

Inventory of Sustainability-Related Courses

University of Amsterdam

Academic Year 2022/23

Semester 2



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Introduction

The UvA Green Office publishes a semi-annual guide on sustainability-related courses offered at the UvA. Within this inventory, the course names include links to their respective websites in the UvA Course Catalogue where more information can be found. We have included the amount of credits available for the courses, the blocks the courses are taught in, and their language. The UvA Course Catalogue served as the basis for the course descriptions provided in this inventory. The selection of courses in this guide is based on search terms centered around “sustainability,” “circular,” and “green”, in English and in Dutch.

Disclaimer

This guide may not include all sustainability related courses offered at the UvA. While we tried to find as many as possible, there might be courses which used different terms to describe their content and thus were not found in our search.

This guide is intended to supplement the UvA course catalogue. As such, the UvA Course Catalogue should always be referred to alongside this inventory. Furthermore, the UvA Course Catalogue is subject to change, and we accept no liability for inconsistencies between this and our inventory of sustainability courses.

Credits

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Feedback

Please send any feedback or suggestions for the next version of the Inventory of Sustainability Related Courses at the UvA to: greenoffice.research-bb@uva.nl.

Amsterdam University College (AUC)

[Big Questions in Time](#)

6 EC, Block 1 & 2, English

Time is a central concept in our thinking but has profoundly different meanings in different disciplines. In this course we will explore how these perspectives are different and focus on developing interdisciplinary skills to understand these differences and work on a number of case studies to apply this understanding to practical problems. We will start by exploring the role of time in a number of disciplines and build an understanding of the meaning of time within different contexts. Topics will include measuring time, historical development of the Time concept, deep time, space-time, time and age, the reality of the present, past and future, time as cultural concept, and time as a social construct. Students will first explore the role and nature of time in their own discipline and then compare and contrast these concepts to those of other disciplines.

[Environmental Economics](#)

6 EC, Block 1 & 2, English

Economics helps explain why individuals, firms, and also governments make the decisions they do. Such decisions are inextricably related to the natural environment in which they reside. This relation goes both ways. For instance, individuals may deteriorate local air quality by purchasing a polluting diesel car while simultaneously this degraded air quality affects their own well-being. In this course we study the relationship between natural resources, environmental quality, the economy, and environmental policy using a large range of modern economic theories and methods. Students will develop a thorough understanding of relevant aspects of the economy and the environment, their inter-linkages, and their relevance to current environmental problems including e.g., climatic change, declining fish stocks, water shortages, and biodiversity conservation. The lectures will focus on linking theory to practical examples in order to set the stage for the application of methods, such as simple modeling and valuation techniques. The course includes the following topics:

- Sustainability and economics: Limits to growth, sustainable development, homo economicus, intertemporal distribution, ecologists vs. economists.
- Welfare economics and the environment: Efficiency and optimality, market allocations, social welfare, market failure, government failure, public goods, externalities.
- Pollution control, targets, and instruments: Stock and flow pollution, optimal pollution level, abatement costs, command & control, taxes & subsidies.
- Cost-benefit analysis and valuation: Revealed and stated preferences, meta-analysis, project appraisal, dual discounting.
- The economics of (non)-renewable resources: Forests, fish, oil, and gas.
- International aspects: Trade and the environment, international environmental agreements.

[Field course in Environmental Earth Sciences](#)

6 EC, Block 3, English

The Field course Earth and Environmental Sciences will explore in the building of the Pyrenees. The Spanish Pyrenees form a beautiful outdoor laboratory to study dynamic mountain building. In this course we will focus on practical outdoor observation of the Earth, combining landscape and geology. The location offers superb examples of the development of a small-scale mountain chain.

The first two weeks are spent preparing for the field work. This includes studying the relevant geological history, preparing the logistics, and learning analytical skills; furthermore mapping, structural geology techniques as well as techniques to study sedimentary layers and landscape will be introduced.

In the last two weeks of the course, we will stay in the region of Ainsa and Jaca (in the province of Aragon). Students will unravel the geological history of a small region through careful mapping and interpretation of the collected data. This results in a reconstruction of the geological history in space and geological time. In the second week we will cross the Pyrenees and explore the structure and building of the mountain chain that has formed as a result of the collision between the Iberian Plate and the European Plate. We will observe large scale compressional processes as well as details in the rock record that illustrate the formation of the Pyrenees. The landscape of the Pyrenees is dramatically influenced by glacial processes that shaped the current topography. Various features in today's landscape can be immediately linked to the most recent ice ages and their impact on the Pyrenees. This course is open for all students with a basic knowledge in geological sciences and counts as a lab course. The field period is a very intense period, with a high workload, with full days in the field and analyses of the data in the evenings.

[Global Environmental Governance](#)

6 EC, Block 1 & 2, English

This course critically examines the past, present, and future of global environmental governance (GEG) and international environmental law. Environmental degradation, in its diverse shapes, forms and severities, is one of the most critical and urgent challenges faced by modern society. It is fair to say that most environmental problems are, by definition, 'global' issues. Given the closed, interconnected ecosystem formed by planet Earth, and given the far-reaching state of 'globalization' of contemporary society, most local conditions ultimately affect the global. But this dynamic also applies vice versa: environmental problems tend to manifest themselves in local impacts and conflicts. The increasingly global nature of most environmental problems would seem to demand global responses, yet the local dimensions may require different approaches and actors. This course will critically reflect on the evolution of such (global) responses in international law, international relations, politics, and global governance, as well as the more recent emergence of local, transnational, non-state, and sub-state governance initiatives. We will build an understanding of how environmental issues migrate back and forth across

different governance levels and scales, and how policy responses can be articulated at global as well as at local levels, and how these various efforts can interact, conflict, or create synergies.

[Introduction to Environmental Sciences](#)

6 EC, Block 1 & 2, English

The aim of this course is to provide students with the fundamental ideas and concepts in the field of environmental sciences and with analytical tools needed for a reflection on the nature of environmental problems and its possible solutions.

[Sustainable City](#)

6 EC, Block 1 & 2, English

Cities are engines of national and global growth. Urban areas generate around 80% of global Gross Domestic Product (GDP). They are also associated with around 70% of global energy consumption and energy- related greenhouse gas emissions.

Already, urban areas account for half the world's population. Over the next two decades they will house nearly all of the world's net population growth: 1.4 million people are being added to urban areas each week. By 2050, over 70% of the total world population is expected to live in cities, implying that in a few decades from now the world urban population will be larger than the entire global population today. This urban transition is being driven by cities in the developing world, where 90% of urban growth is projected to take place.

[Theme Energy, Climate and Sustainability: Case Study](#)

6 EC, Block 1 & 2, English

Since 70% of all CO₂ emissions are related to energy conversion processes, energy policy and climate policy are intimately related. In this course we elaborate these interrelationships in different ways. We will focus on theory (physical climate system; climate impacts; risk management; adaptation; mitigation), on the application of this theory and its societal context in the form of case studies; and on the public debate surrounding climate change and sustainable energy.

Amsterdam Graduate Law School

[International Law and Sustainable Development](#)

6 EC, Block 1, English

In this course, students are invited to consider the interaction between international law and sustainable development. There is hardly an area of international law that has been left untouched from aspirations toward sustainable development. Yet, despite its multiple invocations, what is called sustainable development remains rather underdetermined. In the course, students will be presented with the role of sustainable development in different international legal fields ranging from international economic law, through human rights law, environmental law to technological innovation. Through different angles, students will be enabled to identify and analyze the main components of sustainable development in international law, and to critically analyze the many roles that international law plays in this regard.

[International Responsibility](#)

6 EC, Block 1, English

The course International Responsibility will provide a comprehensive understanding of the role of responsibility in international law by examining how the core principles of international responsibility apply to the pursuit of global challenges such as peace and security, protection of the environment, and protection of human rights. It will discuss the conditions under which states, international organizations, and individuals are responsible for their actions and the consequences that flow from their responsibility. In doing so, particular attention will be paid to the ILC's attempts to codify the core principles of international responsibility, as well as to the jurisprudence of international courts such as the International Court of Justice, arbitration tribunals, and human-rights courts. The course will also compare the mechanisms of international responsibility with other mechanisms through which interested parties can respond to a breach of international law, such as diplomacy or the use of force.

College of Social Sciences

[Applied SP: Towards a Sustainable Society](#)

6 EC, Blok 3, English

The central theme is the application of social psychological knowledge to real-world problems such as conservation, shared decision making, public policy, and immigration. Climate change will serve as a recurring theme that exemplifies the challenges and opportunities of informed interventions. In contrast to the earlier core courses in the major that were focused on theory, the lectures and tutorials in this course are based on psychological approaches to improving social wellbeing. Additional topics may include risk perception, effective communication, and how to build resilient societies that can withstand social and physical threats.

[Sustainability politics. Paradigms and debates](#)

6 EC, Block 2, English

These core issues of sustainability politics will be discussed from various paradigms within political science, each of which asks its own specific kind of questions on political phenomena and analyzes them in its own characteristic way. Some of these have (re-)emerged, since the mid-1980s, to deal with then emerging new political issues like sustainable development: rational choice theory, neo-institutionalism, and constructivism. Others have evolved in earlier epochs of transformation: the period of state formation and societal modernization around 1900 (elitism and pluralism); and the turbulent years around 1970, when environmental and North-South obtained a place on policy agendas due to the work of new social movements (neo-pluralism; neo-Marxism). Their potential for understanding contemporary sustainability politics will be explored by discussing how they problematized and analyzed the politics of these earlier transformations and, next, how that may be translated to similar issues in contemporary sustainability politics.

[Economy and Ecology: Green Futures?](#)

6 EC, Block 1, English

The course provides a historically comparative, anthropologically focused introduction on thinking on the role of economics and ecology in global society, in particular as per developmental and political perspectives. The course seeks to provide an overview and understanding of current issues and approaches to these two themes and of the backgrounds that shaped and grounded them. As the lectures progress, students and lecturers seek to construct an analytical framework clarifying and understanding the connections between academic insights, politics, ideologies, and practices in this field. During the course we explore and critically consider the impact of nature conservation, natural disasters, resource conflicts, resilience, and adaptation. In disciplinary terms, the course combines elements of economic and legal anthropology, development anthropology and the anthropology of the future. We bring these together both from a theoretical

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perspective and with attention to applicability, involving elements of activism, policy and corporate affairs through multiple case studies and guest lectures.

College of Economics and Business

[Sustainability and Economics](#)

30 EC, Minor, English

The Minor Sustainability and Economics (30 EC) is an inter-faculty minor hosted by the UvA Economics and Business, in collaboration with the Institute for Interdisciplinary Studies (IIS). It aims to provide students with a working knowledge of sustainability rooted in economics and politics. With climate change, deforestation, biodiversity loss and other major environmental concerns, sustainability is high on the agenda for international organizations and governments all around the world. This minor will equip students with the necessary tools from economic, environmental, and political approaches, not only to acquire a general understanding of the subject, but also to analyze, evaluate and propose environmental policy and governance measures. Students who take this minor will have a competitive edge when seeking employment in the field of sustainability in the private sector, public sector, NGOs, and international organizations.

The Minor Sustainability and Economics brings under its purview a variety of contexts in the field of sustainability. Concepts included are neo-classical solutions such as tradeable emission rights, carbon taxes and public goods to address sustainability issues. Based on the principles of circular economy, students will also work on practical cases with companies, e.g., reducing emissions or innovating green solutions. Moreover, the growth-based economic approach will be questioned from steady-state and de-growth perspectives, with an emphasis on their alternative proposals to enhance environmental and social sustainability. Lastly, the relevance of different political paradigms throughout history will be studied to address policy making in sustainability today.

College of Sciences

[Inleiding Milieueconomie](#)

6 EC, Block 1, Dutch

Economie wordt wel eens gedefinieerd als de wetenschap die bestudeert hoe de mens met schaarse middelen omgaat om zijn behoeften te bevredigen. Met betrekking tot de actuele vraagstukken op het snijvlak van mens en aarde heeft deze schaarste twee kanten: aan de ene kant zijn de diensten die de aarde ons levert schaars of dragen wijzelf aan die schaarste bij. De draagkracht van de natuur is beperkt en grijpen wij teveel in, dan is die draagkracht het volgende jaar zelfs minder. Aan de andere kant zijn onze middelen schaars, dat wil zeggen beperkt. Wij hebben bijvoorbeeld niet de middelen om van de ene dag op de andere de hele wereld van zonnecellen te voorzien. Wij moeten daarom keuzes maken voor welke doelen wij ons geld inzetten. De module Inleiding Milieueconomie introduceert het economisch gezichtspunt op het object van Future Planet Studies: de actuele en toekomstige vraagstukken op het snijvlak van mens en aarde. De module legt om te beginnen uit waarom problemen zoals milieudegradatie en uitputting van grondstoffen (ook) economische problemen zijn. Daarnaast proberen we erachter te komen wat de economische oorzaken zijn van dergelijke problemen. Verder wordt uiteengezet welke economische prikkels en instrumenten er ontwikkeld kunnen worden om die knelpunten aan te pakken. Hoofddoel is het overbrengen van het besef dat economische inzichten onontbeerlijk zijn voor het formuleren van zowel beleidsdoelen als voor het ontwikkelen van beleidsinstrumenten op het gebied van natuurbehoud en duurzame ontwikkeling.

[Challenges in Biodiversity and Ecosystem Services](#)

3 EC, Block 2, Dutch

Students are introduced to the theory and practice of ecosystem services and functional biodiversity. This allows the students to understand and explain social problems related to nature management, pest control and food safety.

The following topics are covered in lectures, discussion groups, field trips and practicals:

- the interactions between plants, herbivores and their natural enemies;
- the effects of these interactions on the population dynamics of pests and natural enemies in theory and practice;
- the effects of omnivory and apparent competition;
- the effects of spatial distribution (landscape);
- the effect of soil biodiversity on plants (growth);
- the effect of plant diversity on pollinators and the pollination of food crops;
- population dynamics of pests and their natural enemies in monocultures and diversified agricultural systems;
- the role of landscape and functional biodiversity in natural pest regulation in agriculture.

Challenges in Freshwater and Marine Ecology

3 EC, Block 2, Dutch

Water covers about 70% of our planet and is the primary necessity of life. The quality of surface and drinking water has a direct influence on the health of ecosystems and plays an important economic role. However, deterioration in water quality, over-exploitation of aquatic resources and climate change all have potential consequences for ecosystem values and services. This poses risks to human health.

This course is based on three pillars: understanding basic concepts in water sciences, analyzing the effects of human influences on freshwater and marine ecosystems, and preserving and restoring aquatic ecosystems. From these three pillars, various challenges will be addressed in this course:

- Water systems and connectivity (types and geo-distribution of reservoirs and dams; water balance; retention and processing of nutrients; deltas and estuaries; methane production; ecological implications; fish migration)
- Water quality and plastics (environmental chemistry; chemical behavior / fate of toxic substances; ecotoxicology; analysis and monitoring; regulations)
- Harmful algal blooms (cyanobacteria, dinoflagellates, toxins, problems with freshwater and seawater relationship with climate change and eutrophication; opportunities for mitigation)
- Coral bleaching (climate change; ocean warming and acidification; human stressors; implications for coral ecosystem functioning)

Keystone Project II: The Resilient Environment

6 EC, Block 2, Dutch

In the Keystone Project II: The Resilient Environment, students in small groups make a concrete problem analysis of a socially relevant problem that has a clear biological component. A lot of work is done independently within the groups, whereby a content supervisor is available to help guarantee the content line. Depending on the topic, students will engage with stakeholders outside the university to obtain further information regarding the issue. The project ultimately results in policy advice that is addressed to one or more (social) stakeholders. The aim is to provide a diverse range of themes and subjects for the projects, offering students as much freedom of choice as possible in the allocation and elaboration.

Green Chemistry

30 EC, Minor, Dutch

Green chemistry is necessary to meet the societal needs for greener production of energy, food, fuels and (raw) materials. If you want to broaden your knowledge with a molecular perspective on this transition, this minor will provide a good basis. In this minor, there is a

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focus on photosynthetic and green chemistry principles, but also environmental chemistry and industrial processes are covered.

Graduate School of Business

[Environmental Economics](#)

5 EC, Block 1, English

The focus of the course is on environmental policies. To enable students to gain a good understanding of environmental policies, the course will first lay-out the basics of welfare economics and explain how the interplay between humans and their environment may affect social outcomes. It will then investigate the two main problems of environmental economics: how to determine the right pollution targets to set, and how to achieve these targets. Special attention will be given to the choice of policy instruments depending on the environmental problem and its relationship with other market failures (e.g., information asymmetries, market power). The end of the course will focus on the challenges related to the implementation of environmental policies, such as coordination problems in international environmental agreements, the role of lobbies, and public support.

[Business Strategy and Sustainability](#)

6 EC, Block 1, English

Students will learn how theoretical insights from different fields of management and the social sciences can be applied to analyze how firms deal with social and environmental issues. The purpose is to gain a deeper understanding of theories students are acquainted with, become familiar with new theoretical approaches, and apply them to social/environmental issues. In addition, students will learn how to empirically analyze problems in the fields of corporate sustainability and corporate social responsibility (CSR).

[Sustainable and Ethical Marketing](#)

6 EC, Block 2, English

The world is moving faster than ever. Environmental, social, technological, demographic, and political developments pose new challenges for society, and demand critical actions from corporations, nonprofit organizations, the government, and individual actors. Marketing has often been perceived as part of the problem rather than the solution to issues like pollution, (plastic) waste, resource depletion, obesity, food waste, human rights abuses, unsafe products, and privacy concerns. Notable examples are the Volkswagen 'Dieselgate' and Facebook's data privacy scandal. However, markets are also part of a global system that facilitates exchanges and co-creates value. This course aims to understand how marketing can be a force for social change. To do so, we will critically evaluate today's roles of marketing by analyzing how organizations can integrate sustainable and ethical thinking into their marketing philosophies, strategies, and activities, thereby addressing risk and creating value for consumers and society at large. Sustainable and ethical marketing represents a paradigm shift which requires a re-evaluation of assumptions underlying traditional marketing practices, and transformative changes to the ideology and practice of marketing.

Graduate School of Humanities

[Introduction to Environmental Humanities](#)

6 EC, Block 1, English

In the first half of the course, we explore canonical writing from Rachel Carson and Vandana Shiva to Dipesh Chakrabarty and Stacey Alaimo. Our aim here is to distinguish between nature writing and environmental criticism. In the second half, our inquiry will take shape around a special topic designed to bring students up to date in the field. In 2020-21, we explore "elemental ethnography" at the intersection of the classical and periodic elements. From wind, fire, water, and earth, to carbon, phosphorous, calcium, and nitrogen, elements are the indivisible components around which compound forms of matter and life cohere. Global warming and the industrial infrastructures responsible for it express the reciprocity of classical and periodic elements across human and more than human life worlds. CO2 concentration in the atmosphere alters the elemental forces animating planetary life from coral bleaching amidst hydrospheric absorption of carbon, to the thawing of ice sheets and glaciers promising waterlogged futures all over the globe. This section introduces students to analytic and critical concepts, methods, and interdisciplinary case studies responsive to the elements in order to suggest future research topics for the cultural analysis of climate change.

[The Geopolitics of Climate Security: A Critical Introduction](#)

6 EC, Block 2, English

This elective is divided into two overall sections. Each section is comprised of two blocks. The first section – ‘Key concepts and context’ – provides an in-depth account of the core concepts that are introduced in the module. The first block will introduce these key concepts. This includes the concept of ‘geopolitics’ (which, drawing on scholarship from political geography and international relations, is used to explore relationships between different political actors in climate change debates), and the concept of ‘security’ (with a focus on the multiple scales at which security can be conceptualized, e.g., national security, European security, and global security). The second block of section 1 provides an overview of the historical context for ‘climate security’ debates in the European Union, including the role of key institutional actors in these debates, NGOs, and community activist organizations. The overall aim of section 1 is to provide a clear conceptual overview of what ‘climate security’ means in a European context, and to provide a historical and geographical overview how ‘climate security’ discourses have developed in European politics.

Section 2 – ‘Theorizing climate geopolitics’ – introduces key theoretical perspectives to critically analyze climate security debates. The first block of section 2 will introduce postcolonial debates on climate security in a European context. How, for example, can we understand how the ‘imagined community’ and ‘imagined geographies’ of ‘Europe’ are constructed in climate security discourses? How can a postcolonial perspective help us to interrogate ‘Europe’ as a geopolitical construct in relation to its ‘neighbors’? In the second

block, we will examine the gendered and racialized discourses of European climate security debates, exploring how feminist theories of insecurity can help us to disentangle the social and political inequalities of climate security. In the process of exploring these important questions, this elective will enable you to develop a critical understanding of contemporary debates on climate security in a European context.

["Losing Earth"?: Activism and diplomacy on the environment and climate since 1968](#)

6 EC, Block 2, English

The great paradox, and challenge, of our time is that the way in which the modern world has created (and continues to create) greater and more widely shared prosperity since the nineteenth century has simultaneously caused (and continues to cause) such great ecological and climatic changes, that in the foreseeable future humanity and the ecosystems in which it survives will be threatened in their existence. Ever since humanity has come to realize this, there has been a close connection between what happens locally and internationally. No diplomacy without local and transnational action. No support for action without scientific consensus. These three aspects: development of scientific consensus on the main ecological and climatic challenges; civil society activism about these realities; and international diplomacy on these issues will be central to this course for the period since the late 1960s. Given the cross-border nature of the challenges, the emphasis is on the international and transnational aspects.

As historians, we believe that contemporary challenges can only be understood on the basis of knowledge of their historical background, and that historical insight is indispensable when thinking about acting in the present with an eye to the future. This is also the case with the great ecological and climatic challenges of the 21st century. An explicit goal of this course is therefore not only historical analysis (although that is still the main goal) but also linking it to a concrete reflection on possible actions in the present.

Graduate School of Life and Earth Sciences

[GIS/RS Science in Ecosystem Dynamics](#)

6 EC, Block 1, English

This course is divided into two sections. Students without pre-knowledge of GIS/RS select 12 mandatory assignments and 5 elective assignments (total 17 - final numbers will be announced on Canvas). Students with pre-knowledge select 10 mandatory assignments (final number will be announced on Canvas) and then continue with a GIS and/or Remote sensing case study. Some of the objectives are:

- To acquire theoretical knowledge of GIS tools and techniques and Remote Sensing technology
- To master advanced practical skills with ArcGIS Pro and eCognition software
- To apply advanced GIS and RS tools and techniques for the analysis of processes and patterns in geo- ecosystems

[Field Course Geoecological Systems](#)

12 EC, Block 2 & 3, English

Thorough field knowledge of landscape elements and their mutual relationship is vital to the understanding of geo-ecosystem functioning. This course deals with integrated geo-ecosystem analysis and includes the state factors geology and climate, which affect the distribution of water, light and nutrients and geomorphological processes in the landscape, as well as development of soil and vegetation. Introductory lectures will introduce the student to various aspects of the geo-ecosystems under study, amongst others: geological / tectonic setting, geomorphological development and processes, soil development, environmental problems, hydrological functions, functioning and preservation of the local ecosystems as well as land use.

Topics for this course will be geo-ecological inventories, vulnerability assessment, hazard assessment, soil erosion and land degradation, soil and water quality, and conservation strategies.

[Metropole Ecology](#)

6 EC, Block 2, English

An increasing part of Earth's terrestrial surface is taken up by urban and peri-urban land use, forming large agglomerates known as metropolises such as Tokyo, Shanghai, Delhi, Mexico City, Sao Paulo, New York, London, and Paris. These intensively used areas are dynamic ecosystems with distinct properties, hosting particular species and communities, but also creating nuisances e.g., through invasive species or human-wildlife conflicts. At the same time, metropolitan ecosystems are pivotal in supporting human well-being, as over half of the global human population lives in cities, facing challenges related to e.g., air quality, heat, storm water, and space for leisure. Urban ecosystems can provide services to

address some of these challenges. In this course we use an interdisciplinary approach to understand specific challenges and opportunities of an urbanizing world for both biodiversity, ecosystem processes, and people. Specifically, we will learn about 1) the opportunities and limitations of the urban environment for biodiversity and species' coping strategies; 2) the environmental challenges associated with urbanization and human well-being, and the role of ecosystems and their services in addressing these challenges; 3) human-wildlife conflicts in metropolitan landscapes and how these can be addressed.

[Science-Based Geo-Ecological Management](#)

6 EC, Block 2, English

Nature conservation, restoration and agricultural use often generate conflicting demands between biodiversity, recreation, and other use of ecosystems. More often than not, measures and interventions start without asking the question why we actually want to intervene and what are the aims. In addition, contrasting interests between stakeholders, executive organizations, and scientists with respect to management intentions may exist.

This course aims to give insights in the ecological processes that should be considered to come to science-based management of geo-ecosystems.

Understanding will be gained of geo-ecological and socio-ecological processes from local to landscape scale, and the spatiotemporal dynamics of ecosystems.

[Climate Change](#)

6 EC, Block 3, English

Climate is an important boundary condition for natural ecosystems and human societies. Climate change causes stress on natural ecosystems and provides challenges (and sometimes opportunities) for human society. In the past climate has changed due to several natural factors. Nowadays most climate change is caused by human activities. This course seeks to deepen your knowledge about climatology, meteorology, and climate change by studying the relevant literature and writing an essay, which will also be presented.

Graduate School of Sciences

[Catalysis for Sustainable Energy](#)

6 EC, Block 1, English

Concepts comprise fundamental thermodynamic, kinetic, and mechanistic considerations in design and application of catalysts for different types of green energy production, limitations, practical applications as well as characterization and analysis techniques. Active student participation.

[Project Sustainable Future](#)

6 EC, Block 3, English

Human civilization finds itself at a pivotal point in history. As a result of the growing world population as well as extensive industrial and societal developments that have taken place over the last 150 years, humanity has exploited earth's natural resources up to a point that further developing or even maintaining current levels of prosperity cannot be sustained. In addition, it has become very clear that current fossil fuel-based energy technologies have a dramatic adverse effect on the global climate. These issues become even more urgent when considering the anticipated elevated prosperity levels in the developing world.

These developments lie at the basis of the concept of 'sustainability': the future has to be radically different from past and present in the sense that human activities must be carried out in such a way that they can be sustained for many generations. To achieve this, many aspects of human activity have to be changed: different technologies for energy production and resource utilization will have to be developed. Choices will have to be made as of which of these new technologies are considered most favorable for society. Such technologies will have to be implemented at large scale, which requires involvement of decisive societal forces, such as governments, markets, producers, and consumers. Only if clear, rational and appealing visions are developed can such societal forces be activated, and the required changes be realized.

Graduate School of Social Sciences

[Sustainability Marketing and Communication](#)

6 EC, Block 1, English

Environmental problems, such as polluted ecosystems and climate change and its consequences, are posing a serious threat. Since these environmental problems are largely rooted in human behavior, action is necessary to change our way of living to ensure a more sustainable future. While many people are aware of the extent of the problem and the necessity for change, personal and contextual barriers constrain them from actually altering their attitudes and behaviors.

This seminar addresses the challenges of sustainable behavior and discusses possible solutions to overcome barriers through marketing and communication. We discuss the most relevant psychological factors and processes contributing to more sustainable behaviors and look into their applications in different areas of sustainability communication. What are the specific barriers and motivations for sustainable behavior? How can marketing and communication contribute to long-term changes in individual attitudes and behaviors? What are effective ways to address consumers via green advertising and branding, corporate social responsibility communication, or cause-related marketing? Which campaign strategies can be used by advocacy organizations to effectively influence citizens and induce social changes leading to a more sustainable society?

We will discuss and actively work with literature from various research areas. Students will use different perspectives and theories to develop campaign strategies aiming at more sustainable behavior of consumers and citizens. Guest lecturers will share their knowledge and experience from sustainability marketing and communication practice.

[Power and ideology in global environmental decision making](#)

30 EC, Block 1, 2, & 3, English

This MA thesis Research Project:

- (a) focuses on the role of power and ideology within International Environmental Politics (IEP) and Environmental Governance;
- (b) investigates how power and ideology impact on negotiations and problem solving in global environmental issues - notably climate change, CO2 emissions, crop and biodiversity loss, soil erosion, biofuel issues, water conflicts and pollution.

We will study and discuss:

- Who are the key actors shaping global environmental politics?
- What is their ideological lens, and how do / can they exert power?
- What theoretical underpinnings support what type of environmental politics and environmental governance?

- Under what circumstances do state and non-state actors negotiate (treaties) to resolve environmental problems?
- What are the obstacles to effective environmental governance on a global, national, and local scale?
- How do environmental politics and governance spill-over from one issue-areas to another?

Our emphasis lies on practical (recent) issues and debates in global environmental politics and governance by mean of:

- Studying a selection of case studies reflecting a shift of (power) relations and ideology between and within states, civil society, (multinational) corporations, international organizations, and natural resources use.
- Studying a selection of case studies through the lenses of 'environmental modernization (EM)', 'risk society', transition theory, multi-level perspective, corporate social responsibility (CSR).
- Studying the changing (or new) role of the nation-state as a unit of analysis vis a vis transnational and networked local actors.
- The lecturer will actively and personally help students design their thesis to facilitate their access to decision-making- or research positions.

[Spatial Implications of Environmental Change \(seminar\)](#)

6 EC, Block 2, English

In the main module of Spatial Implications of Environmental Change, we look at the various social spatial issues surrounding 7 themes. In this in-depth module, students are given the opportunity to delve further into 2 of these themes under supervision. They will do this from one of the theoretical perspectives from the main course. We also translate this specialization module into policy and spatial interventions. What can be done to address the issues as identified. The deepening and application are done on the basis of a case. Because the students have different geographic interests (city / region, the Global North / South, etc.), they can choose these as they see fit.



Graduate School of Informatics

[BioInformatics II](#)

6 EC, Block 2, English

The course Bioinformatics II focusses on statistical methods for analysis of omics data and/or computational modelling of biological systems.

Institute of Interdisciplinary Studies

[Spatial Implications of Environmental Change](#)

12 EC, Block 1 & 2, English

The climate and the environment are changing at an increasing pace and at the root of these changes is human action. The scientific community now even speaks of a historical epoch called the Anthropocene. It is a period in history when the impact of humans on the planet is greater than any other natural process. Humans have spread across the world in ever increasing numbers and have physically changed the landscape of the earth. This course considers 7 different fields of environmental change as the main focus of this course: Land Use, Fresh Water, Oceans, Climate Change, Biodiversity, Energy, Air.

Of course, environmental problems are by definition human constructs. Nature has always had environmental changes. Think for instance of the large ice ages. For nature in general, change is a fact of life. However, the fact that the changes are occurring so rapidly, and impact human livelihoods are the main reasons why we consider environmental change a problem. Therefore, it is in the interaction between social and natural systems that we must turn our theoretical lenses. Theories such as Social-Ecological Systems, Political Ecology, and Environmental Justice will be used to understand these complex relations between society and nature and concepts such as risk, climate governance, ecological modernization and institutionalization will be studied as individual and collective reactions to environmental change.

[Water Governance of Aquatic Resources and Environments](#)

6 EC, Block 2, English

This interdisciplinary and interactive lecture series deals with the governance of water resources and their ecosystem services, in a global as well as North-South perspective. It examines the current scientific and policy developments with respect to governing water at global level. For example, the member states of the UN General Assembly have adopted the sustainable development goals in 2015, including a goal on fresh water and one on marine water resources and almost all other goals are related to these goals as well. At regional level, a critical issue nowadays is how water is being, and should be, shared between riparian countries; other issues are with respect to river boundaries, transboundary water quality, and shipping. If climate change has a major impact on watersheds this can create new tensions in transboundary rivers and aquifers. At national level, water is used in practically every sector of society. Key questions at this level are how can integrated and adaptive water governance be organized? What is the role of the human right to water and sanitation within this discussion?

[Water Management](#)

6 EC, Block 2, English

Freshwater is one of the most important resources for mankind. However, the amount of

fresh water on Earth is limited. Furthermore, the amount of available water is not equally distributed both in time and space. Consequently, at some place too much water is present whereas in other regions too little water is available. This course will focus on aspects of water management in both humid and dryland regions, hence in areas with excess water as well as in areas with water shortages. You will work on examples involving practical cases directly related to water management issues from the Netherlands, Western Europe, and Southern Spain.

The course will contribute to your understanding on the hydrosphere as an important part of 'System Earth' and how global change affects water availability, and how models can be applied to help improving our understanding and might be used to anticipate on changing water budgets under global change.

[Scenario Planning](#)

6 EC, Block 3, English

Whereas scenario development can help to envision alternative futures, scenario planning can help illuminate the different ways in which things might be done to achieve the preferred, desired future. Complexity-based scenarios provide a rational framework for thinking about and mapping out possible futures. A framework that is not based on simplistic determinism but rather is explicitly founded on reflexive social action. While such scenarios break with modernity's outdated idea of a manageable society, they do offer the opportunity to make rational choices by showing the condition space that defines the possible scenarios, thus enabling us to choose the preferred future we want. With that, the scenario method offers a useful tool in all scientific fields concerned with 'wicked' problems, including the field of spatial planning. Via back casting, i.e., reasoning backwards (which is the opposite of prediction), the necessary actions and interventions can be designed to try to realize the future that is projected in the preferred scenario. Road maps can help to build bridges between the present and the future by translating a shared vision into concrete action strategies.

[Future Planet Project](#)

6 EC, Block 3, Dutch

The aim of the Future Planet Project is to enable students to experience the process and dynamics of executing an interdisciplinary project - in addition to the individual research they did in their Bachelor Project. And to let students catch a glimpse of the potential impact of their Bachelor Projects as regards finding solutions for the Grand Challenges that we face in trying to maintain the planet a habitable place for humankind.

PPLE

[Integrative seminar II: Solidarity](#)

6 EC, Block 3, English

Life is full of examples of individuals or groups that act in ways that are beneficial for their partners, for strangers or for societies as a whole. It is represented in pro-social behavior (psychology) and cooperation (economics), both of which are functional building blocks that allow society to operate. Paying taxes to secure social benefits for society, buying sustainably harvested products, or aiding schools and children in third world countries, are examples of situations in which individuals show their pro-social nature. However, there are many sources of solidarity, from the institutional environment down to the personal motives. In this course we will approach solidarity from psychological and economic perspectives and look at individual and situational determinants of solidarity. The goal of this course is to provide an insight into how individual and societal preferences can be aligned by encouraging the individual to acknowledge and incorporate the desirable societal and/or long-term goal. Using knowledge provided in the lectures and readings, the students will propose, describe, and analyze an issue of solidarity in one of three areas: the environment, the global market, or society.

[Integrative Seminar IV: Societal Challenges](#)

6 EC, Block 3, English

In this integrative seminar, students are invited to consider and reflect on the role of academia in responding to societal challenges and their own possibilities of action and responsibilities as interdisciplinary researchers. To this end, the course offers a series of guest lectures by established scholars who provide critical insights into how academic knowledge is produced; and how they as academics deal with the complexities of the social world in their own work.

Alongside reflecting on the main theme through responding to the guest lectures, students will expand their learning into practice and carry out small-scale interventions through social, creative, and experimental projects. The topics of elective tutorials are diverse, ranging from considering precarious labor to exploring circular economy to cultivating empathy. Regardless of the focus, in all tutorial groups students will be stimulated in critical and reflective thinking, collaboration and experiential learning, which means learning through experiencing and doing.