



**Sustainability Curriculum  
Inventory 2017-2018**

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## Introduction

This sustainability curriculum inventory provides an overview of courses and minor that address sustainability issues. This way we can create an easily accessible overview of the sustainability curriculum at the University of Amsterdam. We can use to promote sustainability curriculum among the students and we can use this to research the availability of sustainability education at the University of Amsterdam.

## People involved with the project

|                          |  |
|--------------------------|--|
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# Research Strategy

## Definition sustainable development

Development that meets the needs of the present without compromising the ability of future generations to meet their own need by maintaining ecosystem services. Ecosystem services are the benefits people obtain from ecosystems (See Figure 1) (CFWGMEA, 2003).



Figure 1. Ecosystem Services (CFWGMEA, 2003)

## Keywords

The courses will be divided in ‘sustainability focussed’ and ‘sustainability related’.

- Courses that are ‘sustainability focussed’ include one of the following keywords in the title or the course description: Sustainable, sustainability or UN development goals.
- Courses that are ‘sustainability related’ do not directly refer to sustainability in the description, but address a critical number of topics that are relevant to understand sustainability issues and entail one or more of the following

keywords: recycling, circular economy, human impact, environment(al), poverty, hunger, disease, health, climate change, clean/green energy. In addition, people doing the inventory have to judge whether the courses fit with the definition of sustainable development.



# Faculty of Economics and Business

## Bachelor Courses

### Sustainability Focused

#### *Corporate Social Responsibility*

Companies are dealing with societal and environmental aspects as a result of pressure exerted by clients, shareholders, regulatory authorities and non-governmental organisations. This course examines how sustainable management or corporate social responsibility has developed and how organisations have reacted to these demands from stakeholders. It will take a closer look at the factors that influence the integration of societal and environmental concerns in corporate strategies and the practical implications of this process.

<http://coursecatalogue.uva.nl/xmlpages/page/2017-2018-en/search-course/course/35211>

#### *Environmental Economics*

This course will review studies that present human influences on the environment and will discuss economic theories that help to understand these environmental changes

<http://coursecatalogue.uva.nl/xmlpages/page/2017-2018-en/search-course/course/31628>

#### *Social Entrepreneurship*

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.

<http://coursecatalogue.uva.nl/xmlpages/page/2017-2018-en/search-course/course/37293>

### Sustainability Related

#### *Development Economics*

Focus on development: Why are some countries poor and other countries rich? How do people cope with being poor in an uncertain sometimes hostile environment? What sort of policies work in the fight against poverty? Can countries really accelerate economic growth through better designed policies? What do both economic growth theories and empirical research suggest with respect to the determinants of growth? What are the historical trends in economic growth across regions? What is the relation between health and economic growth? What is the relation between population growth and economic growth?

<http://coursecatalogue.uva.nl/xmlpages/page/2017-2018-en/search-course/course/33996>



## Master Courses

### Sustainability Focused

In this course students will learn how different theoretical insights from strategic management and other fields of management such as organization theory, marketing, and international business can be applied to analyze how firms deal with the social and environmental issues that they face.

<http://coursecatalogue.uva.nl/xmlpages/page/2017-2018-en/search-course/course/33997>

#### *Sustainable Business Models*

The course utilizes different theoretical perspectives to examine the features, development and impact of sustainable business models. The sessions will address, in particular, sustainable business model typologies, the sustainability-oriented transformation of existing business models, the emergence of organizations with innovative sustainable business models, the development of open business models which create environmental and/or social value through collaboration.

<http://coursecatalogue.uva.nl/xmlpages/page/2017-2018-en/search-course/course/39637>

#### *Sustainability, Accountability and Ethics*

This course primarily explores social, political and organizational perspectives on sustainability, social and environmental accounting / accountability and ethics.

<http://coursecatalogue.uva.nl/xmlpages/page/2017-2018-en/search-course/course/33837>

#### *International Business and Sustainable Development*

This course will prompt students to think critically about how organisational theories and international business strategies and frameworks relate to and are impacted by the pursuit of the Sustainable Development Goals

<http://coursecatalogue.uva.nl/xmlpages/page/2017-2018-en/search-course/course/39509>

### Sustainability Related

#### *Human Development*

Focus on development: An active study of the advanced literature of the human development aspects of development economics, the branch of economics that focuses on the specific economic problems of less developed nations.

<http://coursecatalogue.uva.nl/xmlpages/page/2017-2018-en/search-course/course/36921>

# Faculty of Humanities

## Bachelor Courses

### Sustainability Focused

#### *Climate Change and Environmental Ethics*

Climate change has been called a 'perfect moral storm', since it involves the convergence of a set of global, intergenerational and theoretical problems. In this course, we will zoom in on various of the ethical problems posed by climate change.

<http://studiegids.uva.nl/xmlpages/page/2017-2018-en/search-course/course/31084#aanmelden>

### Sustainability Related

#### *Kansen versus keuzes? Westerse multinationals in ontwikkelingslanden*

De macht van Westerse multinationals staat al heel lang ter discussie, maar sinds de jaren negentig heeft het proces van globalisering daar een nieuwe dimensies aan toegevoegd. Om hun activiteiten in binnen- en buitenland te kunnen legitimeren, ontwikkelden bedrijven maatstaven van behoorlijk gedrag waaraan de bedrijfsvoering altijd zou moeten voldoen. Tegelijk ontstond druk vanuit consumenten en NGO's op bedrijven om gestelde maatstaven ook daadwerkelijk na te leven, bijvoorbeeld door een verbod op kinderarbeid, vormen van discriminatie, of behoorlijke normen ten aanzien van arbeidsomstandigheden of milieuzorg. De Fairtrade beweging won aan kracht en dwong bedrijven te zoeken naar mogelijkheden om grondstoffen op een verantwoordelijke manier in te kopen. Tenslotte namen regeringen de kans te baat door inschakeling van het bedrijfsleven de lasten van ontwikkelingssamenwerking te verlagen.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/38835>

## Master Courses

### Sustainability Focused

#### *Global governance van het milieu*

Na een inleiding op het fenomeen global governance, zal worden ingezoomd op de global governance van het milieu, die intussen een geschiedenis van ongeveer een halve eeuw heeft. Wat is er intussen gebeurd en waarom wordt er zo weinig voortgang geboekt? Naast Westerse gezichtspunten zullen opinies uit de niet-Westerse wereld (vooral uit Azië en Afrika) naar voren komen. Gaan de recent in VN-verband overeengekomen duurzame ontwikkelingsdoelen (Sustainable Development Goals: SDGs) voor een verandering in de global governance zorgen? Welke rol kunnen nieuwe technologieën spelen? Welke scenario's zijn er voor de toekomst van de menselijke leefomgeving? Hoe hangen die samen met conflicten en migratie? In het college zal aan de deelnemers gevraagd worden zich actief over deze kwesties te buigen en aanzetten te doen voor oplossingen.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/38834>

#### *Film Research Seminar I: How to Save the World: or, Ecology and Cinema*

The emphasis in my seminar is to study how cinematic works, mostly fiction films but also documentaries, not only reflect our current environmental and ecological conditions, but suggest solutions through imaginative exploration. Indeed, what do we mean by words such as the 'environment' and 'ecology' and how do we develop conceptual frameworks to explore the relationship between cinematic art, aesthetics and politics? Titles for fields of practice such as 'ecocriticism' and 'eco-philosophy' have both emerged from literary studies. Yet these terms are now undergoing compelling transformations in the study of cinema and its related media environments.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/31498>

### Sustainability Related

#### *Philosophy, Science and Public Affairs*

One of the ideas behind this course is that reflection on the meaning of technologies and training in how to study these phenomena is crucial to the role contemporary philosophers have to play in academia, professional practices and public debates. Issues such as privacy, security and surveillance or problems related to terrorism, energy, food and the environment cannot be dealt with properly without taking the contribution of technologies, for better or for worse, into account. Therefore, in addition to the thorough study of texts a crucial part of the course consist of so-called "philosophical investigations" in which the participants are invited to choose a (contemporary) topic related to technology and to research it according to the literature that has been presented

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35873>

### ***Political Philosophy and the Humanities in a Global age***

In the humanities, globalization has until quite recently been studied from two rather distinct perspectives: either from a postcolonial or decolonial cultural-historical perspective, or from a normative, political theoretical perspective, often rooted in the liberal and human rights traditions. Over the last years, it has been increasingly recognized by scholars from both the cultural and political-theoretical fields that integrating these perspectives would be helpful to enhance the humanities' critical and practical potential in today's world. Criticism of the legacies of eurocentrism and colonialism in liberalism and the human rights traditions is then combined with cutting edge political philosophical work concentrating on questions of imperialism, freedom and global justice, f.e., increasingly, on resource and environmental justice.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35982>

## **Faculty of Law**

### **Bachelor Courses**

#### **Sustainability Focused**

##### ***Environmentalism and Social Legal Change***

In this course students will study the problem of climate change from the angle of law and policy. However, they will also learn about the various interests at stake by taking a specific perspective in the discussion. The perspective on climate change and what political action is desirable depends on the position of the actor in the debate. The environmentalist has different interests in the issue than the industrialist and poor countries demand different political answers than do richer countries.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/33651>

### **Master Courses**

#### **Sustainability Focused**

##### ***International Environmental Law***

International Environmental Law developed rapidly as a special branch of international law after the 1972 Stockholm Conference on the Human Environment. The course is designed to provide a general orientation of the subject. The following issues will be addressed: Principles of international environmental law; The use of living natural resources; The use of non-living natural resources; Trade-related environmental measures; Compliance with international environmental agreements; Liability for environmental damage.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/31498>

## Sustainability Related

### *Omgevingsrecht*

Het omgevingsrecht is het recht dat betrekking heeft op de fysieke leefomgeving. Het betreft het milieurecht, het ruimtelijk bestuursrecht, het waterrecht en het natuurbeschermingsrecht. Het omgevingsrecht is van groot belang bij gebiedsontwikkeling. Denk aan de uitdieping van de Westerschelde, de aanleg en verbreding van wegen, spoorwegen en de aanleg van industrieterreinen en windmolenparken. Ook bij kleinere projecten, zoals het oprichten van een bedrijf op het bouwen van een bouwwerk, is het omgevingsrecht een bepalende factor. De verschillende aspecten die bij dergelijke projecten kunnen spelen, waarbij verschillende en soms tegenstrijdige belangen aan de orde zijn, worden door verschillende omgevingsrechtelijke wettelijke regelingen geregeld. Het is daarom noodzakelijk om het omgevingsrecht als geheel te bestuderen. 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.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/39606>

# Faculty of Science

## Bachelor Courses

### Sustainability Focused

#### *Analyse IPCC Rapport*

Klimaatveranderingen en de antropogene bijdrage daaraan krijgen veel aandacht in de wetenschap, de politiek en in de media. Het Intergovernmental Panel on Climate Change (IPCC) brengt iedere 6 jaar een rapport uit waarin ze de nieuwe ontwikkelingen op het gebied van de klimaatwetenschap samenvatten. Uit verschillende hoeken komt er commentaar op dit rapport, hetgeen niet verwonderlijk is gezien de grote maatschappelijke implicaties ervan. De inhoud van het IPCC rapport wordt in deze cursus behandeld, onder meer aan de hand van het boek "Introduction to modern climate change (Dessler, 2016). Daarbij zal de nadruk liggen op deel 1 van het IPCC rapport (The Physical Science Basis; IPCC, 2013). Aan deel 2 (Impacts, Adaptation and Vulnerability) en deel 3 (Mitigation of Climate Change) zal minder aandacht besteed worden. De film "The Great Global Warming Swindle" wordt bekeken en besproken. In de modelleer practica wordt onder andere de gevoeligheid van modellen toegelicht voor de parameters in die modellen en de gebruikte randvoorwaarden.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35914>

#### *Conservation Biology*

assess possibilities and approaches to use scientific knowledge for a sustainable conservation and recovery of biodiversity;

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/37266>

#### *Dynamische Systemen in de Biologie*

Studenten leren populatie dynamische modellen begrijpen en analyseren met verschillende interactievormen. Hiermee kunnen de studenten maatschappelijke problemen gerelateerd aan populatiedynamica (zoals overbeving, plaagbestrijding en natuurbeheer) begrijpen en uitleggen.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/1990207>

#### *Ecophysiology*

Variatie en plasticiteit in fysiologie van planten en dieren; De invloed van klimaatverandering op fysiologie; De invloed van de biotische en abiotische leefomgeving op fysiologie; De verdediging van planten en dieren tegen belagers (herbivoren, predatoren, parasitoiden en parasieten) en andere vormen van stress; Fysiologische variatie gedurende de levensloop en levenscycli van organismen; De fysiologie van het vermogen van planten en dieren om hun omgeving waarnemen; Zoekgedrag, migratie, oriëntatie en leergedrag van dieren.



<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/32507>

### ***Energietransities***

Als centraal thema van het vak Energietransities hebben we gekozen voor elektriciteitsopwekking. Rondom dit thema wordt door de studenten een vijftal casussen uitgewerkt. Hierbij wordt vanuit elk van de vier invalshoeken gekeken naar de totale keten van winning van de brandstof tot en met de omzetting hiervan tot elektriciteit. Afhankelijk van de casus en de voorkeur van de studenten kan een nadruk op winning (bijv. schaliegas) of juist opwekking (bijv. kolencentrale) gelegd worden. De studenten werken in teams van vier studenten aan een casus, waarbij elk van hen een andere invalshoek vertegenwoordigt. Het eindproduct is een verslag, waarin alle vier de invalshoeken evenredig aan bod komen. Als één van de bronnen voor het verslag houden studenten een interview met een voor hun casus en invalshoek relevante stakeholder of expert.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35918>

### ***Food Production***

In the 20th century, global food availability has improved considerably. The world population increased sixfold and world food production nearly sevenfold. Per capita more food is available, mainly as a result of the increase of the production per hectare. The need for doubling food production in the coming four decades is very clear though, as the world population increases and - even more important - economic development leads to diets with more animal proteins. To save land for nature and biodiversity, further increase of productivity per hectare is necessary by optimizing land and water use, reducing agrochemical inputs and exploiting ecological opportunities.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/34853>

### ***Frontiers in Medical Biology 1***

As the first course in the track (together with Frontiers in Medical Biology II and Advanced Genomics), Frontiers in Medical Biology I will focus on three of today's biggest societal health challenges: "Cancer", "Aging" and "Food for Health". Students will obtain knowledge of the fundamental, biological principles underlying these challenges. During the remainder of the track, they will also develop various skill sets to address these challenges from different perspectives (public engagement - Frontiers I, entrepreneurship - Frontiers II, experimental research - Frontiers I & II and Advanced Genomics).

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36946>

### ***Frontiers in Medical Biology 2***

In week 1-3 the students develop a business idea into a full business model, exploring involved stakeholders. In a set of workshops the students will obtain skill sets related to entrepreneurship and private sector research (knowledge on business models including financial aspects, venture capital investors, R&D and Pharma, property rights and how to give a pitch). Entrepreneurship teaching and business proposal writing coaching is assisted by the Amsterdam Center for Entrepreneurship (ACE, <http://www.ace-amsterdam.org/en/>) and the ACE Venture

Labs incubator for start-ups (<http://www.ace-venturelab.org/>). At the end of these 3 weeks the students hand-in a business model of their explorative research idea and they will pitch their developed plan in front of a dedicated jury (the pitch presentations will take place at AceVentureLab). In week 4-8 students will identify a fundamental research question aimed at addressing a health societal challenge. The students will write and present a research proposal of an original idea for basic biological research in collaboration with an industrial partner. Students will get support and guidance for writing the research proposal. To get an idea of ongoing active research in the areas of interest, guest lecturers will present 'highlights'. Students will actively prepare for these lectures by reading assigned papers to be able to discuss the presented science with the guest lecturer in a Q&A session and the students will write a brief highlight including 3 questions.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35771>

### ***Future of Food***

In block 1 and 2 of the Food semester, a broad range of indicators which can enhance a sustainable food production, consumption and distribution were addressed: the role of soil fertility, soil loss and alternative substrates, nutrients, water, energy use, GHG emissions, upgrading via plant breeding or genetic manipulation, pest management (insights from the natural sciences regarding crop production), but also the role of the global and local economy within the world food system, and the contrasting visions regarding the institutionalization of food-related policies (insights from the social sciences regarding crop production and distribution). In the final block (block 3) of the food semester, we hope to be able to integrate the knowledge we have gained up till now to come up with interesting, inspiring and new (interdisciplinary) ways to perceive the Future of Food. In the final assignment, students are stimulated to reflect upon the promises the scientific basis can hold for sustainable food in the future, and to think about the implications of how we currently produce, distribute and consume food, both globally and locally. In the assignment, students can choose to either work on the production and consumption of meat, or the creation and impact of food losses and waste; two factors that have gotten little attention in the food semester so far.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35938>

### ***Fysica van energie: conventioneel, kernenergie en fotovoltaïsch***

Dit vak bestaat uit de volgende onderdelen: introductie tot het energie- en broeikasgas probleem; thermische energie en bronnen gebaseerd op koolstof; kernenergie (kernsplijting en -fusie); fotovoltaïsche energie. Voor alle onderdelen geldt dat de nadruk sterk ligt op wat de natuurkunde en de natuurkundige erover kan zeggen en berekenen. Het vak past kennis op het gebied van mechanica, elektriciteit, thermodynamica, kernfysica en vastestoffysica toe op het gebied van energieopwekking.

<http://studiegids.uva.nl/xmlpages/page/2016-2017-en/search-course/course/28681>

### ***Green and Industrial Chemistry***

De principes van groene chemie dienen als een conceptueel kader voor het ontwerp, fabricage, gebruik en recycling of verwijdering van chemische producten te begeleiden op een economisch, ecologisch en sociaal verantwoorde manier. Echter,

om groene chemie te bevorderen dient een significante verandering op te treden in hoe de volgende generatie van wetenschappers wordt opgeleid. Dit is het leidende doel van dit vak.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/39217>

### ***Gecondenseerde materie 1***

This course gives a broad overview of a number of important concepts in solid state physics. These provide the quantum physics theory underlying important parts of material science, and give a framework for understanding the physics of material structure, conduction of electricity, the propagation of sound in crystalline solids, as well as the electrical and optical properties of metals and semiconductors.

<http://studiegids.uva.nl/xmlpages/page/2017-2018-en/search-course/course/31880>

### ***Het Economisch Perspectief***

De module Economie in Perspectief introduceert het economisch gezichtspunt op het object van Future Planet Studies: de actuele en toekomstige vraagstukken op het snijvlak van mens en aarde. De module legt om te beginnen uit waarom problemen zoals milieudegradatie en uitputting van grondstoffen (ook) economische problemen zijn. Daarnaast proberen we erachter te komen wat de economische oorzaken zijn van dergelijke problemen. Verder wordt uiteengezet welke economische prikkels en instrumenten er ontwikkeld kunnen worden om die knelpunten aan te pakken. Hoofddoel is het overbrengen van het besef dat economische inzichten onontbeerlijk zijn voor het formuleren van zowel beleidsdoelen als voor het ontwikkelen van beleidsinstrumenten op het gebied van natuurbehoud en duurzame ontwikkeling.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36180>

### ***Kwaliteit van Leven***

Centraal in deze module staat de invloed van de mens op de aarde en het belang van de fysieke en sociale omgeving voor de kwaliteit van leven. Als we het hebben over de kwaliteit van leven, op welke kwaliteit(en) doelen we dan? Kwaliteit van wie of wat? Voor wie? En waar? Wat voor afwegingen spelen hier een rol en hoe kunnen we die kwaliteit bevorderen? In de zoektocht naar een antwoord op deze vragen worden verschillende perspectieven aangereikt.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/32945>

### ***Natuurrampen en Toekomstige Bedreigingen***

De gevolgen van natuurrampen en de discussie over toekomstige natuurlijke bedreigingen voor samenlevingen zijn voortdurend in het nieuws. Als gevolg van de exponentiële demografische groei en de toegenomen concurrentie op landgebruik, worden samenlevingen steeds gevoeliger voor de blootstelling aan natuurrampen en toekomstige natuurlijke bedreigingen. Voorbeelden hiervan zijn overstromingen, aardbevingen, aardverschuivingen, sneeuwlawines en tsunami's. Het is van fundamenteel belang om op een adequate manier om te gaan met toekomstige bedreigingen. Hierdoor kunnen natuurlijke risico's beperkt worden. Het doel van deze module is om inzicht te verschaffen in hoe natuurrampen kunnen ontstaan en hoe het risico op rampen wordt vergroot door de ingrepen van de mens in het landschap. In deze module wordt de kennis in aardwetenschappelijke processen

verdiept en wordt inzicht gegeven in de fysica van de processen die rampen veroorzaken. De vragen die aan de orde komen zijn: Wat is de omvang en frequentie van natuurrampen? Wat zijn de onderliggende fysische en mechanische processen? Hoe worden rampen veroorzaakt door menselijke veranderingen in het landschap?

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36509>

### ***Practicum duurzame chemie***

Het practicum Duurzame Chemie bestaat uit een practicum waarin meerdere organisch-chemische experimenten worden uitgevoerd. De student doet dit onder begeleiding van een docent en verscheidene assistenten (promovendi en studentassistenten). Tijdens het practicum komt men in aanraking met alle elementen van de synthese: het bouwen van een reactie-opstelling, het navolgen van een reactie voorschrift in de uitvoering van de reactie, het isoleren en zuiveren van het reactieproduct (d.m.v. het toepassen van verscheidene lab vaardigheden en -technieken) en het karakteriseren ervan. Ook aan verslaglegging zal de nodige aandacht worden besteed. De experimenten die worden uitgevoerd hebben altijd een link met het thema 'duurzame chemie'. Die link wordt altijd besproken in de handleiding met als doel de student bewust te maken van duurzame aspecten van de chemie. Voorbeelden van experimenten die aan bod komen zijn bijvoorbeeld: de recycling van PET-flessen en de duurzame synthese van adipinezuur. Ook zal er meermaals gebruik worden gemaakt van een katalysator.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36099>

### ***Toekomstige Uitdagingen, Innovatieve Oplossingen***

In het vak Toekomstige Uitdagingen, Innovatieve Oplossingen geven internationaal gerenommeerde gastsprekers hun visie op de belangwekkende thema's van deze tijd. Zij belichten voor welke uitdagingen we ons gesteld zien in de relatie tussen mens en aarde. In dit vak maak je een begin met het leren tackelen van dergelijke ingewikkelde uitdagingen, die niet vanuit een discipline kunnen worden opgelost maar in hun complexiteit dienen te worden bestudeerd. Je leert dat langs twee wegen. In de eerste plaats door je vertrouwd te maken met het systeemdenken, dat helpt om de verschillende factoren die een rol spelen bij complexe issues in onderlinge samenhang te bezien. In de tweede plaats schrijf je zelf een academische paper over een van de uitdagingen die jou het meest interesseert, waarbij je ook kunt proberen er oplossingen voor aan te dragen.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36183>

### ***Toekomstperspectief voor de Aarde***

We gaan in op de meest belangrijke onderwerpen binnen de ecologie, de aardwetenschappen en een klein deel scheikunde, in het bijzonder om nader zicht te krijgen in de relatie tussen de mens en de aarde. Daarbij is er aandacht voor het systeemdenken dat in de drie vakgebieden die in deze module de aandacht krijgen (ecologie, scheikunde en aardwetenschappen) een belangrijke rol speelt. De cursus is opgebouwd uit vier thema's die in verband staan met elkaar (1) de aardkorst: grondstoffen voor het leven (2) het leven: oorsprong en energetische processen (3) gevolgen van klimaatverandering, en (4) bedreigingen voor soorten.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36184>

### ***Water Governance of Aquatic Resources and Environments***

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

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/38067>

### ***World Food System***

Future Planet Studies is about coming up with solutions to challenges facing humanity in the 21st century. One such challenge is how to feed the world's population. In fact, the fulfilment of many basic human needs is directly or indirectly connected to the production of food. This is self-evident for the human need for food itself. However, the basic needs for water, a healthy and stable environment, and safety and security are also strongly linked to food production. The course 'World food system' takes a multidisciplinary approach to these issues. The first primary objective is to offer insights into the concepts, mechanisms and drivers of the world food system and into agricultural policies affecting food production and trade. The second primary objective is to acquire competencies in Remote Sensing (RS) and Geographical Information Systems (GIS) for assessing land use and food production. In a final assignment students will apply their knowledge and competencies to the case of China.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/33838>

## Sustainability Related

### *Analytical and Environmental Chemistry*

The course is an introduction to the chemistry and toxicology of chemicals in the environment and includes the following topics: Techniques to analyse metals and organic chemicals in soil, sediment, water and biota; Sources and emissions of environmental pollutants; Transport and distribution of chemicals in the environment; Partitioning of chemicals between water, air and soil; Accumulation of chemicals in organisms; Degradation of organic chemicals in the environment; Effects of pollutants on organisms; Assessment of the environmental risks of chemicals.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36453>

### *Biodiversity & Global Change*

Students will obtain a basic knowledge of what biodiversity is and how it is distributed in space and time. Moreover, they will apply their knowledge to ask research questions which can then be addressed with data and GIS visualization. Students will also learn to comprehend, present and critically assess scientific literature and to present research projects to the class. At the end of the course, students are expected to be able to (1) describe and summarize patterns of biodiversity and environmental change, (2) compare and discuss hypotheses regarding underlying natural and human-made drivers of biodiversity, (3) handle, visualize and present spatial biodiversity data, and (4) present, critically evaluate, discuss and put into perspective the evidence of biodiversity and global change from the primary scientific literature.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/32525>

### *De Staat en de Mensen*

In dit vak staan de mens en diens omgeving centraal. Veelgebruikte begrippen als integratie en mondialisering worden vanuit verschillende sociaalwetenschappelijke disciplines, zoals politicologie, sociologie, antropologie en psychologie onderzocht. Daarnaast worden grote conflicten, zoals de oorlog in voormalig Joegoslavië en het conflict in Syrië vanuit deze verschillende vakgebieden bekeken.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35309>

### *Digital Earth I: Earth Surface Analyses using Geographical Information Systems*

Digital Earth Surface Analyses using Geographical Information Systems. Lectures will emphasize on general principles and theory in geospatial analysis techniques, map production and project design using ArcGIS 10. The first lecture will be an introduction to GIS.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/37667>

### *Ecosysteem Dynamica*

Abiotische processen en nutriëntencycli; Basiseigenschappen aquatisch en terrestrisch milieu; redox, zuurstof, licht, koolstof en organisch materiaal, N-, S-, en P-kringloop en micronutriënten, trofiegraad en nutrient beschikbaarheid,

remineralisatie en decompositie. Dynamiek in levensgemeenschappen: abiotische factoren; Wetlands, meren, rivieren, het litoraal, waterbodems en bodems in (semi-)terrestrisch milieu, temperatuur, vocht en licht als limiterende factoren van soortsvbreiding. Dynamiek in levensgemeenschappen: biotische factoren; Verspreiding, habitat selectie en sortering via uitruilmechanismen op basis van eigenschappen van organismen.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/31615>

### ***Ecotoxicology***

Less than 10% of the effects observed in the field can be attributed to the measured compounds. This implies that 90% of the observed effects are caused by compounds that were not measured. Hence, there is a need for a more scientifically based and explanatory alternative to water quality assessment, which would be less compound oriented and thus a more affect-driven monitoring strategy. During the practicals we will therefore determine the toxicity of the surface water using bioassays. If the bioassays indicate surface water toxicity, then the responsible substance(s) can be identified. The proposed strategy will be deployed at a wide range of locations provided by the Dutch Water Boards, representative of the Dutch aquatic landscape and threatened by different sources of pollution.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/37269>

### ***Introduction Computational Science***

This course will focus on modelling real world phenomena, ranging from physical to sociological processes. After an introduction to modelling and simulation as the third paradigm of science, we cover three methods for modelling real world systems: cellular automata, ordinary differential equations, and complex networks. The course provides basic understanding of each method and their relation and introduces well-known examples for each approach. Every now and then we will derive some mathematical results such as integrating a simple ODE or deriving the diameter of a network structure; a degree mathematical skills are important to a computational modeler. Practical experience is obtained with back-to-back lab assignments which correspond to the concepts introduced in the weekly lecture material. The preferred programming language is Python. Example modelling assignments include traffic congestion, the flow of gas molecules, and the spreading of infectious diseases through our highly connected society.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/32778>

### ***Klimaatverandering en Zeespiegelstijging***

Één van de grote wereldwijde problemen van deze tijd is de verandering van het klimaat op aarde. Voor Nederland en veel andere kustgebieden zijn niet alleen de verandering van de temperatuur en het neerslagregime van belang, maar is ook de verandering van de zeespiegel ten gevolge van klimaatveranderingen belangrijk. Deze cursus behandelt de werking van het klimaat op aarde, klimaatveranderingen op verschillende tijdschalen en de consequenties voor de zeespiegel. Omdat voor een goed begrip van de algemene circulatie enig begrip van basale natuurkunde onontbeerlijk is, worden waar nodig ook de benodigde natuurkundige principes behandeld. Bij het maken van prognoses (projecties) voor het klimaat in de toekomst spelen modellen een essentiële rol. Daarom wordt duidelijk gemaakt hoe causale

relaties de basis vormen voor dynamische modellen en hoe de “echte wereld” in computermodellen kan worden beschreven. Eigen gemaakte modellen worden gebruikt om de effecten van zeespiegelstijging op polders en rivieren te analyseren.  
<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35917>

### ***Marine Biology***

A large part of the earth surface (more than 70%) consists of seas and oceans. Marine ecology is the branch of ecological science concerned with organisms that live in or near the sea and ocean, their behaviors, and their interactions with the environment. The course starts with theoretical part on the physical, chemical and biological processes that are of key importance for the functioning of marine ecosystems. Furthermore, attention will be given to the effects of human invention on the functioning of marine ecosystems.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/37270>

### ***Organismen in het Milieu***

Principes van de taxonomie; Methoden van classificatie, identificatie/determinatie m.b.v. sleutels, herkenning belangrijkste hoofdgroepen; Inleiding in de belangrijkste ecosystemen van Nederland en hun kenmerkende organismen; Adaptatie van planten en insecten aan hun milieu.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/32176>

### ***Paleoecology***

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, discussions, and fieldwork, 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.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/32522>

### ***Photosynthesis***

Photosynthesis is the process that sustains virtually all life on Earth. In this process organisms capture and store the energy of the photons in the form of carbohydrates. In this course you will follow all the steps of the photosynthetic process at the molecular level. The course will cover: light-harvesting, excitation energy transfer, electron transport, photophosphorylation and mechanism of carbon dioxide fixation. We will get inspiration by the diversity of the photosynthetic process in different organisms and study the strategies used by them to respond to changes in their environment. The use of photosynthesis for bioenergy production will also be discussed.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/39780>



### ***Physics of Energy: Sun, Water, Wind and Storage***

This course contains the following subjects: Introduction to energy and climate: overview of resources – definition of renewability; Introduction to fluid dynamics for energy; Water energy (rivers, reservoirs, tides, waves, blue energy); Wind (Power in the wind, Betz limit, Design of horizontal axis turbines, Other types of wind-harvesters); Geothermal energy; Solar energy (Solar heat, Photovoltaic energy, Photoelectrochemical cells, Water splitting, Thermoelectric); Energy Storage (Pumped water, SMES, Compressed air, Magnetic, Batteries); For all subjects there will be a strong emphasis on the physics and on what a physicist can contribute and calculate. This course applies knowledge of mechanics, electricity, thermodynamics and solid state physics in the realm of energy supply.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/39593>

### ***Project Computational Science***

In this project you will design, implement and test a simulation program for a computational problem of your own choosing. You will use this program to perform a set of experiments and you will interpret and present the results of your experiments. You will be working under the guidance of an experienced researcher.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/39015>

### ***Soils and Environment***

Soils are perhaps the most important essentially non-renewable resources on Earth. Soils are very dynamic systems which perform many functions and deliver services vital to humankind and to the survival of ecosystems. For instance, humanity all but completely relies on soils for food production. Unfortunately the majority of soils are very vulnerable to degradation by overexploitation as their regeneration rate is extremely slow. The sustainable use of soils and the protection of their functions therefore require a profound knowledge of (chemical) processes in soils and their interactions with the environment.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36490>

### ***Soil and Crop Quality Lab***

The course is designed as an introduction into the practical aspects of soil quality measurements and an experimental study on the effects of soil quality on plant growth. The course starts with a short introduction to experimental methods used to determine chemical quality of soils and crops. Subsequently, students perform a series of experiments in which maize is grown in soil amended with different concentrations of nitrogen, phosphorus and copper. The growth rate and yield of the plants growing on these soils will be determined. In addition, soil properties important for fertility will be measured, including texture, bulk density, salinity, buffering capacity and nutrient content. The results will be presented as a written report and discussed in the context of the links between soil quality and crop yield.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36492>

## **Thema 1: De Handelende Mens – Onderzoek**

In het onderzoeksdeel van Thema I ga je in samenwerking met een aantal medestudenten zelf onderzoek doen naar een aspect van (menselijk) handelen. Je kiest een onderwerp binnen een van de 'thema clusters' Filosofie, Cognitiewetenschap, Robotica, Duurzaamheid of Sociale wetenschappen (o.v.b.). Tegelijkertijd word je gestimuleerd over de grenzen van deze vakgebieden te kijken. Dit onderzoek zal voor een belangrijk deel bestaan uit het bestuderen van artikelen over het gekozen onderwerp, maar kan worden aangevuld met eigen onderzoek: bijvoorbeeld een enquête, interviews met experts of observaties. De afsluiting van dit onderdeel is in juni, in de vorm van een onderzoeksverslag en een presentatie op het eerstejaars Bèta-gamma slotsymposium.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/38037>

## **Thema 1: De Handelende Mens – Theorie**

In het theoretische deel van Thema I: De Handelende Mens krijgt interdisciplinariteit gestalte middels een reeks hoorcolleges waarin docenten van het IIS en gastdocenten spreken over onder andere cognitie-wetenschappelijke, filosofische en sociaal-wetenschappelijke aspecten van het menselijk handelen. De analyse van menselijk handelen wordt daarnaast uitgebreid met behulp van vergelijkingen met het gedrag van primaten en beschouwingen vanuit de robotica. Bovendien wordt in deze colleges ingegaan op de samenhang tussen en integratie van verschillende wetenschappelijke theorieën en methodes. Parallel aan de hoorcolleges wordt in werkcolleges nader ingegaan op de collegestof en artikelen uit de reader.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36256>

## **Thema 2: Wetenschap in Praktijk**

Wetenschappelijke kennis kan van grote waarde zijn voor bedrijven, NGO's en overheden die reële maatschappelijke vraagstukken proberen op te lossen. Academics dragen deze kennis mee, en staan voor de uitdaging een brug te slaan tussen wetenschap en dagelijkse besluiten in de praktijk. Deze cursus geeft studenten de mogelijkheid hun wetenschappelijke kennis te gebruiken om reële vragen en uitdagingen van organisaties op te lossen. Alle cases zullen vallen binnen het thema Circulaire Economie.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/32711>

## ***Tropical Ecology***

The course consists of lectures, paper discussions, oral presentations, field excursions, a written report, and a final examination. The first set of lectures will provide students with a foundational understanding of tropical ecology, particularly aspects related to factors that influence biodiversity and function in tropical systems. Some of the topics covered include patterns of biodiversity, environmental gradients, biotic interactions, nutrient cycling, and human activities. The later lectures are focused on how tropical systems are expected to respond to upcoming global change and human pressures, and the conservation strategies currently in place to mitigate these effects. Students will also participate in several paper discussions throughout the module, which will include recent literature relevant to lecture topics. Students will make several trips to the Hortus Botanicus in

Amsterdam to learn about the tropical plants in their collection, and the role of those plants in tropical forests. If possible, excursions to the Wetlands Museum International and the Soil Museum will be organized. During the third week of the module, students will present in a mini-symposium on a specific theme related to tropical ecology or conservation, and the themes will be selected at the start of the course. Students will also write a written report on the same theme. If possible, a symposium will be organized so that PhD students studying tropical ecology in the Netherlands can come to UvA and share their work.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/32524>

### ***Water Management***

The course is structured around three themes. The principles of hydrology, water resources and the hydrological cycle will be applied in three selected environments and illustrated with case studies: Part 1. Climate change and desertification. Desertification and desiccation are advancing in Spain. Rainfall and evaporation dynamics are used to evaluate the water balance for various land use strategies. Part 2. The design of water systems in polders. Polders in the World need a typical design for water level management, for which the Dutch have become famous in the World. Knowledge of saturated and unsaturated water flow is discussed on the basis of the design of a polder. Part 3. Global change and catchment hydrology. A catchment model of the Rhine basin is used to discuss the potential risks of floods associated with climate change. Students use this model to evaluate their own management solution.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/37666>

### ***World Ecosystems***

The course will provide a systematic overview of the characteristic ecosystems on earth, such as tropical forests and savannas, deserts, Mediterranean and steppe ecosystems, temperate and boreal forests, tundras and wetlands. The natural function and structure of ecosystems are treated, with interactions between climate, geology, geomorphological processes, soil formation, adaptation of plants and animals and human impact in each climatic zone. Since the course is part of the thematic block on food production, soil development and characteristic in different climate zones will be a major topic. Questions are discussed, such as which role the ecosystems play in terms of food supply, how this is affected by changes in e.g. climate and land use, and what happens to natural ecosystems if we see them mainly as source of our food production. It is possible that the traditional way of working the land reflects a deep knowledge of what demands can be put upon our environment, or what can be taken from Earth's resources without creating a boomerang effect.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35809>

## **Bachelor Minors**

### **Sustainability Focused**

#### ***Placemaking: Estafette voor Stadsontwikkeling***

In dit vak staat de placemaking van dit gebied centraal. Placemaking is zowel een filosofie als een ontwerpproces waarbij je gebieden inricht op basis van lokale kennis en kwaliteiten. Tijdens dit proces spelen o.a. de verhouding tussen mens en natuur en wet- en regelgeving een belangrijke rol om tot een vitaal en duurzaam gebied te komen. Bekende voorbeelden zijn 'Bryant Park' in New York of De Ceuveel in Amsterdam Noord, maar er zijn talloze andere voorbeelden te noemen. Ook de gemeente Amsterdam omarmt Placemaking, maar in de praktijk lijkt het soms lastig om te realiseren. Studenten met een sociaal-wetenschappelijke, ecologische en juridische achtergrond slaan de handen ineen voor dit estafette vak, waar we de ontwikkelingen van Science Park over meerdere jaren volgen én beïnvloeden.

## **Sustainability Related**

#### ***Minor Future NOW***

Project with various courses and workshops

Over the course of five months, you will work in small interdisciplinary teams (max. 4 persons) on finding solutions to complex challenges, which have been put forward by external partners.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/2045287>

## **Master Courses**

### **Sustainability Focused**

#### ***Assessment of Chemical and Natural Hazards***

Humankind has an enormous impact on the world by trying to adapt nature for his own benefit as well as unintentionally affecting environmental quality by for example chemical pollution. However, natural disasters, such as earthquakes and flooding, as well as poor environmental quality threaten human society. It is therefore important to assess the risks of these threats. This course focuses on GIS or model based applications to assess natural and chemical hazards in the soil-water-landscape system.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/33554>

#### ***Benthic Ecosystems***

Below each body of water—from deep oceans to mountain lakes—there are ecosystems consisting of benthic (bottom-dwelling) organisms that form complex food-web structures depending on their physical environment. Factors such as light, temperature, salinity, substrate-type and water-flow are important drivers for the structure of each of these dynamic systems. Interactions between organisms at different trophic levels are unraveled by an interdisciplinary approach of biology, geology and chemistry. Ultimately, the discipline “Benthic Ecology” aims to understand how these ecosystems function, impact their environment and even predict their dynamics in a changing world.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/31251>

### ***Biosolar Cells***

BioSolar Cells is a Dutch national research programme with the aim to optimize the photosynthesis process in plants, algae and bacteria, and to develop 'artificial leaves' that combine physical and chemical components. The course will start with interactive lectures by experts on each of the three themes from BioSolar Cells. The students will have to read one or two papers before each lecture and formulate research questions, after which the lecturer gives his/her lecture and the questions are discussed. In the second stage of this course, the students choose a research topic, conduct a literature study, prepare a scientific review paper and present their work in a session with all participating students and staff.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-docent/docent/4922>

### ***Catalysis for Sustainable Energy***

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.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36513>

### ***Climate Change***

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

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/34331>

### ***Current Sustainable Energy Technologies***

In week 1, students read all chapters of the book and formulate for each chapter a technological and/or economic/societal question. The question will be accompanied with hypothetical answers or estimations or working hypotheses. Answers must be as quantitative as possible. In week 2, students will present and discuss their questions and hypotheses with their group. Then, participants will be handed specific assignments for further research. In week 3, students will present the results of their further research, and will receive feedback from the other participants in their group. In week 4, students will give their final presentations to all participants of the course and will hand in the final report of their work.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36514>

### ***Emergent Energy Materials***

The course comprises three blocks, matching each of the thematic modules introduced below: Materials for nano photovoltaics For very fundamental reasons (natural abundance, nontoxicity, suitable band structure) silicon is presently the most important photovoltaic material. New opportunities are offered by dedicated material engineering of Si nanostructures; Inorganic materials for solar water splitting Most renewable energy sources are intermittent. Storage of energy in fuels

is therefore important. Inorganic semiconductor nanocrystals when exposed to sunlight are able to split water into hydrogen and oxygen; Organic and hybrid photovoltaics. Photovoltaics is the direct conversion of sunlight into electrical energy. Solution processed organic and nanostructured semiconductors allow enormous potential for new flexible and large scale energy production technologies. <http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/37005>

### ***Green Chemistry***

Sustainability and green chemistry focuses on 12 principles. Aspects like atom efficiency, chemical waste and manufacturing processes will be highlighted as well as catalysis, solvents, biomass, solar energy, alternative feedstock, energy consumption, and safety, all in the context of chemical sustainability. Important ingredients in the course are student presentations on these topics, and assignments on selected topics.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35116>

### ***Integrated Coastal Dune Management***

The Dutch coastal landscape and seascape are both nationally and internationally of great importance to man and nature for its ecological values, its economical values, its positive effect on human health and for sea defence. Due to the wide variety in this spectrum of values, a multidisciplinary approach towards balanced management and policies regarding the coastal landscape is needed. To achieve this, integrated coastal management has been developed, in which current knowledge of many scientific expertise fields are combined. The course is based on the theoretical framework of resilience thinking. In this course hydrology, geology, soils, landscape ecology, environmental studies and nature management are linked to more social disciplines like economics, law, and social and historical geography. The coastal landscape will thus be studied in full detail, including coastal protection, drinking water production, nature management and tourism/recreation. This course is furthermore characterized by an area-oriented approach to express the current topics and debates on management and policies.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35637>

### ***Management of Sustainable Innovation***

A paradigm shift is happening at this moment. Where over the past decades firms were focused on creating shareholder value, the creation of 'shared value' is now gaining terrain: leading management scholars like Peter Senge and Michael Porter are describing how companies from Nike to Tesco create value by including all stakeholders in their firm's strategies. New strategies are centered around respect for the environment, employees, and other stakeholders as to create positive self-reinforcing cycles of value creation. This requires fundamentally different management models in which collaboration with a wide array of stakeholders in key.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35952>

### ***Masterclasses in Green Life Sciences***

In this course, students are trained to discuss important topics within the Green Life Sciences, in the form of a master class, consisting of a tutorial meeting and a seminar. Students will attend lectures from internationally renowned scientists in the

Amsterdam Green Life Science Seminars series organized by ~10 Plant Science groups within the Swammerdam Institute for Life Sciences (SILS) and the Institute for Biodiversity and Ecosystem Dynamics (IBED). This seminar series is organized on a monthly basis throughout the year (except the summer period). The topics for the seminars cover the whole spectrum of plant molecular biology and signal transduction. An overview of upcoming and previous seminars can be found at: [sils.uva.nl/news-events](http://sils.uva.nl/news-events). Students must attend six masterclasses during the 2-year programme. Students may attend more theme lectures on a facultative basis. <http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/34407>

### ***Project Sustainable Future***

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.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35280>

### ***System INnovation and Transition Management I***

Over the past few decades, there has been a growing concern about the social and environmental risks which have come along with the progress achieved through a variety of mutually intertwined modernization processes. In recent years these concerns are transformed into a widely-shared sense of urgency, partly due to events such as the various pandemics threatening livestock, increasing awareness of the risks and realities of climate change, and the energy and food crises. This sense of urgency includes an awareness that our entire social system is in need of fundamental transformation. But like the earlier transition between the 1750's and 1890's from a pre-modern to a modern industrial society, this second transition is also a contested one. Opinions about the desirable pathways towards sustainability vary widely. In this course we address the issue on how to understand the dynamics and governance of the second transition dynamics in order to ensure sustainable development and long-term transformative change.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36277>





## **Sustainability Related**

### ***Assessment of Chemical and Natural Hazards***

Humankind has an enormous impact on the world by trying to adapt nature for his own benefit as well as unintentionally affecting environmental quality by for example chemical pollution. However, natural disasters, such as earthquakes and flooding, as well as poor environmental quality threaten human society. It is therefore important to assess the risks of these threats. This course focuses on GIS or model based applications to assess natural and chemical hazards in the soil-water-landscape system.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/33554>

### ***Biological Oceanography***

Oceans cover 70% of the surface of the Earth and their vast total volume makes it the largest continuous habitat. Half of the oxygen production on Earth occurs in the oceans. The oceans have a critical function for the supply of food and raw materials, and marine ecosystems are crucial in the regulation of Earth's climate and biogeochemical cycles. Our understanding of the ocean and the life it supports is, however, far from complete. Biological oceanography improves our understanding of the principles underlying marine ecosystem organization, and the processes that govern spatial and temporal distribution, dynamics, biodiversity and evolution of auto-, hetero- and mixotrophic organisms as well as trophic interactions. Only an interdisciplinary and (eco)system-wide approach will enable us to unravel the mysteries and the unknowns of the ocean. Physical, chemical and geological processes in the oceans are fundamental to biological oceanography and vice versa, therefore a few of the initial lectures in this course will be dedicated to the different disciplines. This course will give an in-depth insight in the current knowledge of life in the ocean from viruses to metazoans and from production to burial. The knowledge will be largely framed within the complex suite of processes that are involved in the transformation and transfer of fixed organic carbon (particulate and dissolved) from the surface to the deep ocean (collectively referred to as the 'biological pump'). The factors involved in the functioning of the biological pump are linked and diverse for different systems but influence virtually the entire ocean ecosystem.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/31081>

### ***Coral Reef Ecology***

This course is the main field excursion of the Track Freshwater and Marine Biology of the MSc Biological Sciences and focuses on the ecology of coral reefs. Emphasis lies on corals and algae, but the biology and ecology of other reef organisms (i.e. fish, microbes) will also be discussed. The course entirely takes place on Curaçao and includes lectures, fieldwork, and experiments. The duration of the entire course is four weeks.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/32823>

### ***Energy and Climate Change; Science, Policy and Economics***

This course focuses on the inseparable links between energy use and climate change and, consequently, the unavoidable connection between energy and

environmental 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 general economics perspective. Through an examination of this subject, this course also explores three closely-related themes that exemplify the complexity of the interaction between science and technology on the one hand and economics and public policy on the other hand: the challenges of achieving political acceptance, both nationally and internationally, of scientific consensus in the face of ever-present scientific uncertainty; the extent and the limitations of science as a driving force for public policy; and the role of technological development in influencing political choices.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/34408>

### ***Environmental Chemistry***

This course describes the behaviour and fate of natural and man-made chemicals in water, soil and air and the organisms present therein. Topics include transport and distribution processes, and physico/biochemical reactions of compounds in environment(al conditions); environmental soil chemistry; bioavailability, bioaccumulation, metabolism, and degradation of chemicals; biomonitoring, prediction and fate modelling in environmental compartments; biogeochemical cycles, structure property/activity relationships.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/37856>

### ***Microbial Ecology***

The course will first provide a brief history of the field of microbial ecology, and an outline of the general characteristics of microbes and microbial communities, and their role in the cycling of chemical elements. It will then proceed to highlight the most important methodological approaches that have been essential to recent advances in microbial ecology. These highlights will pay special attention to the rapid increasing influence of high-throughput sequencing technologies. Subsequently, several important examples will be presented regarding the role of microbial ecology in key environmental issues, including effects of global climate change, pollution and other anthropogenic pressures on ecosystems.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35614>

### ***NIOZ Marine Master Course Oceanography***

The course includes a pre-course reading assignment, classroom lectures, field- and lab work, data analysis and an oral presentation. First, a series of introductory lectures on physical oceanography, marine chemistry, marine geology and marine ecology will be given, followed by presentations on selected topics representing current research activities at NIOZ. Various equipment and methods of sampling and data collection in the field and in NIOZ labs will be demonstrated. A major part of the course will be devoted to student research projects, which will be supervised by researchers from NIOZ. For these, students will sample and collect data in small groups in the western Wadden Sea on the research vessels *Navicula* and/or *Stern* and/or on the tidal flats. This will be followed by laboratory work, analysis and interpretation of acquired data and the preparation of a presentation. Student groups will present and discuss all group research findings at the end of the course.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/34320>

### ***Plant Breeding and Biotechnology***

This course provides knowledge on recent developments in plant breeding and future prospects in plant biotechnology. A thorough understanding of plant breeding and genetic modification is linked to applications in various fields (crop improvement, functional food, medicines, soil remediation and biofuel production). After a general introduction into a field, recent papers covering new developments in biotechnology will be discussed by/with the participants. Students should get acquainted with technological challenges and possibilities of Plant Biotechnology. Through case studies, societal aspects of the application of current GM-crops will be discussed. Invited lectures from Plant Breeding companies will illustrate the state of the art in applied plant breeding.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/34585>

### ***Spatial Processes in Ecology & Evolution***

The course will start with a week of lectures that will give an overview of how almost all relevant processes in ecology and evolution are inherently spatial. Topics include: dispersal strategies in plants and their evolution; the influence of migration on metapopulation dynamics and persistence; spatial genetics; the lasting impact of past population fluctuations; large-scale patterns in species diversity. In the afternoons, there are computer practicals that make the students acquainted with the R data analysis and programming environment and teach the basics of Species Distribution Modeling. In the second week, the students will use simulations to discover the drivers of the spatial distribution of genetic variation and the analysis of genetic data. Afterwards, the students will receive an actual genetic dataset of an Alpine plant species and, in pairs, have to analyse this data using a number of statistical techniques. The students are expected to write a short report describing their analysis, the results and their interpretation. Finally, the students will learn how the techniques learned in the previous weeks can be applied to answer a range of questions in other fields of ecology and evolution. What are the effects of a change in species distribution on the distribution of genetic variation? How does the response to climate change of a species depend on its dispersal capabilities, demography and dispersal strategy? Can we also use these techniques to model past distributions of species? Do these models match with the large-scale patterns in biodiversity?

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/32803>

### ***Vulnerability Assessment of Geo-ecosystems***

At the end of this course, the student is able to understand the role of earth and ecological sciences in geo-ecological management and research studies, in particular: To acquire theoretical and practical experience in studying geo-ecological problems and their management from an earth and ecological science perspective along geo-ecological gradients; To design and test a field sampling strategy and to analyze field observations and field samples using GIS, lab-work, modelling and statistical techniques; To acquire skills for writing an MSc proposal using the formal proposal template of the Dutch Organization of Science (NWO); To facilitate the integration of the first year master student population in the Earth Science master curriculum; For detailed information is referred to the course guide, which will be published on the Black Board site before the start of the course

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/33720>

## Master Minors

### Sustainability Focused

#### *Natuurkunde en Sterrenkunde: Energy and Sustainability*

In the coming decades humanity is faced with two great challenges. One is to provide a reliable stable energy supply that does not jeopardize the climate. The other is to deal with the exhaustion of the natural supply of the chemical elements. To survive, humanity needs energy efficiency and material efficiency, but also new materials and new energy vectors. The courses in this minor discuss many aspects of the science needed to make the transition towards this new modus operandi successful.

<http://studiegids.uva.nl/xmlpages/page/2017-2018-en/search-minor/programme/3573>

### Sustainability Related

#### *Tesla*

The backbone of the Minor consists of a project that students will work on in small groups (ca. 3 students per group). Each group works on a different project for a different external organization. During the first phase each group will take on the challenge posed by the organization and analyse it and develop a tangible and realistic project plan. After presenting this to the organization and FNWI supervisor each group will start working on the realization of their project.

<http://gss.uva.nl/future-msc-students/tesla-minor/tesla-minor.html>

# Faculty of Social and Behavioral Sciences

## Bachelor Courses

### Sustainability Focused

#### *Environment and Sustainable Development*

This course analyses environmental issues that are critical to developing countries in Africa, Asia and Latin America from a natural resource and livelihood perspective. The analysis considers global, regional and local dimensions of the issues at hand, with a focus on the relationship between the environment and the development process, changes in resource access, and adaptations 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

<http://studiegids.uva.nl/xmlpages/page/2016-2017-en/search-course/course/24693>

#### *Spatial Implications of Environmental Change*

Environmental problems are changes in the physical environment caused by humans, that subsequently are perceived as problematic by significant parts of the society. Some parts of the course are an enhancement or elaboration of issues that are introduced in the 1st year course climate, environment, and spatial dynamics

<http://studiegids.uva.nl/xmlpages/page/2016-2017-en/search-course/course/26342>

#### *Beheer van natuurlijke hulpbronnen: politieke risico's en kansen in theorie en praktijk (Bachelor Project)*

Geïndustrialiseerde en industrialiserende landen consumeren natuurlijke hulpbronnen zoals metalen, mineralen, biodiversiteit, grond, fossiele brandstoffen, voedsel, en water. Zij doen dat sneller dan zij deze kunnen vervangen. Dit leidt tot concurrerende claims op natuurlijke hulpbronnen, waarbij juist landen met een rijkdom aan grondstoffen meer oorlog en armoede kennen dan andere landen. Tegelijkertijd ontwikkelen actoren (overheden, industrie, en in toenemende mate civil society) in geïndustrialiseerde landen politieke en beleidsmatige strategieën waarbij wordt geanticipeerd op mogelijke schaarste, concurrerend gebruik en conflicten. Deze strategieën zijn zeer uiteenlopend, variërend van geopolitieke druk tot lokale conflictbemiddeling, en van inzet van nieuwe technologieën tot nationaal en urbaan transitiebeleid.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/39682>

### Sustainability Related

#### *Kernmodule: internationale betrekkingen*

The Kernmodule IB offers a comprehensive overview and analysis of contemporary world politics as a social scientific field of inquiry and an empirical terrain of political challenges and opportunities. A key insight to be gained is that International

Relations (IR, in Dutch IB) includes but is about much more than only international (or inter-state) relations. It does study inter-state relations with respect to e.g. security or economic affairs, but also more broadly cross-border connections of all types and at all levels, from the transnational activities of non-state actors, like NGOs or terrorist groups, to processes of regionalization (like European integration) or supranational governance (like through the UN agencies and programs). The label 'world politics' may be more opportune, because of concern for our field are all actors, structures, processes, and issues with implications for people in more than one national territory.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/36048>

### ***Transnational Governance***

This course will focus on the development, dynamics, and implications of emerging forms of transnational governance in the global economy. It will examine the processes, practices, and prospects of transnational governance across different issue areas, analyzing the role of various types of public and private actors, and assessing the effectiveness, accountability, and legitimacy of the ensuing governance arrangements. Particular emphasis is devoted throughout the course to the European Union, both as a leading example of governance beyond the nation-state, and as a key actor within emerging forms of transnational governance. Policy domains covered will include: trade, finance, development, environmental protection, food and product safety, labor standards, and human rights.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35277>

### ***De strijd om wind en water: implementatie van grote projecten (Bachelor Project)***

Hoe komen ingrijpende langetermijnplannen van de overheid, zoals bij watermanagement en windenergie, tot uitvoering? Het gaat vaak om controversiële en technisch complexe projecten die grote implicaties hebben voor onze fysieke omgeving. Daarbij verloopt de besluitvorming niet langer via institutioneel 'verankerde' procedures die proberen consensus te creëren bij tegengestelde belangen, maar via voortdurend wisselende netwerken van organisaties en participerende burgers, waar strijd en conflict over de inrichting van de samenleving een gegeven zijn. Bij deze projecten dienen 'big concerns' en 'local actions' te worden gecombineerd, een uitvoeringspraktijk met grote ambities die kiest voor de strategie van de kleine stapje, responsief ten opzichte van lokale omstandigheden. De locatie en omgeving zijn belangrijk bij de keuze van de beleidsaanpak net als de creativiteit in het omgaan met context-specifieke problemen. Voor welke nieuwe dilemma's staan overheden, burgers en andere groepen? Welke nieuwe verbindingen en mogelijkheden ontstaan in het oplossen van fundamentele maatschappelijk problemen? Hoe veranderen opvattingen over macht en legitimiteit in openbaar bestuur in dit soort processen? Het bachelorproject onderzoekt deze vragen in een aantal cases op het gebied van wind en water.

<http://studiegids.uva.nl/xmlpages/page/2017-2018/zoek-vak/vak/35157>

## Master Courses

### Sustainability Focused

#### *Energy and geopolitical economy in Eurasia*

China and the European Union (EU) have experienced a dramatic transformation since the end of the Cold War. Both have been forced to adjust to new global circumstances and to the accelerated speed of the globalizing economy. While in recent decades it was possible to argue that China and the EU had few shared interests, today's world is a much smaller place and the boundaries between domestic and global issues have become blurred. China and the EU have common vulnerabilities and interests in the areas of energy, environmental protection and sustainability. This common ground is a prerequisite for cooperation between China and the EU. But how should they proceed in terms of producing favorable conditions for such cooperation? In search of an answer to this comprehensive question, this course adopts a comparative perspective to study the policies of China and the Europeans Union, with corresponding practices and challenges in the area of conventional energy security, developing of alternatives and renewable energy, as well as sustainable development.

<http://studiegids.uva.nl/xmlpages/page/2017-2018-en/search-course/course/37416>

#### *Governing transitions for global sustainable development*

The main challenges in governing those transitional trajectories relate to (a) 'breaking through' entrenched economic and political interests that gain from the present (industrial) system, and (b) envisioning, designing, and implementing governance styles that support mutual reinforcing of social and economic goals (such as economic welfare, environmental quality, and earning capacity).

<http://studiegids.uva.nl/xmlpages/page/2017-2018-en/search-course/course/31436>

#### *Global environmental politics and governance in theory and practice*

This MA thesis Research Project focuses on actual forms of International Environmental Politics (IEP) and Environmental Governance aimed at curbing global environmental issues, notably climate change, CO<sub>2</sub> emissions, crop- and biodiversity loss, soil erosion, biofuel issues, water conflicts and pollution. Students will familiarize themselves with current research and learn about the most important research traditions and approaches, as well as with some of the core principles and concepts relevant to the global ecological crisis, including notions of (ecological) modernization, Triple-F (food-fuel-finance) crisis, risk society, individualization, environmental economics, anthropocentrism, and securitization.

<http://studiegids.uva.nl/xmlpages/page/2017-2018-en/search-course/course/38693>

### Sustainability Related



### ***Transnational Politics***

The first perspective focuses on how political decision-making processes that take place at municipal, provincial or national level are informed, transformed or reinforced by transnational issues and by the transnational interests or identities of the actors engaged in decision-making. Think for instance about how political parties, social movements or transnational corporations are affected by and respond to migration or trade. The second perspective focuses on transnational or 'global' governance arrangements. This encompasses the changing role of existing intergovernmental organizations (IGOs), as well as the realm of transnational private regulation, or the intersection of non-state with state and inter-state regulation. The third perspective focuses on world politics: this considers how the growing significance of transnational issues (i.e. migration and refugees, sustainability), and transnational actors (i.e. NGOs, MNCs, terrorists) transforms 'world order', traditionally conceived of as constituted by interactions among state actors. The themes of the course comprise populist parties and movements, sustainability and climate change, migration, terrorism and anti-terrorist policies, activism, trade, and political violence.

<http://studiegids.uva.nl/xmlpages/page/2017-2018-en/search-course/course/38024>

### ***EU-US relations in a globalised world: geopolitics, geoeconomics & transnational governance***

This course will commence with a theorization of this developing relationship and its members. We revisit classical International Relations theory to understand bilateral relations between state(-like) actors, before taking a closer look at the unique qualities of these two actors, referring to American exceptionalism and Normative Power Europe. We end our conceptual explorations by taking a look at the different elements that make up the EU-US interaction, from diplomatic negotiations to non-governmental networks and cultural exchange. Students are encouraged to engage in a theoretical debate by handing in a short review paper. We will then engage in a historical analysis of the EU-US relationship since 1945, from a security perspective, as well as from a political economy perspective. Next is an assessment of the development of the institutional make up of the relationship. We will then engage in more current analyses of transatlantic conflict and cooperation, both from a geopolitical, a geoeconomic and a transnational perspective. Cases include economic and trade relations, environment and climate change, energy security, intelligence and data exchange, conflict resolution and post-conflict cooperation, migration and immigration on a global scale, intergovernmental and transatlantic security institutions, counter-terrorism and challenges posed by new economic powers.

<http://studiegids.uva.nl/xmlpages/page/2017-2018-en/search-course/course/38619>

### ***Marketing Communication***

Central to this seminar are communications between advertisers and consumers and how this influences consumers' attitudes and behaviour. Advertisers generated communication involves the production and contents of advertising and other brand messages about commercial, social and green marketing topics by advertisers, organizations, and brands. Consumers generated communication about brands,

products and good causes takes place through negative and positive (e)Wom, product reviews, and liking and sharing of brand messages. Students learn theories on, and practices of marketing communication and user generated content and its effects on attitudes, buying and consuming of products and services. Students also learn how to use this understanding in designing theory based and evidence based campaigns and webcare.

<http://studiegids.uva.nl/xmlpages/page/2017-2018-en/search-course/course/35603>

## References

CFWGMEA (Conceptual Framework Working Group of the Millennium Ecosystem Assessment) (2003). *Ecosystems and human Well-being. A Framework for Assessment*. Washington: Island Press.

