

Inventory of Sustainability-Related Courses

University of Amsterdam

Academic Year 2021/22





Contents

Educational Institutions

Amsterdam University College (AUC).....	4
Amsterdam Graduate Law School.....	13
College of Social Sciences.....	14
College of Economics and Business.....	21
College of Humanities.....	24
College of Life Sciences.....	28
College of Sciences.....	31
Graduate School of Business.....	32
Graduate School of Communication.....	36
Graduate School of Economics.....	38
Graduate School of Humanities.....	39
Graduate School of Life and Earth Sciences.....	41
Graduate School of Sciences.....	46
Graduate School of Social Sciences.....	49
Institute of Interdisciplinary Studies.....	53
PPLS (Politics, Psychology, Law, Economics).....	62
Psychology.....	63

Introduction

The UvA Green Office publishes a semi-annual review of sustainability-related courses at the UvA. This inventory lists courses offered at the UvA, alongside details of their credits, block, language of instruction and professor. The titles of the courses are also hyperlinked to the UvA course catalogue where more details can be found. The descriptions in the UvA course catalogue served as the basis for this inventory.

Disclaimer

The courses listed in this inventory were found by searching through the UvA course catalogue and looking for the terms “climate”, “environment”, “circular”, “sustainability” and “green”. Additional courses which were deemed to have a clear sustainability focus have also been included. Of course, it is possible that there are more sustainability-related courses with titles that do not contain these keywords and thus will be omitted from this list. Some courses listed on the UvA course catalogue do not specify the course coordinator, and therefore no coordinator has been included for these courses in this inventory.

No sustainability-related courses were found for the following educational institutions, and subsequently they do not feature on this inventory: Amsterdam College of Law, College of Communication Science, College of Pedagogical and Educational Sciences, College of Informatics, Graduate School of Child Development and Education, Graduate School of Informatics, Medical Informatics.

This guide is intended to supplement the UvA course catalogue, and therefore should be read in conjunction with the course catalogue. Additionally, the UvA course catalogue is subject to amendments, and therefore the Green Office accepts no responsibility for inconsistencies between the UvA course catalogue and this inventory.

Credits

Many thanks to Miléna Jacob, Olivia Deuschle, Arda Ergin and Milly Warner for creating this inventory.

Feedback

To contact the Green Office about this inventory, please email the Head of Research and Education at greenoffice.research-bb@uva.nl.

Amsterdam University College (AUC)

[Big Questions in the Anthropocene. 6 EC, English, Blocks 1 & 2.](#)

The impact of humans on Earth measured and experienced in what is commonly referred to as the Anthropocene, brings us the questions: how and to what extent has human impact surpassed that of natural forces? How do we imagine and envision the Anthropocene? What are the problems relating to the Anthropocene and the experiential and felt elements of life within it? What is required to survive in a context in which multiple scales of “violence” affect humans and non-humans alike?

Itself a highly contested term, the Anthropocene has been used not only to designate a geological epoch, but also as a means of framing a number of significant environmental, social, and cultural challenges that this period has brought with it. These challenges will be examined from perspectives in the Social Sciences (e.g. international relations, economics, cognitive psychology, sociology, anthropology), Humanities (e.g. ethics, visual arts, film, history, communication, journalism, critical theory) and Sciences (e.g. earth system science, environmental science, ecology, engineering).

In this course, you will draw on a number of disciplinary perspectives to open up problems that attend the Anthropocene, both conceptually and as a marker for more complex and urgent material/ real-world impacts that humans continue to shape and encounter. The course is structured around three key themes: (1) resource management (food security, sustainability, energy); (2) cultural construction (rethinking and contextualizing human/nature relationships, Anthropocene as epoch); and (3) social action (the new economics of the Anthropocene, ethical dilemmas, politics).

In Big Questions in the Anthropocene, you will critically evaluate your relationship with the planet and study new ways and the cultures and practices that it sustains. Together, we will explore questions such as: how do our economies impact waste disposal and energy sources? In addition, we will examine technological innovations, debate ethical issues, and perform social analyses. As we interrogate the idea of the Anthropocene, we will also discuss and challenge related concepts and oppositions. These include the presumptive binary division between ‘nature’ and ‘humankind’; the myth of human domination over nature; and naturalized conceptualizations of time and history.

To effectively address the problems of the Anthropocene, you will develop a set of interdisciplinary tools and a broad understanding of the context and situations in which to apply them, as well as the potential of these tools to facilitate discussion and effect change.

[Big Questions on the Environment: Science, Society and Culture. 6 EC, English, Blocks 4 & 5.](#)

Inventory of Sustainability-Related Courses

University of Amsterdam, Academic Year 2021/22

It is fair to say that the environment in general and climate change in particular are the quintessential interdisciplinary issues of our time. They can be studied within the scope of sciences (e.g., earth system science, climate science, environmental science, ecology), social sciences (e.g., environmental policy and law, international relations, economics, cognitive psychology, sociology, anthropology) and humanities (e.g., philosophy, religion, ethics, literature, visual arts, film, history, communication, media, journalism, and critical theory). The interdisciplinary connections between these approaches form the basis for this Big Questions course.

The course content will span different disciplines and explore how these may help in providing a full understanding of a broad array of aspects regarding contemporary environmental problems, in particular climate change. In the first half of the course selected topics will be studied from a more monodisciplinary angle (e.g., studying a work of art; a policy framework; physical observations) which together build a multi-disciplinary framework. This part is mostly based on (guest-)lectures, student-led teaching, and group discussions.

In the second half of the course we will move to truly interdisciplinary inquiry by having students work collaboratively in interdisciplinary teams to explore how different (disciplinary) approaches shed light on the same issue and together may provide a deeper, more holistic and more contextual understanding than would be obtained by taking only one approach. Each student team will undertake an interdisciplinary group project related to the theme of the course, involving research and a creative product (e.g., a work of art, a short movie, a play, a policy proposal, etc).

[Climate Sciences: Past and Present, 6 EC, English, Blocks 1 & 2.](#)

The climate of the past 3 million years is characterized by the waxing and waning of polar ice sheets. What are the rates and magnitudes of these changes in relation to the ongoing climate change? Quantitative approaches are more and more important to mechanistically understand the processes leading to and resulting from Climate Change. A basic knowledge of modern climate systems is a prerequisite for studying the climate of the past. The concept for the course is based on the interplay of the different spheres: hydro-, cryo-, atmo-, bio- and geo-sphere. The “sphere thinking” enables the dynamics to govern and not static principles. Specialized topics will be selected where the students will become “the specialist”. Next to classical lectures, Flip the Classroom sessions will be performed. The mandatory book by Ruddiman 3rd edition (a second hand copy of the first or second edition also fulfills) will be dealt with in the following way: 1. The teacher gives a short introduction to one or several chapters. 2. The students get one or several figures/tables from the respective chapter(s) to be explained by the students during the following session in front of the class. At the VU practicals will be performed on microscopes to reconstruct phases of drastic ice melting during the past 50000 years based on ocean sediments.

Ecology: From Soil to Society. 6 EC, English, Blocks 4 & 5.

The theory of ecology aims to understand the spatial and temporal patterns of the distribution and abundance of organisms. Before we delve into this theory, we will first acquaint ourselves with the major groups playing a role in the ecological theater: bacteria, plants, animals and fungi. Throughout the course we will deepen the acquaintance by looking to specific plants and animals. We then briefly address the abiotic factors affecting the distribution and abundance of organisms. Finally we will address their reciprocal interactions and how these contribute to the regulation of population size and the flow of energy and nutrients within ecosystems.

The interaction of ecology with humans will be covered in various ways. The human activities underlying economic and socio-cultural globalization lead to a third form of globalization that has multiple and increasing impacts on ecology: biological globalization. This is the process by which species spread across geographical distribution barriers, leading to so-called bio-invasions. We will use *invasive species* as a tool to study ecological processes. These species often disrupt local ecosystems, providing natural experiments to study ecological processes. At the same time, they may impact strongly on the economy if they completely overtake the local ecosystem. Invasive species thus provides a strong linkage to ecological theory and societal issues. Other links to relate to conservation and restoration ecology. The rationale for society to aim for conservation and restoration is to be found in *ecosystem services*. These services allow the value of nature to be expressed in monetary units which is a prerequisite to integrate ecology and economy.

Ecological theory is often underpinned by or even formulated in terms of mathematical models. During the course we will pay due attention to this approach and we will practice some

Environmental Archaeology. 6 EC, English, Blocks 1 & 2.

Environmental Archaeology covers the interaction between humans and their environment in the archaeological and historical past. Within the course this broad scope embraces research covering a range of environmental specialisms between science and archaeology, and will also be highlighted from a humanities perspective. What are the main contributing disciplines and what is their respective role in environmental archaeology? What are the biotic and abiotic components of our environmental change in geological and archaeological archives?

The lectures will focus on: 1) the importance of an integrated approach cutting across different specialisms to arrive at a holistic view of a site and its environment 2) concept of reconstructing palaeoenvironments and palaeoeconomies by identifying micro- and macrofossils, 3) future perspective of the Anthropocene by recognizing questions as: What

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22

is it? How old is it? How do we get it? What can we do about it? What are the options for the future?

Key methodologies that will be discussed stem from archaeology, archaeobotany, archaeozoology, forensic archaeology, palynology, geoarchaeology, biological anthropology, as well as more synthetic and theoretical approaches to the past human environment as well as sustainable directions to the future Anthropocene.

Environmental Chemistry / Eco-Toxicology. 6 EC, English, Block 3.

This interdisciplinary course addresses the presence of chemical pollution in the environment and its effect on biological processes ranging from the molecular to the population level. The course consists of four main pillars, each addressing its own questions, i.e.

- Environmental chemistry: What are the main classes of environmental pollutants? What are their chemical characteristics? How do they enter the environment? What is their fate in the environment?
- Monitoring of pollutants: How can we measure exposure to chemicals in the environment? How can we discover new contaminants?
- Environmental toxicology: How does a compound behave after uptake? What makes a chemical toxic? How can we test the toxicity of a chemical? What is the mode of action of a toxicant? How do chemicals interact?
- Risk assessment: How can we determine a safe level of exposure for humans? And for the environment?

Throughout the course, several classes of compounds will be discussed with special emphasis on these four pillars. Each pillar will be examined separately.

Environmental Economics. 6 EC, English, Blocks 4 & 5.

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

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22

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.

[Environmental Law and Policy. 6 EC, English, Blocks 1 & 2.](#)

There are very few issues that affect our daily lives, our future and that of the planet as profoundly and as visibly as environmental degradation. This course will explore the emergence and evolution of law and policy approaches designed to address contemporary environmental challenges in a multi-level context, with a particular focus to the level of the European Union (EU) and its Member States. We will examine how the unique and complex nature and framing of environmental ‘problems’ affects the way governments and non-governmental actors, respectively and collaboratively, respond to the environmental challenges posed by our modern industrialized, globalized, and anthropocentric world.

Drawing on various fields of study including law, policy, politics, IR, environmental studies, economics, sociology, philosophy, and ethics, this course will provide students with interdisciplinary, multi-perspective knowledge and critical insight into how modern societies respond to environmental threats.

[Field Course in Environmental Earth Sciences. 6 EC, English, Block 6.](#)

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;

Inventory of Sustainability-Related Courses **University of Amsterdam, Academic Year 2021/22**

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 work load, with full days in the field and analyses of the data in the evenings.

[Introduction to Environmental Sciences. 6 EC, English, Blocks 1, 2, 4, & 5.](#)

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, English, Blocks 4 & 5.](#)

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.

These trends give rise to a series of interesting and relevant questions, which we will address throughout the course:

First, we need to understand the economics and geography of cities. Why do people and firms want to concentrate in highly dense, expensive and vulnerable parts of the world? What explains the location of cities?

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22

Second, we need to understand the extent to which urbanization is a sustainable form of organization of economic activities. How does urbanization influence global environmental change, and how does global environmental change in turn influences urbanization processes?

Third, we need to understand the kinds of urban policy frameworks required to make cities productive, resilient, cleaner, quieter and safer.

System Earth. 6 EC, English, Blocks 1 & 2.

The focus of this interdisciplinary course is on the Earth as a complex and dynamic system.

In the first part of the course we will study the characteristics of and interactions between the major Earth compartments: solid earth, atmosphere, biosphere, ocean, cryosphere. We will focus on their large-scale dynamical behavior and the role of feedbacks and associated timescales. This includes e.g. the global atmospheric circulation; ocean circulation; plate tectonics; metabolic pathways.

In the second part of the course we will study the biogeochemical cycles of carbon and nitrogen within and between these spheres. These and other cycles involve both biological, physical, geological and chemical processes and transformations. Both the natural and the human perturbed cycles will receive attention. Understanding the carbon cycle is crucial in assessing climate change, while the perturbation of the nitrogen cycle is implicated in many different environmental problems.

The emphasis is on the emergent behavior of the earth system on different spatial and temporal scales. This exhibits a dynamic equilibrium between long-term stability and (natural and/or anthropogenic) perturbations and change.

Besides the textbook we will use research and review articles as well as scientific assessment reports. By means of a small research project students can focus on a specific area of interest.

Theme Course: Climate and Energy. 6 EC, English, Blocks 1 & 2.

The first part of this theme course is shared with “Climate and Sustainability” and is focused on how and why the climate is currently changing and what this means for society at large. The second part is focused on various ways of producing usable forms of energy, to better understand how we can mitigate climate change.

Part 1: Climate Change

Topics of study include a brief history of climate science, featuring some of the great physicists of the 19th century who laid the foundations for our understanding. The carbon cycle and the Earth’s energy balance will be discussed as key aspects of the climate system. We will investigate the observations, causes, impacts and future projections of climate

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22

change. An underlying theme is to consider how we know what we know, and to instil a critical thinking approach to statements about climate change.

Part 2: Energy Science

The current energy system will be briefly discussed, as well as the transition to a low carbon energy system (shared with C&S). The underlying chemical and physical principles are used to show how energy is collected and utilized and why such processes are inherently inefficient. We consider the working principle of the following energy conversion mechanisms: thermal energy (as the basis for different ways of harnessing energy), solar energy and wind energy. Further, the conundrum of providing continuous electricity with intermittent renewable resources is investigated.

[Theme Course: Climate and Sustainability. 6 EC, English, Blocks 1 & 2.](#)

The first part of this theme course is shared with “Climate and Energy” and is focused on how and why the climate is currently changing and what this means for society at large. The second part is focused on the transition to a more sustainable society.

Part 1: Climate Change ; Topics of study include a brief history of climate science, featuring some of the great physicists of the 19th century who laid the foundations for our understanding. The carbon cycle and the Earth’s energy balance will be discussed as key aspects of the climate system. We will investigate the observations, causes, impacts and future projections of climate change. An underlying theme is to consider how we know what we know, and to instil a critical thinking approach to statements about climate change.

Part 2: Sustainability ;The current energy system will be briefly discussed, as well as the transition to a low carbon energy system (shared with C&E). We will explore sustainable development from various angles. Examples of questions to be addressed are the following: What economic, ethical, social and political considerations are at stake in this transition? How would continuing climate change be expected to impact different aspects of life? What options do we have to deal with the challenges of climate change? What are the interactions between climate change and development, climate change and conflict, etc? How does societal change occur and how can we influence its trajectory? How can we characterize the different stakeholders and positions in the political and societal debate? How does climate change relate to other sustainability issues (the so-called planetary boundaries)? Welcome in the Anthropocene: an era characterized by profound and long-lasting human influence.

[Theme Course: Sociology, Anthropology and Sustainability. 6 EC, English, Blocks 1 & 2.](#)

Inventory of Sustainability-Related Courses **University of Amsterdam, Academic Year 2021/22**

This course introduces you to **sociological and anthropological ways of thinking** and take you on a journey to answer a 'big question' central to these two sister disciplines, namely: what does it mean to be human in today's world? Today's world, we suggest, is defined by pressing questions around globalization and the (un)sustainability of human behaviours, choices, and beliefs. Therefore, the concepts of globalization and sustainability are central to our endeavour to formulate answers to the aforementioned 'big question'.

[Theme Energy Climate and Sustainability: Case Study. 6 EC, English, Blocks 4 & 5.](#)

In this course we will investigate a range of topics that are relevant in the context of the energy transition, climate change, and sustainability. The topics (or 'case studies') are chosen to be relevant to political discussions, current events, and societal debate and span the sciences (climate change, renewable energy, etc) as well as the social sciences (cost-benefit analyses, post-truth, societal change).

The theoretical foundations will be studied to the extent needed to understand the particular cases, but the focus is mostly on the application of knowledge and insight in different contexts and situations. Some lectures are based on the contents and information transfer, while other classes are more discussion-based or used to work on certain problems.

[Urban Environment Lab. 6 EC, English, Block 6.](#)

This course focuses on the science and social science of urban environment planning. An evidence-based approach to the problem of climate change and spatial planning will be the focus of this year's lab. More specifically, we will explore the urban heat island effect in Amsterdam using a range of spatial analysis tools and methods.

Students will personally try to measure this effect, statistically link obtained local temperature measurements to environmental characteristics and assess potential future changes in urban temperatures in Amsterdam based on socio-economic and climate scenarios. Following this assessment solution strategies will be proposed to limit local temperature increases. Finally an attempt is made to evaluate the effectiveness of these strategies.

Amsterdam Graduate Law School

[Omgevingsrecht, 6ECTS, Nederlands, Semester 2 Block 1, mw. mr. M.J.C. Visser \(Master Publiekrecht: Staats- en Bestuursrecht\)](#)

Het omgevingsrecht is het recht dat betrekking heeft op de fysieke leefomgeving. De nadruk bij dit vak ligt op de bestudering van de samenhang tussen de belangrijkste deelterreinen van het omgevingsrecht: het milieurecht, het ruimtelijk bestuursrecht, inclusief bouwrecht en het natuurbeschermingsrecht.

Het omgevingsrecht is van groot belang bij gebiedsontwikkeling. Denk aan de aanleg van windmolenparken, de uitbreiding van vliegvelden en de verbreding van (spoor)wegen. Ook bij kleinere projecten, zoals het oprichten van een bedrijf, het bouwen van een bouwwerk of het organiseren van een festival, is het omgevingsrecht een bepalende factor. De verschillende (tegenstrijdige) aspecten die bij dergelijke projecten kunnen spelen, worden door diverse omgevingsrechtelijke wettelijke regelingen gereguleerd. Een belangrijke factor is bovendien dat het Europese milieu- en natuurbeschermingsrecht veel eisen stelt aan onze fysieke leefomgeving en zo randvoorwaarden stelt aan het nationale omgevingsrecht.

Tijdens de werkcolleges wordt, mede door deskundigen uit de praktijk (Raad van State, advocatuur en/of adviesbureaus), ingegaan op relevante wet- en regelgeving, een aantal actuele ontwikkelingen en botsende belangen. Er worden casus voorgelegd en praktijkvoorbeelden besproken. Ook wordt aandacht besteed aan nieuwe ontwikkelingen, zoals de (naar verwachting in 2021 in werking tredende) Omgevingswet en de energietransitie.

College of Social Sciences

[Advanced Environmental Geography: Governance for Sustainability, 12 EC, English, Semester 1 Block 1+2, dr. ir. C.F. \(Crelis\) Rammelt \(Master's Human Geography\)](#)

Environmental geography, with its focus on human-ecosystem interactions in a spatial-temporal perspective, is well placed to shed light on the daunting environmental challenges of our times. These challenges can only be tackled by understanding, analysing and addressing their underlying driving factors. Doing so bring us to a discussion of key concepts in governance for Sustainable and Inclusive Development in the Anthropocene. The drivers can operate at local through to global levels. Such factors can be located in institutions, such as agreements, markets, trade relations, and governance structures, but also in discourses, local customs and changing geo-political contexts. Similarly, the impacts of global change can manifest themselves at multiple levels of governance, and may occur far away, in time and space, from the causes of these problems. Such challenges call for multi-level, polycentric, adaptive forms of governance. The issues discussed in this course have a strong North-South dimension, as well as an upstream-downstream (water) and transnational dimension (climate). The course takes a problem-oriented approach to analyse climate and water policy issues, as well a theory-oriented, multi-disciplinary approach to the topics—including knowledge of physical, spatial and institutional dimensions, of policy, politics, law and economics.

[Climate Proof Development of Cities and Strategic Planning, 6EC, English, Semester 1 Block 1, dr. M. \(Mendel\) Giezen, \(Master's Urban and Regional Planning\)](#)

One of the key issues cities have to deal with for the foreseeable future is Climate Change. The increase in green house gasses has impacted the climate in many regions in the world. While some places might get hotter and other colder, it is clear that weather events are becoming more extreme in a lot of cities around the world. Two concrete examples are that there will be more events of extreme rainfall and more periods of extreme temperatures and drought. This leads to the paradoxical situation that cities need to prepare for an excess of water as well as a lack thereof. Combined with a situation in democratic societies where increasingly a variety of stakeholders have influence in the governance process and there is a lot of uncertainty, these challenges require strategic planning in order to adequately adapt to these challenges. This will be the focus of this course.

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22



The course will use 3D planning software engine Tygron to have students experience the process of strategic planning around climate proof urban development and have them develop creative solutions for cases within the Municipality of Amsterdam. Students will be asked to reflect on the process using the literature and classes they have gotten in the course. They will be working within a reflexive backcasting approach to strategic planning.

[Economy and Ecology: Green Futures? 6 EC, English, Semester 2 Block 1, dr. G. Nooteboom and dr. L.G.H. \(Laurens\) Bakker, \(Pre-Master's Medical Anthropology and Sociology, Cultural and Social Anthropology, Anthropology and Development Sociology, Bachelor Bèta-gamma, Cultural Anthropology and Development Sociology, Minor Cultural Anthropology and Development Sociology and Culturele Anthropologie voor ISW-studenten\)](#)

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 uses elements of economic and legal anthropology, development anthropology and the anthropology of the future but has an emphasis on the (anthropological) study of ecology. We bring these together both from a theoretical perspective and with attention to applicability, involving elements of activism, policy and corporate affairs through multiple case studies and guest lectures.

[Environment & International Sustainable Development, 6 EC, English, Semester 1 Block 3, mw. dr. M.A.F. \(Mirjam\) Ros-Tonen, \(Bachelor Sociale Geografie en Planologie, pre-master's International Development Studies, Minor Internationale Ontwikkelingsstudies and International Development Studies\)](#)

This course analyses environmental issues critical to the global South from a political ecology perspective, with a focus on the politics of human-nature relationships and inequalities in access to natural resources. The analysis considers global, regional and local

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22

dimensions of the issues at hand, focusing on the relationship between different environments and development processes, changes in resource access, and adaptation to global and local environmental change.

The course looks into conceptual approaches, international policy dimensions and some critical environmental problems, while reserving time for an active role of the students. The lectures introduce students to different theoretical approaches and discourses, the international policy dimensions of sustainable development and to specific environmental problems. In the working groups several methods are used to further discuss and 'digest' the information offered in the lectures.

[Green Economy and Society, 6 EC, English, Semester 1 Block 2, N. Westerkamp MSc, \(Bachelor political science, Minor political Economy and politieke economie\)](#)

From Green New Deal to Nitrogen Pollution Policy and from Sustainable Business to Circular Economy, the contemporary political debate and decision-making on sustainability issues involves both continuous evolution of and experimentation with new policies, policy ideas and governance designs, as well as continuous conflict over and contestation of such policies, ideas and designs. This course offers an introduction to key concepts and theories contributing to our understanding of these phenomena through a Politics, Political Economy and Governance lens.

These theories consider international, transnational and national institutions as the main forces in addressing sustainability problems. Whereas traditionally, (inter-)state institutions were their main focus, more recently the crucial roles of institutions in the realms of market, civil society and science have also been recognized. The course will analyze how sustainability problems and associated processes of globalization are being dealt with in this complex institutional setting.

While governments more often than not still have a unique position in such sustainability politics, they can essentially only play their roles in interaction with non-state actors. Because of this, governing the greening of Economy and Society is likely to introduce various challenges in designing governance, as well as opportunities for political contestation, as outlined in this course.

[Integratiepracticum 2: Duurzaamheid, 6 EC, Nederlands, Semester 2 Block 3, mw. drs. M.A. \(Marg\) van Eenbergen, \(Bachelor Interdisciplinaire sociale wetenschap\)](#)

Inventory of Sustainability-Related Courses University of Amsterdam, Academic Year 2021/22

In dit practicum gaan studenten ‘transdisciplinair’ aan de slag: een integratie van theoretische kennis met kennis en vragen uit de praktijk. In dit practicum betekent dit dat studenten zich gaan buigen over een casus uit het bedrijfsleven of vanuit de overheid, met als thema ‘Duurzaamheid’.

Opdrachtgevers presenteren een duurzaamheidsdilemma en studenten schrijven zich in voor een van de casussen. Per casus worden groepen gevormd, die alle dit dilemma van de opdrachtgever gaan onderzoeken en een oplossing gaan ‘ontwerpen’.

Dit proces voltrekt zich volgens ‘design thinking’: dit houdt onder andere in dat de studentengroepjes tussendoor steeds terugschakelen met zowel begeleider als opdrachtgever. De begeleider houdt constant in de gaten dat de oplossingen die gezocht gaan worden zich op het *sociaal-wetenschappelijke* vlak liggen, dat de kwestie *transdisciplinair* benaderd worden, en behapbaar blijft. De opdrachtgever geeft feedback vanuit de praktijk. Daarnaast ligt in dit practicum de nadruk op het ontwikkelen van ‘samenwerken’ als academische vaardigheid.

[Magic Bullets in Development, Climate Change and Global Health, 12 EC, English, Semester 2 Blocks 1+2, dr. R.P.M. Gerrets and dr. G. Nooteboom \(co-ordinator\), \(Bachelor Cultural Anthropology and Development Sociology, pre Master’s Medical Anthropology and Sociology, Cultural and Social Anthropology, Minor Anthropology and Development Sociology, Cultural Anthropology and Development Sociology and Culturele Anthropologie voor ISW-studenten\)](#)

In the field of international development, poverty alleviation strategies come and go, as do hypes and accompanying buzzwords. Every few years, ‘new’ solutions to end global poverty gain popularity, informing ‘novel’ policies and practices which then spread across the globe. These solutions often rely on specific blueprints involving, for example, poverty measurement or eradication models, which are trialed in one country, to be applied in others. Oftentimes these blueprints hinge on ‘magic bullets’ - in short, technological fixes to problems with complex (e.g., social, economic, legal etc.) underpinnings. Examples of such ‘magic bullets’ are microcredit, conditional cash transfers, land registration but also antimicrobial therapy, species eradication or community health worker programs.

Recently, environmental programmes and green policies have become important in international development. How are ‘green futures’ envisioned, what are the hidden ideological, technical and moral ideas behind them, and what do they do in the field? What is more, they come with specific technologies of implementation, targeting and distribution that render social issues such as inequality, injustice or wealth redistribution as technical

matters that, in the process of targeting and implementation, become depoliticised administrative issues.

In this course, we study development practices and policies of doing good. We do this through the study of developmental ideas and models presented as – relatively – simple solutions to end complex global problems such as poverty, (tropical) diseases or climate change. We critically analyse the adoption and popularity of various ‘magic bullets’ in the field of development, the buzzword-laced semantic networks in which they operate and the complexities of implementation and responses on the ground. Students will learn how to understand the mobility of magic bullets, identify cross connections between ideas and ideologies, and explore the linguistic complexities of ‘development speak’. We also try to be practical and assess the empirical viability of some magic bullets.

[Spatial Implications of Environmental Change \(seminar\), 6 EC, English, Semester 2 Block 2, J.J. \(Jannes\) dr. Willems, \(Bachelor Sociale Geografie en Planologie, pre-master’s Urban & Regional Planning and Human Geography\)](#)

In de hoofdmodule van Spatial Implications of Environmental Change hebben we gekeken naar de verschillende sociaal ruimtelijke problematieken rondom 7 thema's. In deze verdiepingmodule krijgen studenten de kans om zich onder begeleiding verder te verdiepen in 2 van deze thematieken. Zij zullen dit doen vanuit een van de theoretische invalshoeken uit de hoofdcursus. Verder maken we in deze specialisatiemodule de vertaalslag naar beleid en ruimtelijke interventies. Wat kan er gedaan worden aan de problematiek zoals geïdentificeerd aan te pakken. De verdieping en toepassing wordt gedaan aan de hand van een casus. Omdat de studenten verschillende geografische interesses (stad/regio, het Mondiale Noorden/Zuiden, etc.) hebben, kunnen zij deze naar eigen inzicht kiezen.

In the main module of Spatial Implications of Environmental Change, we looked at the different social-spatial issues around 7 themes. In this in-depth module, students will have 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. Furthermore, in this specialization module we will make the translation to policy and spatial interventions. What can be done to address the issues as identified. The deepening and application is done through a case study. Since the students have different geographical interests (city/region, the Global North/South, etc.), they can choose these as they see fit.

[Sustainability politics. Paradigms and debates, 6 EC, English, Semester 2 Block 2, prof. dr. J. \(John\) Grin, \(Bachelor Political Science, Minor Political Economy, Minor Public policy and governance\)](#)

Global climate change and resource problems are now widely seen as urgent. In increasingly many countries, these problems are no longer primarily a source for protest and action amongst social movements and engaged individuals. The Paris Treaty, transnational partnerships between firms and societal organizations and an increased sense of discomfort regarding the potential political-economic and security ramifications of natural resources scarcities have created a broadly shared aspiration for sustainable development.

Thus, we now witness an actual shift from niche action and concern to a much more comprehensive transformation of modes of production, energy provision, transportation, consumption and so on. This gives rise to what we may call *sustainability politics*. In this course, you will learn especially how to understand three core issues of such politics:

1. *Whose sustainability?* – what about democratic inclusion and legitimization in processes of shaping sustainable transformation?
2. *How to achieve collective, transformative action?* – what are the benefits, limits and conditions of different modes (‘top-down’; ‘bottom-up’) of governing societal change.
3. *Between stability and transformation:* what are barriers and opportunities for profound change within the context of the established order?

We will discuss these issues on basis of a variety of specific, contemporary examples, focusing on climate change / energy issues, natural resources and food. The politics discussed will range from Amsterdam and other cities in the EU and the US, through regional policies in countries like Germany and the Philippines to national policies in countries as different as Bolivia, South Africa, and The Netherlands, to the UN, EU and WTO, as well as transnational governance through sustainability certification and its different consequences in Vietnam and Bangladesh. Conceptually, key themes will be social movements, governmental policymaking, globalization theory and developmental states, market-based modes of (transnational, transformative) governance, state theory, and the (national and transnational) public sphere as a place for deliberation and transformation.

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

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22

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.

[The Circular City: Towards a Sustainable Urban Ecosystem, 6 EC, English, I.M. Kenny, Summer school UvA](#)

Students are taught how to leverage the potential of cities via a new paradigm for urban planning and design: urban metabolism. While this concept has been around for over 50 years, recent interest in it has rejuvenated the fields of urban studies, industrial ecology, and architecture. Urban metabolism can be defined as the sum total of the technical and socio-economic processes that occur in cities, resulting in growth, and production of energy, materials, and waste. The city is viewed by its 'material flows', generally defined into water, energy, materials (including food), and waste. These flows consist of inputs (local, regional, and global inflow of resources), throughputs (energy required to transform these resources and waste produced by any process), and outputs (the material outcome of this process).

While immersed within the innovative city of Amsterdam, students will learn about several aspects of urban resilience from ecological, economic, and cultural perspectives. Through the use of different tools, scientific methods and analysis, students will experience experimental urban design and planning firsthand. Inspired and equipped with the right tools and knowledge base, students will return to their home cities ready to step up to the challenge and transform their cities.

College of Economics and Business

[Corporate Social Responsibility 6EC, English, Block 2, Hendriksen](#)

Companies are dealing with societal and environmental issues as a result of pressures exerted by customers, shareholders, regulatory authorities and non-governmental organisations. This course examines how firms have reacted to these demands from stakeholders and how sustainable management and corporate social responsibility have developed. It explores the factors that influence the integration of societal and environmental concerns in corporate strategies and the practical implications of this process.

Corporate social responsibility is addressed from an international business and strategic management perspective. Especially in international business companies are confronted with differences in legislation, ethical standards and management practices. It is important to manage these issues from an ethical viewpoint and to avoid any risk of negatively influencing the reputation of the company. There are also potential competitive advantages for companies in marketing green products, saving environmental costs and, more generally, in developing sustainable business models. The lecturers will refer to their own research in the field and provide both theory and practical cases.

[Environmental Economics 6EC, English, Block 2, Dr. Sol](#)

This course will review studies that present human influences on the environment and will discuss economic theories that help to understand these environmental changes. The topics that will be covered include: public goods and externalities, Malthus and carrying capacity, steady state economics, a broader perspective on cost benefit analysis (e.g. intertemporal welfare economics and valuing the environment), theories of optimal resource extraction for both renewable resources and non-renewable resources, policy instruments - such as Pigouvian taxes and depletion quotas - and private sector responses, including the Jevons paradox.

[International Development Project BSc 12EC, English, Block 2-6, Prof. Borgman](#)

The International Development Project (IDP) is a year-long project that works together with social enterprises to tackle issues influencing individuals and communities in developing countries. The project consists of four phases. First of all, students will contact several non-profit organisations to find a suitable project. Secondly, they will budget their plans

Inventory of Sustainability-Related Courses **University of Amsterdam, Academic Year 2021/22**

and use their creativity to raise funds. Thirdly, desk research will be carried out in the Netherlands in the form of expert-interviews inside and outside academia, and a literature review. Lastly, the International Development Project will travel to the country in question to continue the research. A project-specific consultancy report will be completed after returning to the Netherlands. Various roles exist within the project, including a chairperson, treasurer, secretary and an acquisition officer. During the year, students will receive coaching, work on personal development and reflect on their contribution within the project.

[Introduction to Social Entrepreneurship 6EC, English, Block 2, Dr. Mol](#)

The Introduction to Social Entrepreneurship elective course is coordinated by the Amsterdam Business School (UvA) in collaboration with the Institute for Interdisciplinary Studies (UvA) and the Amsterdam Business Research Institute (VU). The course consists of two interrelated and integrated components and will be assessed based on various written assignments (see below).

Component one equips students with the academic background to review, evaluate and analyse the concept of social entrepreneurship, the elements that constrain and enable social entrepreneurship and how and why people engage in social entrepreneurship. This academic part consists of six mandatory two-hour lectures which will be delivered by academics, (social) entrepreneurs and others. Students will read obligatory texts related to these topics. Students will be individually assessed in two ways. First, before each lecture - including lecture 1 - students will submit a QAQC lecture preparation assignment. Each QAQC will be evaluated using a standard rubric form and graded on a pass/fail basis. A student must complete a QAQC each week to complete the course. Second, students will submit three individual writing assignments that will be assessed using a standard rubric. The total score for these assignments will make up 60% of the final grade for the course. During the second - parallel - component of the course students will participate in workshops which are focused on how to conceive ideas for social enterprises and how to write a business plan. Working in small teams students will write a business plan for the start-up of a social enterprise. The business plan will be assessed on several components: an assessment of relevant social needs and the potential for a social enterprise, an assessment of social and economic viability of the social enterprise and a concrete and detailed business plan with a realistic time schedule, etc. The business plan will make up 40% of a student's final grade. Moreover, a pitch event will be organised in which all teams get the opportunity to pitch their business plan in a competition to a jury consisting of both academic and entrepreneurial experts and of representatives of Enactus. Students who complete this course will be actively encouraged to join Enactus UvA or Enactus VU in order to bring their project (or other projects) to fruition.

Natural Resource Economics 6EC, English, Block 5, Dr. Dominguez Martinez

This course will investigate the links between human societies and natural resources through the lens of economics. It will be organised around six broad topics: sustainability, fossil fuels, water, fisheries, biodiversity, and development. Course content for each topic will in turn have two main components. First, we will draw on real-world data and case studies to analyse why each topic is a complex policy issue. Second, we will cover economic approaches that allows us to conceptualise and understand these issues. The course will emphasise how economic tools can be used to inform policy on the optimal management of natural resources.

Social Entrepreneurship 9EC, English, Block 2 & 3, Dr. Mol

Is it possible to apply academic skills to concrete societal or environmental problems as a student? During this course students will acquire entrepreneurial skills and will engage in at least 80 hours of community service where they will gain experience in applying these entrepreneurial skills to a societal or environmental issue. The course thus contributes to the mission of the University of Amsterdam (UvA) to engage 'with social issues, in keeping with the spirit of the city with which it is inextricably linked' (UvA profile and mission). The course Social Entrepreneurship is coordinated by the Amsterdam Business School (UvA) in collaboration with the Institute for Interdisciplinary Studies (UvA) and the Amsterdam Business Research Institute (VU). The course consists of three interrelated and integrated components and will be assessed based on the successful completion of at least 80 hours of community service and three different assignments (see below).

College of Humanities

[Environmental Archaeology and the Anthropocene, 6 EC, English, Semester 2 Block 1, dr. S.J. Kluiving, \(Minor Archaeology Today: \(Digital\) Science in Archaeology\)](#)

Environmental Archaeology and the Anthropocene deals with the interaction between humans and their environment in the past as well as in the future. As a discipline, Environmental Archaeology focuses on the study of our environment and the changes therein over time on the basis of the abiotic and biotic components found in geological sediments, soils and archaeological deposits. In this course the emphasis will be twofold: on the Holocene as an epoch and on the Anthropocene as the new era of mankind in which the impact of man on his environment in its widest sense, the planet, has reached an unprecedented scale. The course offers a broad scope and includes research from a range of environmental specialisms between science and archaeology (e.g. archaeobotany, archaeozoology, palynology, geoarchaeology, biological anthropology) as well as from a humanities perspective. It also asks the question in what way environmental archaeology can contribute to a more sustainable environment.

The course will focus on:

1. the importance of an integrated approach cutting across different science specialisms to arrive at a holistic view of a site and its environment;
2. concepts of reconstructing palaeo-environments and palaeo-economies by identifying micro- and macrofossils;
3. the future perspective of the Anthropocene, the new era of mankind.

[Environmental Archaeology: Landscape, Food, Economy and Nature, 6 EC, English, Semester 1 Block 2, dr. C. Cavallo, dr. S.J. Kluiving and dr. E. Smits \(Bachelor Archaeology\)](#)

Environmental Archaeology as a discipline studies the interaction between humans and their environment in the past. It focuses on the reconstruction of the environment in its broadest sense (landscape, flora, fauna and climate), and the changes therein, and uses the abiotic and biotic components found in geological sediments, soils and archaeological deposits as its source material. While the focus is on the relationship between human settlement and its environment, environmental archaeology always puts man centre stage: it studies how the physical landscape put limits and constraints on human settlement, and, vice versa, how the natural environment was changed by human intervention and exploitation of it. In this course you will be introduced to the methods and theories used in this field of archaeology and learn how to put them to use to answer questions on the interrelationship between humans and their environment.

In this course, four aspects of the interrelationship between humans and their environment will be discussed:

1. Natural and human induced processes in the formation of the landscape;
2. Spatial imaging of the landscape: the use of maps;
3. Plants and animals in the landscape and their exploitation;
4. Humans in the landscape: environmental reconstruction and food economy

[Greening the World: Fiction and Non-Fiction for Environmental Humanities, 6 EC, English, Semester 2 Block 1, dr. C.M. Lord and drs. M.C.C.J. Reesink \(co-ordinator\)](#)

We are living in tumultuous and exciting times. Not only has COVID 19 shown us that our natural environments speak back to us in confronting ways, but Greta Thunberg, as well as a host of notable climate scientists, institutions such as the UN and the IPCC, activists, scholars and creatives, have all raised the alarm for the survival of our planet.

Our climate and our ecology is everywhere: in our human lives and society, our human cultures and imagination. The field of Green media and popular culture brings to life our inescapable relationship with our home, this fragile blue planet. It is a composite of trees, air, water, volcanoes, fossil fuels, trees, animals, weather systems and us. Green media offer us a rich field of inquiry, helping us to study how the green values of popular culture are in contradiction with dominant practices such as capitalism and consumption.

The seven lectures and viewings will cover key concepts and theories in the area of green media by looking at fiction and non-fiction forms, from Tv series to feature films, documentaries, commercials and infomercials across a variety of genres. Human relationships with the eco-system of animals and plant life, rocks and climate, are often considered to be oppositional. We are raising the temperature of the planet.

How do our media help us understand this? Or cause us to be in denial? Our course seeks to be positive and life-affirming, treating media and the greening of these media as a practice which is both regenerative and resilient.

In this course, we will explore the field of green media as transdisciplinary. We will consider how this academic field, with its 'ecological' turn, can help us offer social, cultural and mediated solutions to help our eco-system.

[Kunst en locatie. Beeldende kunst in de gebouwde omgeving in Nederland, 6 EC, Nederlands, Semester 1 Block 1, mw. dr. P.A. Brouwer, Bachelor Kunstgeschiedenis](#)

Kunst en architectuur maken tegenwoordig deel uit van een geglobaliseerde wereld en een wereldwijde beeldcultuur, maar tegelijkertijd is er een enorme waardering van het specifieke en lokale. Deze paradox is niet nieuw. Al eeuwenlang zijn kunstenaars, architecten, filosofen, historici en kunsthistorici gefascineerd door deze twee uiterste invloedssferen en worden kunst en architectuur vanuit zowel een globaal als lokaal perspectief bestudeerd.

In dit college staat het lokale centraal. Vanwege de *spatial* en *cultural turn* in de geesteswetenschappen, de kunstgeografie, en actuele vraagstukken over geopolitiek, culturele identiteit en ecologie staat de plaatsgebondenheid van kunst en architectuur weer volop in de belangstelling. In dit college komen belangrijke historische en actuele theorieën aan bod en wordt inzichtelijk gemaakt hoe deze de kunstgeschiedschrijving bepalen: of het nu de aloude indeling van kunstenaars in nationale en regionale scholen betreft, site-specific landart, of contextuele architectuur. In colleges en excursie worden deze theorieën toegepast op Nederlandse casussen, van de middeleeuwen tot aan de moderne tijd, waardoor je Nederlandse kunst en architectuur leert bevragen juist op hun nationale en lokale specificiteit.

[The Climate Emergency. The History of a Crisis, 6 ECTS, English, Semester 1 Block 1, dr. P.H. van Dam](#)

Coming to grips with climate change, we all become historians. Regardless of our disciplinary and professional backgrounds, we have to develop accounts of how the climate has changed and how our relations to the planet have evolved.

This course aims to connect the present concerns to a historical perspective, which revolves around three themes: the intellectual history of the climate (What is it?), social conflict over environmental issues (Who cares?), and the history of global governance (What do we do?). From these vantage points, the participants become acquainted with different modes of historical analysis and developing accounts of history. They chart explanations of the current crisis, the approaches which have been applied, and the possible obstacles to change.

[The Geopolitics of Climate Security: A Critical Introduction, 6 EC, English, Semester 2 Block 2, \(Minor European Politics: Policies and Issues\)](#)

This elective is divided into two overall sections. Each section comprises 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 conceptualised, 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 organisations. 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 – ‘Theorising climate geopolitics’ – introduces key theoretical perspectives to critically analyse 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 ‘neighbours’? In the second block, we will examine the gendered and racialised 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.

College of Life Sciences

[Biodiversity & Global Change, 6 ECTS, Semester 1 Block 2, English, dr. rer. nat. W.D. Kissling, \(Bachelor Biology, Beta-Gamma and Future Planet Studies\)](#)

Biodiversity contributes to the proper functioning of ecosystems and is essential for a sustainable future of our earth. It also contributes to food production, biotechnology, and medicine, and is therefore of fundamental importance for our human well-being. However, biodiversity has changed dramatically, both in the geological past as well as more recently due to the impacts of modern humans. The resulting environmental changes (both natural and human-driven) take place at different spatial and temporal scales, but the mechanisms and processes driving biodiversity change are often poorly understood. For instance, species and ecosystems respond to changing environmental factors such as climate, soil, and land use, resulting in a complexity of biotic and abiotic interactions. This makes an understanding and the prediction of future biodiversity changes extremely challenging. To understand the effects of future global change on biodiversity, insights from past and currently observed changes, experiments, biological theory and modelling are relevant to predict how and why the biosphere changes. This encompasses many different disciplines, including macroecology, climate change biology, biogeography, molecular ecology, and climatology. The course concentrates on patterns and processes of biological diversity at species, population and ecosystem levels, and covers biodiversity (past, current and future patterns), threats and ongoing changes, biogeography, biodiversity data, and past, recent and future global change. Course material will be mainly covered by lectures. In addition, the management of data and visualization of biodiversity in space and time is performed with Geographic Information Systems (GIS). The course therefore allows students to get up-to-date with knowledge and skills in biodiversity and global change research of the twenty-first century.

[Ecotoxicology and Environmental Quality, 6 EC, English, Semester 1 Block 3, dr. M.H.S. Kraak, \(Bachelor Biology, Beta-Gamma and Future Planet Studies\)](#)

Research project practicals: Behavioral responses of freshwater snails to pharmaceuticals

The rate of increase in the production and diversification of pharmaceuticals has led to their worldwide occurrence in soils, biota, sediments, surface water, groundwater and drinking water. Pharmaceuticals are designed to induce a biological response at low concentrations, are continuously released into the environment and slowly degrade, leading to chronic exposure of non-target aquatic organisms. Hence, adverse effects on aquatic organisms are likely to occur, but remain poorly studied. The aim of the present project is therefore to determine the behavioral

responses of freshwater snails to pharmaceuticals. To this end ecotoxicity tests will be performed, exposing the snails to concentration ranges of the selected pharmaceuticals, with survival, consumption and behavior as endpoints.

[Evolutionary Psychobiology: Ecology, Behavior & Cognition, 12 EC, English, Semester 1 Block 1, dr. K.R.L. Janmaat PhD, \(Minor Evolutionary Psychobiology\)](#)

The study of animal behaviour, provides us with knowledge on the cognitive skills of a large variety of animal species and populations and their relation to social and ecological conditions, making it a crucial part of studies in psychology and biology. Each animal has special requirements to survive and reproduce, and the same problem is often solved in different ways in different species. Observations of such species-specific behaviours (e.g. tool use, food caching behaviour and imprinting) led to new insights in the anatomy and physiology of brain structures and their evolution. Studying our own behaviour and that of other animals can thus provide a window into our minds and insight into what makes us human.

When studying animal behaviour, questions are asked not only about “how” behaviour is controlled, but also about what behaviour is for, how it evolved in the natural environment (“why” questions). The second half of the course will focus on how to answer these questions. You will learn how to design a behavioural study and how to conduct behavioural measurements accurately and reliably. You will work in an interdisciplinary team of students and learn the value of each discipline. The course will include a nine days practical where you collect behavioural data by observing an animal of your choice, such as a primate, dog, cat, corvid or parrot species in a natural, semi-natural or captive environment (ARTIS zoo). The aim of these observations is to study the extent of cognitive capacities, such as episodic-like memory, timing, planning, insight, orientation, recognition, communication, social learning and so on. The final aim of the practical work is to have you develop and present a promising design for an experimental or observational study. The practical work is alternated with lectures and journal clubs that will help you develop such a design. These will address topics as recording methods, observer bias, how to deal with confounding variables (through design and use of statistics), advantages of experiments versus observational designs, wild versus captive studies and how to measure validity and independency of collected data. Dependent on your enthusiasm and performance such designs can be followed up with a Bachelor or Masters research project.

[Keystone Project II: The Resilient Environment, 6 EC, Nederlands, Semester 2 Block 2, mw. drs. H.M.H. de Leeuw, \(Bachelor Biologie\)](#)

In het Keystone Project The Resilient Environment maken studenten in kleine groepen een concrete probleemanalyse van een maatschappelijk relevant probleem dat een duidelijke biologische component heeft. Er wordt binnen de groepen veel zelfstandig gewerkt, waarbij er een inhoudelijk begeleider beschikbaar is om de inhoudelijke lijn te helpen waarborgen. Afhankelijk van het onderwerp zullen studenten in gesprek gaan met stakeholders buiten de universiteit om nadere informatie met betrekking tot het vraagstuk in te winnen. Het project mondt uiteindelijk uit in een beleidsadvies dat gericht is aan een of meerdere (maatschappelijk) stakeholders.

Er wordt gestreefd naar een divers aanbod van thema's en onderwerpen voor de projecten, waarbij de studenten zo veel mogelijk keuzevrijheid wordt geboden bij de toewijzing en de uitwerking.

[Palaeoecology, 6 EC, English, Semester 1 Block 1, dr. W.D. Gosling, \(Bachelor Biology, Beta-Gamma, Future Planet Studies\)](#)

The Palaeoecology course will provide you with a wide range of insights into how information about ecology and ecological change in the past can be obtained. To understand the ecology of the past we will also explore mechanisms related to past climatic change, physical processes in the landscape, and human activity. We will focus on the Quaternary period (last 2.6 million years), and evidence for past ecological change will be looked at over a range of timescales (from multi-millennial to annual). We will also explore spatial patterns of ecological change from local to global scales. Over the course of the lectures, practicals and discussions, we hope that you will gain a new perspective on ecological change that places the world you see around you today into a clearer context.

College of Sciences

[Analytical and Environmental Chemistry. 6 EC, English, Block 1, Dr. Leslie.](#)

This course offers an introduction to the chemistry and toxicology of chemical environmental pollution, one of the hallmarks of the Anthropocene. Topics include:

- Techniques to detect and quantify chemical pollutants in soil, sediment, water and biota
- Sources and emissions
- Transport and distribution
- Partitioning of chemicals between environmental compartments (water, air, soil, biota)
- Bioaccumulation, biotransformation in living organisms and (bio)degradation processes
- Adverse effects, bioassays and effect directed analysis
- Environmental risk assessment of chemicals
- Elementary systems mapping in environmental chemistry problem-solving

Graduate School of Business

[Business Strategy and Sustainability 6EC, English, Block 1 & 4, Dr. Georgallis](#)

Students will learn how theoretical insights from strategic management and other fields of management such as organisation theory, marketing, and international business can be applied to analyse how firms deal with social and environmental issues. The purpose is to gain a deeper understanding of theories that students have already been acquainted with in other courses, become familiar with new theoretical approaches, learn to apply them to social/environmental issues and, in the process, obtain more in-depth knowledge of these specific issues. In addition, students will learn how to empirically analyse problems in the fields of corporate sustainability (CS) and corporate social responsibility (CSR). We also aim to develop practical skills such as teamwork, debating and presenting.

[Ethics and the Future of Business 4EC, English, Block 1 & 4, Dr. Kourula](#)

The purpose of this course is to explore the trends, core concepts, theories, and approaches of business ethics and corporate sustainability. We examine our own role as well as the roles and impacts of business and other organisations in society. The course is divided into a general and a track-specific part. The general part reviews core normative ethical theories, examines ethical decision-making and related factors and biases, explores trends and tools in corporate sustainability, and links all of these to broader societal challenges with a focus on innovative solutions. The track-specific part goes deeper into the topics and approaches which are most relevant to the different specialization areas within the MScBA programme.

[Honours Capstone: Tackling Challenges in Business Sustainability 5EC, English, Block 5, Hendriksen](#)

This course is project-based in the sense that participants work in groups to tackle a sustainability challenge of an organisation. We work together with a range of organisations to develop sustainability projects so that participants can learn to apply the frameworks of the previously taken courses in a practical project, guided by the course lecturer. Applying consulting skills and project management tools, student teams are challenged to create entrepreneurial and innovative sustainable business models in line with the UN Sustainable Development Goals. The course culminates in team presentations of proposed solutions to experts in the field.

[International Business and Sustainable Development 6EC, English, Block 5, Dr. Westermann-Behaylo](#)

The global business community is mobilising to realise the 2015 UN Sustainable Development Goals (SDGs). The SDGs set an ambitious agenda to transition to a more sustainable and inclusive global economy by 2030, calling for new business models and smaller environmental footprints. Success of the SDGs will depend on diverse actors innovating new governance mechanisms and new forms of partnership, co-investment, and collaboration. The SDGs represent a significant opportunity for companies that view emerging markets as their source of long-term growth, as achieving SDGs will reduce obstacles and help these countries grow into vibrant markets. At the same time, the SDGs threaten entrenched firms with potential disruption of operations and supply chains, and damage to reputations. Achieving the SDGs will require innovation and partnerships with government and civil society, as well as coordination and knowledge sharing to solve complex problems. It also requires reconciling short-term pressures with longer-term strategies. This course will prompt critical thinking about how international business theories and strategies are impacted by the SDGs. Students will consider the impact of specific goals at the industry level, and actively engage in case studies of actual firms as they adapt to the challenges posed by the SDGs.

[International Development Project MSc 12EC, English, Block 2-6, Prof. Borgman](#)

The International Development Project (IDP) is a year-long project that works together with social enterprises to tackle issues influencing individuals and communities in developing countries. The project consists of four phases. First of all, students will contact several non-profit organisations to find a suitable project. Secondly, they will budget their plans and use their creativity to raise funds. Thirdly, desk research will be carried out in the Netherlands in the form of expert-interviews inside and outside academia, and a literature review. Lastly, the International Development Project will travel to the country in question to continue the research. A project-specific consultancy report will be completed after returning to the Netherlands. Various roles exist within the project, including a chairperson, treasurer, secretary and an acquisition officer. During the year, students will receive coaching, work on personal development and reflect on their contribution within the project.

[Partnerships for Sustainable Innovation 5EC, English, Block 4, Dr. Westermann-Behaylo](#)

This course develops knowledge and skills for fostering innovative sustainability initiatives in organisations and cross-sector partnerships. Students study how changing individual behaviours as well as organisations structures are key to improving business sustainability.

Inventory of Sustainability-Related Courses **University of Amsterdam, Academic Year 2021/22**

We discuss the innovative use of entrepreneurial and market principles and practices to address environmental, economic, and social equity problems. We explore processes for conducting sustainability assessments, measuring performance on sustainability indicators using established frameworks and best practices. The theoretical frameworks will be applied to cases through exercises and site visits to see innovative sustainable partnerships in action.

Sustainability, Circularity and Business 5EC, English, Block 2, Dr. Kourula

This course examines the broad roles that businesses can play in sustainability and circularity. We will first explore the history and background developments related to these concepts and ways of thinking, both at the level of global institutions and local manifestations. The recognition of the limits of the natural environment and planetary boundaries are taken as a normative and ethical starting point for our investigations. Then we move towards evaluating the relevant existing theories and models and the key actors that are involved in societal transformations. Systems thinking will be a key lens through which we will examine how sustainability and circularity (can) permeate organisations, industries, and fields. Incorporating transdisciplinary perspectives across business and management, environmental science, technology studies, policy approaches and social sciences will be key to linking current efforts to systems thinking. We adopt a strategic and business model lens to evaluate these themes at the organisational level. The theoretical frameworks will be applied to cases through exercises and site visits to see how different actors are making sustainability and circularity a reality.

Sustainable and Ethical Marketing 6EC, English, Block 5, Dr. Vock

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 organisations, 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 the negative environmental impact of fast fashion companies. 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 analysing how organisations 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

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22



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 Communication

[Corporate Social Responsibility \(CSR\) Communication 6EC, English, Block 4, Dr. Lock](#)

The role corporations (should) have in society has been debated for decades. In light of the increasing power of tech giants, this discussion is ongoing. With global trade and in a networked economy, the ethical responsibilities of transnationally operating companies are manifold and a variety of stakeholders, such as NGOs, governments, journalists, and employees, challenge companies regarding their ethical business conduct. Given increased public spotlight on businesses and a 24/7 news cycle, companies' communication of their social and environmental responsibilities attracts heightened attention by stakeholders and triggers discussions on their credibility, or greenwashing. How should corporations behave to be seen as ethical today? What are the origins and theories behind the buzzwords - sustainability, creating shared value, sustainable development, purpose - in the CSR field? How can we detect credible and legitimate CSR practice and communication from greenwashing?

[Shaping Society: How Organisations and the Media Influence Public Issues 6EC, Block 4, Dr. Jacobs](#)

Public issues such as vaccination, online privacy, and climate change are fiercely debated in society and have far-reaching consequences for everyday life. Several actors attempt to influence such debate, either under the radar through public affairs activities or out in the open, based on their policy responsibilities. The media plays a crucial role here because it influences this discourse, is strategically used by involved actors, and mirrors positions of public opinion in society. In this course, we study the interplay between corporations, public organizations, and the media in shaping and strategically influencing the public debate on issues. We study this from three perspectives: public affairs and lobbying, public sector communication, and the role of the media in public issue debates. Special consideration is given to the role of framing and digital media. The course is structured along a literature and theory line and a consultancy track. In the former, students will be familiarized with theories and models of corporate and public sector communication, with a specific focus on strategic communication and the role of the media. In the latter, students will put this knowledge hands-on into practice by consulting an organization (public or private) on an issue it faces.

[Sustainability Marketing and Communication 6EC, Block 4, Dr. Meijers](#)

Environmental problems, such as polluted ecosystems and climate change and its consequences, are posing a serious threat. Since these environmental problems are largely

Inventory of Sustainability-Related Courses

University of Amsterdam, Academic Year 2021/22

rooted in human behaviour, 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 behaviours.

This seminar addresses the challenges of sustainable behaviour and discusses possible solutions to overcome barriers through marketing and communication. We discuss the most relevant psychological factors and processes contributing to more sustainable behaviours and look into their applications in different areas of sustainability communication. What are the specific barriers and motivations for sustainable behaviour? How can marketing and communication contribute to long-term changes in individual attitudes and behaviours? 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 behaviour of consumers and citizens. Guest lecturers will share their knowledge and experience from sustainability marketing and communication practice.

Graduate School of Economics

[Climate Change Economics 5EC, English, Block 3, Dr. Mol](#)

In this course, you will learn how economic tools can be used to measure the impact of climate change and determine the best policies to combat it. Lectures will cover a wide range of topics, including the link between the economic and climate systems, methods used to discount the future, the risk of disasters and irreversibilities, and many more.

[Environmental Economics and Policies 5EC, English, Block 2, Dr. Douenne](#)

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 relation 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.

[Natural Resource Economics 5EC, Block 4, English, Dr. Romp & Dr. Varela](#)

In this course, you will be trained to think about the use and protection of natural resources. You will reflect on many key challenges such as the optimal extraction of a non-renewable resource, the effect of market power on resource depletion, the existence of a "resource curse", as well as problems related to open-access to renewable resources and solutions for managing the "commons".

Graduate School of Humanities

["Losing Earth"?: Activism and diplomacy on the environment and climate since 1968. 6 EC, English, Semester 2 Block 2, R. van Dijk, Ph.D. and prof. dr. R.J. van der Veen](#)

De grote paradox, en uitdaging, van onze tijd is dat de manier waarop de moderne wereld sinds de negentiende eeuw grotere en breder gedeelde welvaart heeft gecreëerd (en nog altijd creëert) tegelijk zulke grote ecologische en klimatologische veranderingen heeft veroorzaakt (en nog altijd veroorzaakt) dat op afzienbare termijn de mensheid, en de ecosystemen waarbinnen zij overleeft, in hun bestaan wordt bedreigd.

Sinds de mensheid zich hiervan bewust is gaan worden, heeft er een nauwe band bestaan tussen wat lokaal gebeurt en internationaal. Zonder lokale en transnationale actie geen diplomatie. Zonder wetenschappelijke consensus geen draagvlak voor actie. Deze drie aspecten: ontwikkeling van wetenschappelijke consensus over de belangrijkste ecologische en klimatologische uitdagingen; civil society activisme over deze realiteiten; en de internationale diplomatie over deze vraagstukken, zullen in dit vak centraal staan voor de periode sinds eind jaren '60 van de twintigste eeuw. Gezien de grensoverschrijdende aard van de uitdagingen, ligt de nadruk op de internationale en transnationale aspecten. Als historici vinden we dat eigentijdse uitdagingen slechts op basis van kennis van hun historische achtergrond begrepen kunnen worden, en dat historisch inzicht onontbeerlijk is bij het nadenken over handelen in het heden met het oog op de toekomst. Ook bij de grote ecologische en klimatologische uitdagingen van de 21e eeuw is dit het geval. Een expliciet doel van dit vak is daarom niet slechts de historische analyse (hoewel dat nog altijd het hoofddoel is) maar ook de koppeling ervan aan een concrete reflectie op mogelijk handelen in het heden.

TRANSLATION:

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 at the same time caused (and continues to cause) such great ecological and climatic changes that in the foreseeable future the very existence of humanity, and the ecosystems within which it survives, will be threatened.

Since humanity began to become aware of this, there has been a close link between what happens locally and internationally. Without local and transnational action, no diplomacy. Without scientific consensus no support for action. These three aspects: development of scientific consensus on the major ecological and climatic challenges; civil society activism on these realities; and international diplomacy on these issues, will be the focus of this course for the period since the late 1960s. Given the transnational nature of the challenges, the emphasis is on the international and transnational aspects.

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22

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

[Socio-Environmental Changes in Latin America: Power, Participation and Governance, 6 EC, English, Semester 1 Block 3, dr. F. de Castro, \(Master's Latin American Studies\)](#)

Latin America holds large reserves of renewable and non-renewable resources and is a major global supplier of energy, metals, foodstuffs and environmental services. Historically the countries in the region have faced challenges in managing their natural resources in a sustainable, productive and equitable way. While some progressive governments have tried to change that trend, the intensification of extractive activities and related large infrastructure projects has led to a growing vulnerability and inequality. More recently, the region started to experience a new wave of right-wing governments who are explicitly moving away from social policies, human rights and the environmental conservation agenda.

The corona pandemic adds to the increasing conflicts, injustices and environmental degradation taking place in the region. At the local level, they materialize into unequal access and control over land, water, forests and other resources, due to the growing tension between large-scale rural development and indigenous and non-indigenous peasant livelihoods and their small-scale local management. At the national level, central governments and/or multinational companies ignore socio-environmental demands from civil society and criminalize activists. At the same time, new narratives, alliances and social mobilizations emerge from these struggles in which indigenous and peasant communities play a key role. This course addresses this dual process which takes place in a complex political context of neoliberalism and post-neoliberalism, de- and recentralization and Latin America's globalization and regionalization.

Graduate School of Life and Earth Sciences

[Climate Change, 6EC, English, Block 6, Dr. van Boxel](#)

Climate change is one of the important world-wide issues now and in the rest of the century. Climate is important for both natural ecosystems and human societies. Climate change causes stress on natural ecosystems and provides challenges for human society, but also benefits and opportunities. In the past climate has changed due to several natural factors. Nowadays human activities, especially the emission of greenhouse gases and deforestation are the main causes of climate change. This course seeks to deepen your knowledge about climate change by studying the relevant literature and writing an essay.

If the student has little prior knowledge of meteorology and climatology the student has the option to replace the essay by discussions on the basic principles of meteorology using a standard text book, followed by an examination.

The lectures will cover most chapters from Houghton (2015). Each student selects a chapter from a recent IPCC Report and presents this chapter. All students read the summary of this chapter and the chapter is discussed in class. Each student writes an essay on a climate change related subject and presents this essay at the final presentations.

[Energy and Climate Change; Science, Policy and Economics, 6 EC, English, Block 2, Dr. van Boxel.](#)

This course focuses on the inseparable links between energy use and climate change and, consequently, the unavoidable connection between energy, science, finance, ethics, and public policy. The entire course is truly multi-disciplinary, in the sense that the challenges associated with the subject matter of energy and climate change are simultaneously taught from a natural scientific, public policy and financial perspective. Through an examination of these subjects, this course explores numerous closely-related themes that exemplify the complexity of human energy production, distribution, storage, and usage as it relates to the interaction between: (1) science/engineering, (2) finance/economics, (3) public policy, (4) environment/sustainability and (5) ethics (individual and collective).

[Environmental Measuring Techniques. 6 EC, English, Block 4, Dr. McMichael.](#)

In order to understand ecological, (biogeo)chemical, and physical patterns and processes at the earth surface, quantitative knowledge of soil and water properties is essential. Without quantitative data it is impossible to assess the impact of environmental changes on the functions of ecosystems, and interpretation of these environmental data requires profound knowledge of the methodologies which were applied.

Inventory of Sustainability-Related Courses **University of Amsterdam, Academic Year 2021/22**

In this course you can choose your own focus on measuring techniques in the fields of tropical ecology, paleoecology, biogeography, environmental chemistry, soil (biogeo)chemistry, geomorphology or soil physics. You can combine or choose for either:

- Training in a wide scope of existing measuring techniques employed by the research areas Ecology, Biogeography, Earth Surface Science or Environmental Chemistry, either in the field or in the laboratory
- Contributing to the development of new measuring techniques by testing or implementing a recently developed new technique or by carrying out a mini-research

The physical-chemical laboratories of IBED are very well equipped and the research groups involved have an excellent expertise in all of the offered disciplines. With two field excursions you will experience how quantitative measurements of environmental processes are done under field conditions, and develop critical thinking on the relevance of these measurements.

[Environments through Time. 6 EC, English, Block 2, Dr. Gosling.](#)

Global environments have been extensively transformed over the last decades, and are projected to change at an accelerated rate over the coming centuries. Human-induced and natural forcing mechanisms, such as land-cover change, climate change, and population growth are the primary drivers of current environmental change. However, to understand if the observed, and projected, environmental changes are outside the normal variation of the Earth's system functioning, in terms of magnitude and speed, we require a longer-term context. Landscape, societies and climates evolve over timescales of decades to millennia, and on spatial scales of tens to thousands of kilometers. To obtain insight into how environments have changed beyond the documentary record, we must turn to the fossil record for information. Indicators of past environmental change allow us to reconstruct many aspects of past environments, such as climates, vegetation, and human history, but to make these directly comparable with observed and projected changes a clear understanding of timescales is required. In this course we will consider how information on time can be obtained from the fossil record (dating methods), apply the different methods for reconstructing chronologies, and explore patterns of environmental change through time.

In the course we focus on the importance of timescales for environmental change using a systems science approach to think about function and interactions.

[Geoecological Systems in a Changing World: Carbon, Nitrogen and Pollutants. 6 EC, English, Block 2, Dr. Tietema](#)

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22

Current environmental research has to meet the challenges of climate change and other human-made impacts. The cycle of major elements in ecosystems depends on interactions between organisms and their abiotic environment and will be affected by these environmental changes at different scales, i.e. from local to global and from the molecular to the landscape level. This course focus on fluxes of elements and substances in soils and their impacts on the atmosphere and the hydrosphere.

Special attention will be paid to:

- Soil as a habitat for (micro)organisms and as a reactor controlling biogeochemical cycles in terrestrial ecosystems
- Important processes and boundary conditions regulating cycles of C, N, P and pollutants
- Importance of soil organic matter for biogeochemical cycles in a changing environment and feedback reactions to global change
- Approaches to quantify biogeochemical cycles and their controlling processes
- Interaction of biogeochemical cycles and (in)organic pollutants

[Global Ecology and Biodiversity. 6 EC, English, Block 2, Dr Kisling.](#)

Biodiversity contributes to ecosystem functioning and is of fundamental importance for human well-being. Moreover, knowledge about biodiversity and its spatial (global, regional and national) distribution is essential for understanding the origin of biodiversity, for reporting about biodiversity change, and for conservation management and spatial planning. Mapping and analysing biodiversity and environmental data also contributes to the vision that biodiversity is valued, conserved, restored and wisely used, that ecosystem services are maintained, and that we can sustain a healthy planet and deliver benefits essential for all people. With this course, we want to contribute to educating a new generation of ecologists who are equipped with the quantitative skills to address questions in global ecology, biodiversity and conservation science. We particularly focus on handling large biodiversity and environmental datasets, analysing spatial ecological data, and modelling of biodiversity and species distributions. Good quantitative and modelling skills are required. For a large part of the course, students will develop their own research project in global ecology and biodiversity and combine ecological and environmental data using R, Microsoft Excel/Access, Geographic Information Systems (GIS) and other quantitative/analytical tools. The statistical modelling and prediction of species potential distributions and biodiversity in geographic space is of particular focus.

[Grand Challenges of Human-Ecosystem Interactions. 6 EC, English, Block 2, Dr. Jansen.](#)

Inventory of Sustainability-Related Courses **University of Amsterdam, Academic Year 2021/22**

The course is designed around the grand challenges that we are facing in a world with an ever increasing human population within the limits of planetary boundaries. We will not try to cover the entire broadness of grand challenges but we will discuss six selected topics that are all closely related to our own research. We will discuss: i) the effects of local and global change (land use, eutrophication, pollution, climate) on biodiversity; ii) how we can successfully manage Earth's systems (through e.g. integrated land management, spatial planning, nature and soil conservation); and iii) how we can ensure ecosystem services provision in the future. In this course we use an interdisciplinary approach to understand specific challenges and opportunities relating to human ecosphere interactions.

Masterclasses in Green Life Sciences. 3 EC, English, Blocks 1-6, Dr. Bleeker.

In this course, students are trained to critically read and discuss important topics within the *Green Life Sciences*. The course has the format of masterclasses, consisting of a tutorial meeting, including presentations and discussion and attending of a seminar. Students will prepare and attend lectures from internationally renowned scientists in the *Amsterdam Green Life Science Seminars* series organized by the GLS groups within SILS and IBED institutes. This seminar series is organized on a monthly basis throughout the year (except the summer period) but the exact timing depends on the guest speaker. The topics for the seminars cover the whole spectrum of plant molecular biology and signal transduction. Students must attend a total of six masterclasses during their two-year programme. Students may attend more theme lectures on a facultative basis.

Masterclasses in Ecology and Evolution. 3 EC, English, Blocks 1-6, Dr. Egas.

Being able to participate in discussion is an important skill for scientists. It requires the ability to combine theoretical and empirical knowledge as well as a critical view on the arguments put forward by others. The best way to improve these skills is to practice them under supervision of senior scientists. In this course students are trained to discuss the important topics in Ecology and Evolution with top scientists in the world, in the form of a masterclass (described below). In doing so, students will attend seminars from these internationally renowned scientists in the Nature of Life meetings organized by the Institute of Ecological Sciences (VU) and in the series of IBED lectures organized by the Institute for Biodiversity and Ecosystem Dynamics (UvA). Both series are organized on a monthly basis throughout the year (except the summer period). The topics for the seminars cover the whole spectrum of ecology and evolution. An overview of upcoming and previous seminars can be found at www.falw.vu.nl/nl/onderzoek/ecological-sciences/nature-of-life-meetings/index.asp and www.science.uva.nl/ibed-

[agenda/see.cfm](#). Students must attend six masterclasses during the 2-year programme. Students may attend more theme lectures on a facultative basis, subject to availability.

[Soil and Landscape Degradation. 6 EC, English, Block 3, Dr. Cammeraat.](#)

This is an advanced course for master students Earth Sciences. Present and past concepts of degradation processes in geomorphology and soil science will be introduced and discussed. These will include the key concepts of soil and land degradation, resilience, as well as the concept of land degradation neutrality. Soil erosion, soil formation rates, and sediment transfer and balances in their broadest sense will be treated in detail. Case studies will be used to demonstrate how processes can be quantified and influenced by human interventions, including their role in carbon sequestration. Different ways of quantifying soil and landscape degradation will be reviewed. The relationship of soil loss and erosion to soil material properties will be stressed.

Graduate School of Sciences

[Biocatalysis for a Sustainable Future. 6 EC, English, Block 2, Dr. Drienovska.](#)

In the course "Biocatalysis for a Sustainable Future" you will learn the basis of biocatalysis and protein engineering with an emphasis on how enzymes are used/can be used in sustainable manufacturing of chemicals and pharmaceuticals or fighting environmental causes such as pollution. Lectures will be complemented by group assignments in which you will work on the evaluation of existing enzymatic, industrial processes as well as designing a new process. You will walk away with skills and knowledge to critically evaluate the potential and challenges of enzymatic processes for sustainable development. The course consists of lectures, exercises and a group project assignment finished with a group presentation.

[Catalysis for Sustainable Energy. 6 EC, English, Block 5, Dr. Pullen.](#)

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.

[Environmental Chemistry. 6 EC, English, Block 3, Dr. Praetorius.](#)

In this course students will learn fundamentals of environmental chemistry, more specifically the major sources and emission pathways of chemical pollutants, the mechanisms governing their transport and fate in different environmental compartments (with a focus on organic pollutants) as well as approaches to chemical risk assessment and management. Students will learn about the different classes of chemical pollutants and how their environmental behaviour is driven by their underlying chemical structure and properties.

Topics include transport and distribution processes, and physico/biochemical reactions of compounds in the environment; bioavailability, bioaccumulation and degradation of chemicals; monitoring and non-target screening, prediction and fate modelling in environmental compartments; structure property/activity relationships; risk assessment and regulation.

The course Environmental Chemistry will consist of interactive (online) classes with exercises, group projects, a computer practical and a final exam. Lecturers are Dr. Antonia Praetorius, Prof. Annemarie van Wezel, Dr. Thomas ter Laak and Dr. Saer Samanipour. Two teaching assistants will support the course by assisting during the exercises and group work. Office hours will be offered once a week.

[Materials Design for Circular Economy. 6 EC, English, Block 2, Dr. Gracea.](#)

Inventory of Sustainability-Related Courses University of Amsterdam, Academic Year 2021/22

This course covers the design, synthesis, characterization and rationalization of a range of functional solids, with applications in carbon capture and storage, gas storage and separation as well as water purification and soil remediation. Specific subjects: crystal structure of solids; physical methods for the characterization of solids; synthesis, processing and fabrication methods; microporous and mesoporous solids. The course will also cover materials integrated in products used in daily life and how they can be used more efficiently, on long-terms and closed loops.

The specific subjects covered in more detail are:

- Crystal structure of solids (inorganic and inorganic/organic materials); Chemical bonding & Crystal symmetry; Degree of ordering & Phase transitions; Relation between properties, structure and crystal symmetry.
- Physical methods for the characterization of solids (Spectroscopy, Microscopy, Thermal analysis, Surface Characterization).
- Synthesis, Processing and Fabrication Methods (Sol-gel methods, Hydrothermal synthesis, Chemical-vapor deposition, Gas-phase synthesis, Strategy for crystal growth, Thin films).
- Microporous and Mesoporous solids (Zeolites, Clays, Organosilicates, Metal-Organic Frameworks, Covalent Organic Frameworks)
- Materials for Sustainable Applications (molecular storage and separation, waste water treatment, energy storage and conversion).
- Sustainable Materials Management and Circular Economy

[Molecular Modelling for Sustainability. 6 EC, English, Block 5, Dr. Hamlin.](#)

Computational chemistry plays a central role in modern chemical research. Various molecular properties can be computed with chemical accuracy. In this way, valuable information can be obtained about quantities that are experimentally inaccessible and can be indispensable for sustainability research and catalysis. One of the main objectives of this course is to learn current state-of-the-art quantum chemical methods and computer software. This course deals with *ab initio* theory (among others, Hartree-Fock and Møller-Plesset theory) and modern density functional theory (DFT).

These methods are applied in a computer lab in order to become acquainted with important modeling skills, such as geometry optimization (molecular structure, stability, and thermochemistry) and the exploration of potential energy surfaces (kinetics, reaction mechanism).

A second main objective is to develop skills for interrogating an (experimental) chemical problem relating to sustainability and catalysis using computational techniques and

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22

generate a practical solution. Furthermore, the course introduces useful physical models that help in the interpretation of experimental as well as computational data. An important issue in this course is the unifying power of computational chemistry: the same theoretical models serve as tools for solving very diverse problems from all branches of chemistry, but in particular solar cell design and catalyst design.

Project Sustainable Future. 6 EC, English, Block 6, Dr. Slootweg.

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 becomes 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

[Advanced Environmental Geography: Governance for Sustainability. 12 EC, English, Blocks 1 & 2, Dr. Rammelt.](#)

Environmental geography, with its focus on human-ecosystem interactions in a spatial-temporal perspective, is well placed to shed light on the daunting environmental challenges of our times. These challenges can only be tackled by understanding, analysing and addressing their underlying driving factors. Doing so bring us to a discussion of key concepts in governance for Sustainable and Inclusive Development in the Anthropocene. The drivers can operate at local through to global levels. Such factors can be located in institutions, such as agreements, markets, trade relations, and governance structures, but also in discourses, local customs and changing geo-political contexts. Similarly, the impacts of global change can manifest themselves at multiple levels of governance, and may occur far away, in time and space, from the causes of these problems. Such challenges call for multi-level, polycentric, adaptive forms of governance. The issues discussed in this course have a strong North-South dimension, as well as an upstream-downstream (water) and transnational dimension (climate). The course takes a problem-oriented approach to analyse climate and water policy issues, as well a theory-oriented, multi-disciplinary approach to the topics—including knowledge of physical, spatial and institutional dimensions, of policy, politics, law and economics.

[Climate Proof Development of Cities and Strategic Planning. 6 EC, English, Block 1, Dr. Giezen.](#)

One of the key issues cities have to deal with for the foreseeable future is Climate Change. The increase in green house gasses has impacted the climate in many regions in the world. While some places might get hotter and other colder, it is clear that weather events are becoming more extreme in a lot of cities around the world. Two concrete examples are that there will be more events of extreme rainfall and more periods of extreme temperatures and drought. This leads to the paradoxical situation that cities need to prepare for an excess of water as well as a lack thereof. Combined with a situation in democratic societies where increasingly a variety of stakeholders have influence in the governance process and there is a lot of uncertainty, these challenges require strategic planning in order to adequately adept to these challenges. This will be the focus of this course.

The course will use 3D planning software engine Tygron to have students experience the process of strategic planning around climate proof urban development and have them develop creative solutions for cases within the Municipality of Amsterdam. Students will be asked to reflect on the process using the literature and classes they have gotten in the course. They will be working within a reflexive backcasting approach to strategic planning.

[Future Societies Lab. 6 EC, English, Block 3, Dr. Giezen.](#)

This course is a community service-learning course. This means that students work on research initiated by societal organizations. In particular, these organizations and their questions are related to sustainability issues. By working for 'clients,' students apply their research skills and acquire hands-on experience in practice-based research. We consider this important as it is the type of research students are most likely to do after they finish their studies. In this sense, this course is designed as a win-win for students, partners and the university and aims to make a valuable contribution to societal sustainability transformations.

The course will be designed in a four-week pressure cooker in which groups work together on their issue. Intensive cooperation between students will be expected. To help with this, we will start with an introduction to the SCRUM method and design thinking.

[Master Studio of Future Cities. 6 EC, English, Block 3, Dr. Savini.](#)

The Masterstudio is renamed from 2019 Masterstudio Future Cities. It is a full week of interactive lectures, workshops, excursions, evening debate and project design centered around a key theme. The theme is defined in October each year, before the studio week that takes place in January. The content of the past editions can be found at www.masterstudio.org. Past editions have developed the themes of 'urban commons', 'urban degrowth', 'circular economy', 'food systems', 'smart urbanism', 'culture' and 'urban justice'.

[Sustainable Cities. 9 EC, English, Blocks 2 & 3, Dr. Sezneva.](#)

What makes a city 'unsustainable'? Is it pollution or gentrification? Trash left under a bench in a park or an unhoused person on the minority background? A rat in the main street or a woman in the dark alleyway? A tree, which provides shade or a security camera, which monitors behaviour? These questions are intentionally polemical. They highlight the fact, that different people, objects and lifestyles are valued differently. Who, what and how deserves the collective effort of being 'sustained' – or not – is far from clear. What is clear, though, is that as a social value, sustainability is not monolithic and involves diverse, sometimes contradictory policies and practices.

[The Circular City: Towards a Sustainable Urban Ecosystem. 6 EC, English, Summer School, Dr. Kenny.](#)

Students are taught how to leverage the potential of cities via a new paradigm for urban planning and design: urban metabolism. While this concept has been around for over 50 years, recent interest in it has rejuvenated the fields of urban studies, industrial ecology, and architecture. Urban metabolism can be defined as the sum total of the technical and

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22

socio-economic processes that occur in cities, resulting in growth, and production of energy, materials, and waste. The city is viewed by its 'material flows', generally defined into water, energy, materials (including food), and waste. These flows consist of inputs (local, regional, and global inflow of resources), throughputs (energy required to transform these resources and waste produced by any process), and outputs (the material outcome of this process).

While immersed within the innovative city of Amsterdam, students will learn about several aspects of urban resilience from ecological, economic, and cultural perspectives. Through the use of different tools, scientific methods and analysis, students will experience experimental urban design and planning firsthand. Inspired and equipped with the right tools and knowledge base, students will return to their home cities ready to step up to the challenge and transform their cities.

[The Politics of Sustainability: Environments, Materials, Cultures. 6 EC, English, Block 5, Dr. Bonelli.](#)

By learning from different ways of caring for the various ecological systems of which we are a part, and on which we depend for survival, this course will cultivate growing awareness about the challenges and contradictions 'sustainability' entails. Inspired by a variety of social movements and territorial struggles over life, the course will reveal how building up a sustainable world demands much more than technical fixes, and more than protecting bounded communities or 'natural sites'. We will learn from the multiplicity of relationships between humans and non-humans, and will explore how different ways of knowing and ways of living interact, clash and transform. By supporting and encouraging diverse of co-existences between human and non-human in all its forms, this course provides conceptual tools to critically imagine livable earth's futures and to rethink -again and again- of the role social scientists might play in collaborating to ensure a sustainable, livable earth.

[Transnational Governance and Corporate Social Responsibility. 9 EC, English, Blocks 2 & 3, Dr. Schleifer.](#)

In a globalizing world, societies and economies are highly interdependent. In the absence of a world government and gridlock in many intergovernmental forums, a multitude of transnational governance arrangements has been developed through the contestation and cooperation between states, business, and civil society actors. They set sustainability standards for global supply chains, form cross border municipal networks, and provide collective goods in areas where the state is unwilling or unable to do so. This 'transnational turn' has greatly increased the complexity of global institutions, raising fundamental questions about the very nature of politics and governance in the 21st century. This course will introduce students to the theory and practice of transnational governance, with a

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22



particular focus on the role of business actors and Corporate Social Responsibility (CSR). Its main objectives are threefold. First, students will learn about the history and theory of transnational relations and CSR. We will discuss the intellectual development of the field and consider different explanations of the rise of transnational actors. In addition, we will discuss how the shift from government to governance affects our thinking about fundamental political concepts, such as legitimacy, effectiveness, as well as the power and responsibility of business. Second, the course introduces students to key actors and issues in transnational governance – in particular, but not exclusively, its private variety. Topics covered during the course include: business actors in global governance, transnational advocacy networks for human rights, the legitimacy of multi-stakeholder initiatives, public-private partnerships for sustainable development, and the role of cities in global governance. A third objective of the course is to train students to plan and write a case study-based research paper on a transnational governance-themed topic.

Institute of Interdisciplinary Studies

[Bachelor Project, Future Planet Studies. 18EC, Dutch, Block 4&5, Dr. Rijdsijk.](#)

During the course of the Bachelor Project, students will apply the research skills that they have learned throughout the FPS program, as well as learn new skills for carrying out their own scientific research either within the track Future Earth (i.e. from the domain of the geo-bio sciences and/or chemistry) or within Future Society (bridging domains of political science, human geography and/or spatial planning). Within each track, students will choose their research topics from broader research programs or projects led by UvA-researchers.[1]

The first four weeks of the course (March 2021) are devoted to working out a detailed research proposal for the individual thesis. During the execution phase, each student delivers a contribution from within the field of his/her expertise. Critical reflection of relevant theories and literature on the chosen subject forms part of the research as does reflection on the relevance, reliability, and validity of the gathered data, and the methods and techniques that were used to obtain them.

At the end of the Bachelor Project, the student reports the findings of the research in a thesis. The thesis is a clear, systematic, and scientifically well-founded report on the research project and its results. Writing the thesis is more than merely writing a report. Students must be able to show that they have gained and applied essential research skills, and the report needs to incorporate all essential elements of an academic research project that the student has engaged in including a critical analysis of the results which are discussed in the context of contemporaneous scientific insights on the theme.

[1] Students can indicate their preferences (1st, 2nd & 3rd choice), and we will try to do as much justice as possible to these preferences, given certain preconditions and limitations of the course (such as the need for a fair division over the available supervising teachers).

[Challenges for the Blue Planet, 6 EC, Dutch, Block 4, Dr. van der Geest](#)

Water covers about 70% of our planet and is the prime necessity of life. The quality of surface and drinking water directly influences ecosystem health and plays a major economic role. Yet, deterioration of water quality, overexploitation of aquatic resources, and climate change all pose risks to human health and potentially impact ecosystem values and services. This course will be based on three pillars:

understanding the basic concepts in aquatic sciences, **analyzing** the effects of human impact on aquatic ecosystems, and reflecting on **conservation and restoration** measures of aquatic ecosystems on an overpopulated and industrialized continent.

Built upon these three pillars, different topics will be addressed in highlight topics discussing:

Inventory of Sustainability-Related Courses

University of Amsterdam, Academic Year 2021/22

- Water quality (Environmental chemistry; chemical behavior/fate of toxicants; ecotoxicology; analysis and monitoring; regulations). A special highlight lecture will be devoted to plastics in the aquatic environment.
- Harmful algal blooms (cyanobacteria, dinoflagellates, toxins, problems freshwater & marine, relation with climate change & eutrophication, mitigation options).
- Reservoirs and dams (types and geo-distribution of reservoirs and dams; water balance; nutrient retention and processing; anoxia; methane production; ecological implications; fish migration)
- Fisheries (population dynamics, implications fisheries, regulations)

The theory is based on a set of prescribed preparatory lectures, scientific papers, and a textbook.

In addition, next to the highlight topics and self-study, the course is structured around workgroups, providing the opportunity for in-depth analysis of a water quality issue.

The workgroup activities draw on the DPSIR

(Drivers-Pressures-States-Impacts-Response) framework to explain the causes and consequences of a water quality problem. We shall investigate basic principles of water quality and how poor water quality results, explore to what extent this can be prevented and/or managed, and how important functions, such as proper ecosystem functioning can be guaranteed.

[Circular Economy, 6 EC, English, Block 1, Dr. Bulters.](#)

During this course we will start by observing the current (linear) economy and the current state of it. We will try to identify the effects and externalities of this economy that influence the world around us. After looking at the status quo, we will study a proposed solution to the linear economy: the circular economy. We will study this solution, its benefits and its flaws in detail. We will also study other proposed solutions (such as doughnut economics and the biobased economy) and will identify the differences between them. After that we will look at the steps that different stakeholders can take to go towards a more sustainable or circular economy. As a student in this course you will analyse specific cases individually as well as in a group assignment.

[Degrowth, 6 EC, English, Blocks 1 & 2, Dr. Rattles](#)

Inventory of Sustainability-Related Courses

University of Amsterdam, Academic Year 2021/22

How is economic growth entwined with the social, environmental and financial turmoil of the past few decades? How can we have a stable and prosperous economy that does not grow—let alone one that shrinks to a sustainable level relative to existing planetary boundaries?

The predominant economic system is caught in a double bind: its expansion disrupts the natural world and fails to curb global inequities, while slowdown destabilises the inner workings of economic system itself. Many continue to hope against hope that economic growth can be decoupled from its ecological impact and will bring wealth to all. However, these perspectives trivialise the fundamental contradictions between the goals of economic profitability, environmental sustainability and social justice. To persist in denying these contradictions will end in a process of uncontrolled economic decline with serious social and ecological harm.

The degrowth movement offers a radical critique and an alternative vision that draws from a range of unorthodox intellectual and philosophical traditions, including political ecology, ecological economics and post-development. In this course, their insights are brought together using a system dynamics approach. It confronts us with our own biases concerning growth, limits, money, well-being and so on.

[Desertification, 6 EC, English, Block 5, Dr. Cammeraat](#)

This course aims at understanding desertification and learning the principles of geo-ecological field inventory and field measurement techniques. This will be illustrated within a field area where desertification is an important process.

The course is a part of the semester focusing on water-related issues and in this course the results of water shortage, as expressed by groundwater over-drafting, irrigation, salinization, and land degradation problems will be studied in the field. It addresses typical water-related issues in dryland regions in contrast to the ecosystems which have an excess of water, and that are being dealt with in other courses in the program. This course has also a function in providing a field translation from knowledge discussed in the classroom to the real environment of the landscape, integrating theoretically studied objects with real-world field conditions.

Field experience is an important part of the education of earth scientists and ecologists and this course also aims at the student's development of required field skills. Based on GIS-related techniques, as learned in preceding courses, the ability to handle and analyze spatial data is further extended. Drought adaptation of plants will be studied in the field. Furthermore, field knowledge is implemented into a model-based scenario study on the effects of climate change on biomass production, an important Desertification indicator.

Inventory of Sustainability-Related Courses

University of Amsterdam, Academic Year 2021/22

Finally, the 'Desertification Vulnerability' will be assessed based on the results of the outcomes of the course.

In preparation for the field class, a set of lectures and workshops will be given in which the most important characteristics of the study area will be studied and discussed. At the onset of the field class, field inventory methods will be explained, trained and used in order to eventually understand the landscape cross-relationships between lithology, soil, geomorphology, land use, vegetation and desertification processes. For this, we will integrate the knowledge of previous courses and also work with maps and other GIS-derived materials that have been prepared in advance.

The field class takes place in the province of Murcia, SE Spain, and the fieldwork will be carried out in small student groups, where each group will be responsible for a specific field area. Each group will also be responsible for a thematic map covering a larger part of the field work area. Before leaving Spain draft maps should be ready.

Additionally, quantitative field techniques will be applied to study degradation. Soil and water samples will be taken at representative field sites which will deliver input data for a scenario study on the effects of land-use change and or climate change on land degradation and desertification of the field area.

After returning from Spain, the thematic maps will be digitized and processed in GIS and an explanatory text to the produced maps will be created. Furthermore, a scenario study based on a computer model using field-derived data will be carried out to study the impact of climate change or land use in the area with respect to crop production and/or degradation. All studied aspects will be integrated and discussed in one written report by each of the groups.

[Honours module: Sun, Energy and Materials. 6 EC, English, Blocks 2 & 3, Dr. Marseveen.](#)

In nature, energy from the sun is stored in chemical bonds within glucose via photosynthesis. Burning glucose, as the fuel of life, with molecular oxygen releases a lot of energy thereby producing carbon dioxide and water as side products. Photosynthesis is the name of the reverse reaction. Can mankind copy this carbon-centered circular economy? Besides providing energy, glucose is also the building block for the molecules of life. So artificial photosynthesis would deliver both sustainable energy and materials. Mechanistically, photosynthesis can also be considered as the oxidation of water providing molecular oxygen and hydrogen. By just mimicking this part of photosynthesis by making an 'artificial leaf' we would be able to produce molecular hydrogen from water and thus store solar energy. But these are just examples of sustainable molecular solutions for the future, will there be others?

Inventory of Sustainability-Related Courses **University of Amsterdam, Academic Year 2021/22**

The first goal of this course is to know the *facts* why and at what pace the transition to both sustainable energy and materials should be carried out. The first part of the course deals with the chemical principles of the carbon cycle (formation of fossil carbon, photosynthesis, current scale of the use of fossil sources for energy and materials, iron and cement). In the second part of the course the *molecular* solutions will be treated that are currently developed within research institutes and companies. In short, this course deals with the molecular aspects of the current use fossil resources (problems) and the search for sustainable alternatives (solutions).

[Introduction to Spatial Planning. 3 EC, English, Block 1, Dr. Willems.](#)

Many sustainability challenges, related to for example renewable energy production, water safety and climate adaptation, and the circular economy, have a significant spatial dimension. Future Planet Studies students, therefore, need to comprehend the role of spatial planning in pursuing sustainable spatial development.

This course will introduce students to the spatial planning discipline. Students gain insight into the change from modernist top-down and design-oriented planning approaches to the more bottom-up, society-oriented approaches of today. Students will be able to explain and analyze different roles and instruments of the spatial planner in guiding spatial development. The role of the spatial planner will also be positioned in a broader urban governance perspective. Students will learn about contemporary planning approaches and theories, in particular in regard to planning for sustainable, resilient, and just cities.

[Plant-Soil Interactions. 6 EC, English, Block 1, Professor de Vries](#)

One of the major challenges humanity faces is producing enough food for a burgeoning world population without destroying our environment. In the course, Plant-soil interactions in food production systems you will get an understanding of the pressures and challenges global food production is facing, with a specific focus on the role of plant-soil interactions in these aspects. Almost every food production system depends on the interactions between plants and soils: soils underpin plant growth, but plants also modify soil properties. Plants and soils interact through a wide range of mechanisms. In this course, you will learn about the fundamental processes through which plants and soils interact, including both the biotic and abiotic components that govern these processes, and how these processes are affected by common agricultural practices and can provide solutions for the challenges global food production is facing.

[Plant-Soil Practical, 3 EC, English, Block 1, Dr Burdfield Steel](#)

Inventory of Sustainability-Related Courses **University of Amsterdam, Academic Year 2021/22**

Soils are essential for agriculture, as they are the medium that plants grow in, supply the nutrients that plants require, and have important functions in regulating supplies and recycling waste and raw materials. They can modify the composition of the atmosphere, and serve as a habitat for soil organisms that initiate litter decomposition and soil formation. The chemical processes within soils are important for the functions and services that they provide, particularly for agriculture. All these properties and processes can have a profound impact on the yield of crops. Soil management in modern agriculture is aimed at optimizing soil properties by adding inorganic fertilizers, organic fertilizers, and even biota were required to maximize yields. Given the complex web of ecological interactions that is present in the soil, the outcomes of different management strategies may not always be intuitive.

The course comprises two parts: a laboratory experiment, and a field excursion. During the field excursion, you will investigate how soil structure and content varies across landscape, and how this impacts plant and animal biodiversity. You will also learn how human agricultural practices impact soils and how this in turn affects the types of agriculture landscapes can sustain.

In the laboratory section you will test the effect of soil properties, and communities, on the growth of plants. You will follow the empirical cycle, from choosing your study questions, defining hypothesis, and collecting measurements, to analyzing and reporting findings. Greenhouse and laboratory practicals will allow your hands-on experience of running experiments and collecting data as well as laboratory skills and several workshops will cover experimental design and data analysis.

[Rethinking Sustainable Societies: New Perspectives. 6 EC, English, Block 1, Dr. Giezen.](#)

It has been almost half a century since the Brundlandt report introduced the concept of sustainable development by defining it as “human societies must live and meet their needs without compromising the ability of future generations to meet their own needs.” While subsequent academic and political thinking has come a long way, the standard line of thought is still that there needs to be a balance between economy, society, and ecology with economic growth coming before the others. This course takes another approach and looks towards different perspective on what a sustainable society is or how to get there.

We will look at several theories that provide a strong analysis of the fundamental flaws of our current system and that offer a radical different approach to create more sustainable societies. This ranges from new perspectives on the economy to the position of non-human actors in politics and law. The course will follow a lecture/seminar format. As the last 50 years have not taken us closer to the ambition of the Brundlandt report, but ever deeper towards a climate crisis, it is time to rethink our approach and consider systemic changes.

[Rethinking Sustainable Societies: Urban Lab. 6 EC, English, Block 3, Dr. Giezen](#)

The current climate crisis requires us to rethink how we develop a sustainable society. And as the majority of the world now lives in urban environments, it makes sense to look how our cities are developed and what needs to be changed both in terms of climate mitigation as well as adaptation. This course will take a hands-on approach to some of the main climate issues currently facing the municipality of Amsterdam. In a pressure cooker format of four weeks of intensive collaboration, you and your team of fellow students will make a climate proof plan and present it to representatives of the municipality. You will get workshops in urban planning, design and systems thinking and group work in order to prepare you to be a professional that can work collaboratively and interdisciplinary on tomorrow's challenges.

The course will start with an introduction day with the client and several content and skill based workshops. Students will then actively cooperate in the first week on the analysis phase, the second week will again start with a workshop and reflection session and then students will continue with the second phase of visioning. The third week will again start with a workshop and reflection session, after which the students will work on the third phase of plan development using a backcasting and prototyping approach. The fourth week will focus on elaboration and refinement. It will start again with a workshop and reflection session, and end with the presentations of the plans to the client.

[Spatial Implications of Environmental Change. 12 EC, English, Block 4 & 5, Dr. Giezen.](#)

The climate and the environment is 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 humans' impact 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 several different fields of environmental change as the main focus of the first period. In the second period, we will investigate local/urban implications and responses to environmental change.

Of course, environmental problems are, by definition, human constructs. Nature is always in flux. Think, for instance, of the 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 humans 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

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22

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, English, Block 5, Dr. Scholtens.](#)

This interdisciplinary and interactive lecture series deals with the governance of water resources and their ecosystem services. This course takes a global perspective with explicit attention to North-South relations. What can the Netherlands, for example, learn from Bangladesh when it comes to water governance? And vice versa? What happens if one's perspective changes from the local to the national and international level? Governance refers to the process of making and implementing decisions with regard to societal objectives. It is undertaken by governments, but also by civil society actors such as NGOs and religious bodies, private parties such as businesses, and consumers. Governance takes place at multiple levels of the administrative scale varying from the international to the local. Such governance, by virtue of engaging multiple actors and levels, has to deal with competing interests and concerns. Governance is also about weighing a range of priorities against one another: should environmental protection receive priority, or is social justice more important? Is economic efficiency a prime concern, or is employment the main goal? Establishing priorities is generally a matter for politics, and there is no single objective way to ascertain which issue should be a priority at what level of governance and in which context? In this course we engage with these and other questions, aiming for students to acquire a basic understanding of the challenges and opportunities of water governance from a global perspective.

[Water Management. 6 EC, English, Block 5, Dr. Praetorius.](#)

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 places, 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.

[World Food and Ecosystems. 6 EC, English, Block 2, Dr. Jacobs.](#)

Inventory of Sustainability-Related Courses
University of Amsterdam, Academic Year 2021/22

Different parts of the world have different biomes, strongly related to the global climate zones and abiotic conditions. In the course World Food and Ecosystems, you will study the most important biomes, their basic function, spatial patterns and internal structure, and their role with respect to the food supply. You will also learn to apply digital data (maps, measurements, and imagery) to improve the analysis of food-related problems and potential solutions. This information is also used for a glance at the future, and the potential impacts of climate change on natural ecosystems and food supply.

PPLE (Politics, Psychology, Law, Economics)

[System Change - how crises change the way we structure the world, 6 EC, English, Block 3, L.F. Thorpe](#)

This course is about systems change. There are many types of systems, in this course we will focus on systems that are currently under pressure of so-called sustainability crises. A well known example is climate change. Climate change is often called a “wicked problem”, because its causes and consequences are connected to many different elements, factors, stakeholders, etc. This complexity makes it hard to tackle the general problem of for instance increased occurrence of extreme weather events (floods, droughts, ice). But what is needed to tackle such an issue? You need an understanding of the different systems that operate in our world and are impacted by or have an impact on the changing climate we are experiencing. In this course we critically explore the systems, processes and concepts defining today’s ‘normal’ society (e.g. the economic system, societal structures and systems, ecological systems) and investigate their relationship to sustainability issues. **This course is not about climate change only**, but addresses multiple systems, crises and changes in the sustainability realm. It includes both, the overlapping societal and environmental domains, such as the relationship between poverty, inequality, destruction of ecosystems and depletion of environmental resources.

We start off by giving students the necessary tools at hand to understand what systems are made of, how system thinking works and how it can be applied in practice. From the past to the present, we dive deeper into the reasons why systems change, and the role different crises play(ed). Examples include the biodiversity / mass extinction crisis, climate refugee crises and the more recent COVID-19 crisis. Based on different theories of transition management, the course highlights the possibilities of shifting to a ‘new normal’. Here we take on a more activist approach and discuss how we as society can potentially make use of certain crises to change our existing systems. Finally, the course introduces different movements (e.g. Degrowth, Environmental Justice Movements) that call for fundamental system changes in the realm of sustainability. We encourage students to critically rethink the world and its systems we live in right now, contributing to a better future.

Psychology

[Applied SP: Towards a Sustainable Society, 6 EC, English, Block 6, Dr. Brick](#)

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 more focused on theory, the lectures and tutorials in this course are also based on psychological approaches to improving social well-being. Additional topics may include risk perception, effective communication, and how to build resilient societies that can withstand social and physical threats.