to Thesis Writing that is a Guide to Life, *The New Yorker*, April 6, see: <https://www.newyorker.com/books/page-turner/a-guide-to-thesis-writing-that-is-a-guide-to-life>
- ^Morén-Alegret, Ricard; Milazzo, Josepha; Romagosa, Francesc & Kallis, Giorgos (2021) 'Cosmovillagers' as Sustainable Rural Development Actors in Mountain Hamlets? *European Countryside Journal*, 13(2), 267-296.
See: <https://doi.org/10.2478/euco-2021-0018>
- *Pullen, Alison; Helin, Jenny & Harding, Nancy (2020) *Writing Differently*, Bingley, UK: Emerald Publishing Limited. See: https://bibcercador.uab.cat/permalink/34CSUC_UAB/1eqfv2p/alma991010496454506709

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Lectures	40	1.6	1, 10, 3, 2, 7, 8, 5, 9, 6, 4, 11
Practical exercises	15	0.6	10, 3, 2, 6, 11
Seminars	40	1.6	3, 2, 4, 11
Type: Supervised			
Course works	35	1.4	1, 10, 3, 11
Reading papers	40	1.6	10, 11
Tutorships	7	0.28	1, 3, 7, 8, 5, 9, 6, 4, 11
Type: Autonomous			
Exercise preparation	45	1.8	1, 10, 2, 4, 11
Information research	50	2	10, 11
Personal study	50	2	1, 10, 3, 7, 8, 5, 9, 6, 4, 11
Readings	50	2	1, 10, 3, 7, 8, 5, 9, 6, 4, 11

PART 1 - THEORY AND PRACTICE OF INTERDISCIPLINARITY IN ENVIRONMENTAL SCIENCES

Students will read, summarize, and prepare a brief presentation for an assigned reading in each session of this part. Each session will begin with a brief introduction to the specific topic provided by the instructor. Then, a puzzle methodology will be used to present and discuss the assigned readings, followed by a group debate on the main points discussed in the readings. Finally, students will individually respond to a questionnaire covering the topics discussed.

This module section allows the use of Artificial Intelligence (AI) technologies exclusively for tasks related to bibliographic research or information search and text correction. The student must (i) identify the parts that have been generated with AI; (ii) specify the tools used; and (iii) include a critical reflection on how these have influenced the process and the final result of the activity. Lack of transparency in the use of AI in this evaluable activity will be considered academic dishonesty and will result in the activity being graded with a 0 and not being recoverable, or more severe sanctions in serious cases.

PART 2 - INTRODUCTION TO ECOLOGICAL ECONOMICS

The sessions are designed as a combination of lectures, debates, and self-learning activities (reading, assignments, and group work). They provide a space for students to interact with ICTA academics and critically evaluate their work.

PART 3 - INTRODUCTION TO INDUSTRIAL ECOLOGY

- Block 1 (2ECT). Introduction to circular economy, and the main tools of industrial ecology

- 12 hours of class that include theory and practical exercises.
- 6 hours of Circular Economy, Ecodesign and theory applied to case studies
- 6 hours of theory and case studies
- 25 hours of readings (documents and case studies) and studies outside the classroom (individual and in groups)

Classroom hours: Theory classes will provide students with the necessary knowledge to understand the application of LCA, Carbon Footprint and Ecodesign tools in the analysis and design of electrical and electronic equipment (EEE), as well as conceptualize a project proposal in circular economy.

Work outside the classroom consist of two exercises: a paper review focused on a case study on LCA and one group research project.

The project on circular economy will be carried out outside the classroom to ensure that the students have understood the theoretical classes and have learn to put the concepts into practice.

Group projects: The conceptualization and design of a project proposal based on circular economy issues such as:

- Circular supply: use of recycled and reusable materials, instead of new materials.
- Recovery of resources through innovative processes that allow a positive impact on the value chain.
- Extend product life through recovery, resale, or eco-friendly innovation and design.
- Products as services: offering payment services for a product while maintaining its ownership for the subsequent recovery of resources.
- Innovation in processes through closed-loop production, to maximize the use of resources and minimize environmental impact.

The project proposal will be presented as follows:

- A short video describing your project (max. 7 min). The video should highlight the main objective, the potential benefits in environmental, social and economic terms and the tentative methodological approach to evaluate it.
- A brief report with the following content:
 - Section 1, general approach to the project:
 - o Description of the objective of the circular economy project.
 - o Methodological approach
 - o Possible benefits of the project
 - Section 2, evaluation of the potential impact of the project:
 - o Provisional environmental assessment of the project using tools that focus on a systematic and life cycle approach.
 - o Description of the Functional Unit, and the system or product description
 - o Discussion on the expected results of the evaluation using the selected environmental tool

The project proposals will be evaluated based on the following aspects:

- Speech and communication: clarity of the objective, the methodology and the results, and the correct use of vocabulary and terminology
- Time: adjusted use of time to important aspects

- Format and data: easy to understand and follow the discourse (good listening and reading of the information presented)
- Project: real applicability and replicability of the proposal, originality, and innovative nature of the idea. potential benefits on environmental, social and economic aspects.
- Existence of clear and measurable objectives and indicators of tracing.

PART 4 - INTRODUCTION TO GLOBAL CHANGE

At the beginning of the Master's program, a detailed agenda for the trip (which will be by bus and organized by the ICTA-UAB) and the activities will be provided. Although the master's program will cover most of the expenses, students will be asked to contribute a small amount to the travel and accommodation costs. The required amount will be determined later and will not exceed €100/person (for the 2.5 days of the training). We will carry out outdoor activities, as well as classroom activities, talks, and debates related to the knowledge and sustainable use of the local environment. Main speakers: Miquel Ninyerola (professor from the Dept. of Animal Biology, Plant Biology and Ecology-UAB), JordiCristóbal (professor from the Dept. of Geography-UAB), staff from the FC-LP (to be determined), and all the master's students in the debates. The field activities will be adapted to the natural space visited and the weather conditions.

Use of artificial intelligence

In this course, the use of Artificial Intelligence (AI) technologies is permitted as an integral part of the work's development, if the result reflects a significant contribution from the student in analysis and personal reflection. The student must: (i) identify which parts were generated with AI; (ii) specify the tools used; and (iii) include a critical reflection on how these have influenced the process and the result of the activity. The lack of transparency in the use of AI in this assessable activity will be considered academic dishonesty and will result in the activity being graded with a 0 with no possibility of recovery or may even lead to more severe sanctions in serious cases.

PART 5 - ACADEMIC COMMUNICATION AND DISSEMINATION

1. Professor's presentations, problem-solving, and case studies.
2. Learning based on real-world cases.
3. Written and visual presentations (e.g., using PowerPoint) and oral presentations in the academic workspace.
4. Scientific debates and discussions.
5. Participation in complementary activities.

This part 5 of the subject may allow a restricted use of the so-called "Artificial Intelligence" (AI) tools in some activities. However, the use of AI or any other digital technology is forbidden in exams and oral presentations. The generative AI gives errors or hallucinations and it is always necessary that students revise everything before submission. When the use of AI is explicitly authorised in written form by the professor/s, students must in writing: 1) identify the parts that are generated with AI; 2) specify the tools used; and 3) include a critical reflection on how these tools have been influential in the process and results of the activity. The absence of transparency in the use of AI in evaluative activities may imply that the subject is qualified with zero (0) and/or stronger penalties in worse cases.

In the different parts, all activities have deadlines that must be respected according to the proposed schedule (unless students have an official medical certificate, etc. indicating the need for additional time). In any case, when possible, it is recommended to maintain open communication with the professor.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Assignments, projects and course works	30	0	0	10, 3, 2, 7, 8, 5, 4, 11
Attendance and active participation at class	10	0	0	1, 2, 8, 5, 9, 6, 4, 11
Essays	20	0	0	2, 11
Exams	7	3	0.12	10, 2
Fieldtrip activities	20	0	0	10, 3, 2, 7, 8, 5, 9, 6, 11
Quizzes and questionnaires at class	13	0	0	3, 7, 5, 4, 11

Grades will be distributed as follows:

- Part 1: 15%
- Part 2: 30%
- Part 3: 15%
- Part 4: 20%
- Part 5: 20%

To pass the module, students must achieve a minimum grade of 5 out of 10 in each part.

Single Evaluation: This module does not offer the Single Evaluation option, as per the coordination of the program and the Dean's Office of the Faculty of Sciences.

Plagiarism: Copying or plagiarism in any evaluation activity constitutes an offense and will result in a grade of 0, with no possibility of recovery, whether it's an individual or group assignment. If during an individual in-class assignment, the instructor detects a student attempting to copy or use any unauthorized documents or devices, the student will receive a grade of 0 without the option of recovery. A work or activity will be considered "copied" if it reproduces all or a significant part of another student's work. It will be considered "plagiarism" if presented as one's own without citing sources, regardless of whether the original sources are in print or digital format.

PART 1 - THEORY AND PRACTICE OF INTERDISCIPLINARITY IN ENVIRONMENTAL SCIENCES

- Class participation: 10%
- In-class reading questions: 40%
- Group essay: 50%

Not evaluable: A student who has not submitted more than 30% of the evaluation activities will be considered not evaluable.

Recovery: A student who does not achieve a 5 in Part 1 can recover the essay through a new individual essay to be completed on the agreed date on the first day of class.

PART 2 - INTRODUCTION TO ECOLOGICAL ECONOMICS

- An exam will be held on October 1st covering the concepts learned in the first two sessions(40%).
- A group essay of 1,500 words based on one of the guest lectures (sessions on September 25, 29, and 30, and October 1, 2, and 6) will account for the remaining 60% of the grade.

- Students will be marked as "Not Evaluated" if they do not submit the preparatory assignments required prior to the exam.
- If a student does not achieve at least half of the total available points, they will have a second chance by submitting the essay individually, no later than two weeks after the grades are published.

PART 3 - INTRODUCTION TO INDUSTRIAL ECOLOGY

To pass the module, the student must have at least a grade of 4.0 in each block, the combined grade must be greater than 5. If the student fails in one module, he will have to re-register for the entire module.

- Block 1: the evaluation will be of 30% of the initial tests done in class, 20% of the exercise of review of a publication of LCA as homework, 40% on the project as homework and 10% based on the participation and class attendance.

The degree of participation consists of:

1. Quizzes (Individual). Each class will begin with a 10-15-minute test based on the previous class and assigned readings. In addition to ensuring a continuous effort on the part of the students, this will also motivate them to arrive on time to class and be prepared to think.

2. Homework (Individual). There will be 1 activity during the course based on a critical review of a LCA scientific publication.

3. Project (group). Students will make 1 video presentation of their project during the course. They will also submit a report on the conceptualization, design and method of assessing the potential environmental impact of the project. The final project and its presentation will be announced during the classes.

Non-evaluable grade:

A student who has not submitted more than 30% of the assessment activities will be graded as non-evaluable.

Recovery:

A student who does not achieve a 5 in the ecological economics module can undertake a recovery exercise based on an exam with 3 questions. The maximum grade that can be obtained is 6 out of 10.

PART 4 - INTRODUCTION TO GLOBAL CHANGE

The students will carry out an evaluation consisting of the creation (in groups of 4-5) of a presentation with the results.

Students who have obtained a grade lower than 5 on the poster presentation will have to repeat the presentation. A date for the re-evaluation will be set.

PART 5 - ACADEMIC COMMUNICATION AND DISSEMINATION

1. Proactive, critical, and constructive participation in in-person debates on campus related to readings: 10%
2. In-class exercises: 25%
3. Exams: 45%
4. Oral presentation with PowerPoint support: 20%

IMPORTANT NOTE: To pass this part of the course, students must submit in-class exercises, take in-person exams (achieving at least a grade of 5/10), and deliver an oral presentation in class with PowerPoint (PPT) on

the established day and location. If a student fails, exams and oral presentations with PPT can be retaken in June-July. However, participation and in-class exercises cannot be retaken.

Regarding this Part 5, a student will receive a "not evaluable" if they submit less than one-third of the requested coursework.

Bibliography

PART 1 - THEORY AND PRACTICE OF INTERDISCIPLINARITY IN ENVIRONMENTAL SCIENCE

- Bremer, S. and Meisch, S. 2017. Co-production in climate change research: re-viewing different perspectives. *WIREs Clim Change*, 8: e4823
- Lélé, S., and R. B. Norgaard. 2005. Practicing interdisciplinarity. *Bioscience* 55 (11): 967-9751
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Software

Explained in the content section of each part

Groups and Languages

Please note that this information is provisional until 30 November 2025. You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject.

Name	Group	Language	Semester	Turn
(PAULm) Classroom practices (master)	1	English	annual	morning-mixed
(PAULm) Classroom practices (master)	2	English	annual	morning-mixed
(TEm) Theory (master)	1	English	annual	morning-mixed