The one-year Master programme Environment and Resource Management (ERM) aims to ensure that students acquire theoretical concepts, practical skills and operational techniques that allow them to find solutions for societal problems that relate to natural resources and the environment. Students are trained to bring in their disciplinary knowledge and co-operate in multidisciplinary teams so that they can contribute to an integrated approach towards problem analysis and problem solving in private, public, national, and international organisations dealing with natural resources and the environment.

The programme offers four specializations:

- Environmental studies
- Energy studies
- Climate and Water
- Ecosystems Services and Biodiversity

The year schedule 2012 - 2013 can be found at the FALW-website.
Further programme information can be found at www.environmentmaster.nl.
A complete programme description can be found at the FALW-website.

New course on international development issues in the context of sustainable development available at the VU!
This innovative elective course is administered cooperatively by the Society for International Development (SID) and the Institute for Environmental Studies (IVM), and is open to all Master students from Dutch and European universities.
For more information click here.
## Expired programme components ERM

<table>
<thead>
<tr>
<th>Course Description</th>
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<tbody>
<tr>
<td>MSc ERM, spec. Climate and Water</td>
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<tr>
<td>MSc ERM, spec. Ecosystems Services</td>
<td>1</td>
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<tr>
<td>MSc ERM, spec. Energy Studies</td>
<td>1</td>
</tr>
<tr>
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### Optional modules

- Choose at least one of these courses: 2 credits

### MSc ERM, compulsory courses for all themes: 2 credits

- Vak: Aquatic Ecology (Periode 1)                     | 3       |
- Vak: Climate and Policy (Periode 3)                  | 4       |
- Vak: Climate Modelling (Periode 3)                   | 6       |
- Vak: Energy System Transitions (Periode 3)           | 6       |
- Vak: Environmental and Energy Policy Tools (Periode 4) | 7   |
- Vak: Environmental Economics for ERM (Periode 2)     | 8       |
- Vak: Environmental Policy (Periode 2)                | 9       |
- Vak: Governance of Ecosystem Services (Periode 3)    | 10      |
- Vak: International Development Issues in the Context of Sustainable Development (Ac. Jaar (september)) | 11 |
- Vak: Modern Climate Systems (Periode 1)              | 13      |
- Vak: Modern Geo-ecosystems (Periode 1)               | 14      |
- Vak: Philosophy of Political Science and Research Methods () | 15 |
- Vak: Political Concepts and Processes ()             | 16      |
- Vak: Research Project (Ac. Jaar (september))         | 17      |
- Vak: Sedimentary Environments and Climate Archives (Periode 1) | 18 |
- Vak: Sustainability and Growth (Periode 1)           | 19      |
- Vak: Sustainable Energy Analysis (Periode 1)         | 21      |
- Vak: Sustainable Land Management (Periode 3)         | 22      |
- Vak: Theories and Approaches in International Relations () | 23 |
- Vak: Value of Ecosystem Services (Periode 1)         | 25      |
- Vak: Water and Policy (Periode 1)                    | 26      |
- Vak: Workshop Governance for Sustainable Development (Periode 3) | 27 |
Expired programme components ERM

MSc ERM, spec. Climate and Water

Vakken:

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<td>Water and Policy</td>
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MSc ERM, spec. Ecosystems Services

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<td>Governance of Ecosystem Services</td>
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<td>6.0</td>
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<td>Value of Ecosystem Services</td>
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MSc ERM, spec. Energy Studies

Vakken:

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<tr>
<td>Sustainable Energy Analysis</td>
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MSc ERM, spec. Environmental Studies

Opleidingsdelen:

- optional modules
- choose at least one of these courses

optional modules

Vakken:

<table>
<thead>
<tr>
<th>Naam</th>
<th>Periode</th>
<th>Credits</th>
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### Vakken:

#### Aquatic Ecology
- **Periode 1**
- **Credits**: 6.0
- **Code**: AM_450137

#### Climate Modelling
- **Periode 3**
- **Credits**: 6.0
- **Code**: AM_450004

#### International Development Issues in the Context of Sustainable Development
- **Ac. Jaar (september)**
- **Credits**: 6.0
- **Code**: AM_1029

#### Modern Climate Systems
- **Periode 1**
- **Credits**: 3.0
- **Code**: AM_450185

#### Modern Geo-ecosystems
- **Periode 1**
- **Credits**: 3.0
- **Code**: AM_450313

#### Philosophy of Political Science and Research Methods
- **Credits**: 5.0
- **Code**: SPPSRM_O

#### Political Concepts and Processes
- **Credits**: 5.0
- **Code**: SPCP_O

#### Sedimentary Environments and Climate Archives
- **Periode 1**
- **Credits**: 6.0
- **Code**: AM_450330

#### Theories and Approaches in International Relations
- **Credits**: 5.0
- **Code**: S-TAIR_O

### choose at least one of these courses

#### Naam | Periode | Credits | Code
---|---|---|---
Climate and Policy | Periode 3 | 6.0 | AM_450188
Energy System Transitions | Periode 3 | 6.0 | AM_468019
Governance of Ecosystem Services | Periode 3 | 6.0 | AM_468025
Sustainable Energy Analysis | Periode 1 | 6.0 | AM_468018
Sustainable Land Management | Periode 3 | 6.0 | AM_1015
Value of Ecosystem Services | Periode 1 | 6.0 | AM_468024
Water and Policy | Periode 1 | 6.0 | AM_468023
Workshop Governance for Sustainable Development | Periode 3 | 7.0 | AM_468026

### MSc ERM, compulsory courses for all themes

#### Naam | Periode | Credits | Code
---|---|---|---
Environmental and Energy Policy Tools | Periode 4 | 12.0 | AM_468012
Environmental Economics for ERM | Periode 2 | 6.0 | AM_468020
Environmental Policy | Periode 2 | 6.0 | AM_468021
Research Project | Ac. Jaar (september) | 18.0 | AM_468017
Aquatic Ecology

**Vakcode** | AM_450137 ()
---|---
**Periode** | Periode 1
**Credits** | 6.0
**Voertaal** | Engels
**Faculteit** | Fac. der Aard- en Levenswetenschappen
**Coördinator** | prof. dr. J.E. Vermaat
**Docent(en)** | prof. dr. J.E. Vermaat
**Lesmethode(n)** | Werkcollege, Practicum
**Niveau** | 400

**Inhoud vak**

Commonalities versus specific features of aquatic ecosystems: lakes, rivers, estuaries, the sea. Interactions between water body and surrounding land (catchment). A systems perspective: important processes and the role of biota: marginal or crucial? Interactions among biota in the food-web (predation, competition) and otherwise (the role of engineers or keystone species, mutuality, mutualism). Aquatic biodiversity: what does it mean? Biota as indicators of water and sediment quality in rivers and lakes. Aquatic ecology for water quality and quantity management.

The course will be taught from Dobson & Frid (2009), with additional papers providing deepening for the chapters.

**Onderwijsvorm**

plenary lectures (5 x 4 = 20 hrs). Lecture format: Vermaat provides the general introduction, students have prepared and give a brief presentation of chapters 2+3, 4+5 and 6+7, respectively, of Dobson & Frid. Non-presenting students are expected to have prepared by reading these chapters and the two accompanying, deepening papers (see below) before the lecture. The lecture is concluded with 45 min debate on the two accompanying papers.

comparative fieldwork in small groups of 2-4 students: spatial gradients among and within water bodies around Amsterdam (field 4 d, lab processing 4d), student seminars on fieldwork (4 hrs); student groups write a report on their fieldwork subject (length 5-10 pp, 11 pt Times New Roman, Introduction, Method, Results, Discussion, References containing ~ 10 papers from the primary literature)

literature study

**Toetsvorm**

Written test (60%), fieldwork report (20%), oral presentations (both on book and lab work, content and quality, 10%), fieldwork performance (10%).

The written test is open book. It is composed of three questions on the book, two on the lecture notes, and one question on each of the three selected articles, in total therefore 8 questions. Answers can be written on the examination sheets. Each question has sufficient space to allow for your answer.

**Literatuur**
For 2010 the following selected articles:

**Rivers**

**Estuaries**

**Coastal Seas**

**Open Ocean**

**Doelgroep**
Elective for MSc Earth Sciences, Geo-environmental Sciences, various MSc programmes in Biology

**Climate and Policy**

<table>
<thead>
<tr>
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<td>Fac. der Aard- en Levenswetenschappen</td>
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<tr>
<td>Coördinator</td>
<td>prof. dr. J. Gupta</td>
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<tr>
<td>Docent(en)</td>
<td>prof. dr. ir. P. Vellinga, prof. dr. J. Gupta, E. Papyrakis</td>
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<td>Niveau</td>
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</table>
**Doel vak**
After studying this course, students should be able to define and explain key concepts of relevance to the climate change governance issue; understand the causes, impacts and effects of climate change and the key scientific controversies in the regime; be able to identify, explain and analyze the various policy options for mitigation and adaptation at different levels of governance; be able to understand and analyze the key political challenges in the climate change regime, the common problems facing all countries, the coalitions in the regime, the North-South, North-North, South-South, European and domestic political issues; be able to explain and assess the long-term objective, the principles, the commitments of countries and other key elements of the Climate Change Convention, the quantified commitments of developed countries, and the flexibility mechanisms under the Kyoto Protocol; be able to explain, analyze and form a judgment on the role of forestry in the climate change regime, and the various aspects of policy with respect to deforestation and land degradation; be able to define and explain the role of market mechanisms in the climate change regime, their advantages and disadvantages, and their potential in addressing the climate change problem; be able to integrate the information learnt thus far to assess and identify possible long term solutions to the climate change problem and the research questions that emerge from a study of the climate change regime; and be able to make a judgment about which principles, policy instruments and approaches are likely to be most efficient, equitable and/or effective in addressing the climate change problem.

**Inhoud vak**
International policy on human-induced climate change and its mitigation is a hotly debated subject. Current (international) climate policy is the result of a complex and long-lasting negotiation process at multiple levels of governance. In this process, the science of the complex earth and climate system is closely linked to questions on the socio-economic effects of climate change, the options for global environmental governance as determined by the structure of international organizations, international economic and political relations and environmental law. These close relations between earth system research and economic/political questions make this course an interesting subject for students with a bachelor's degree in different subjects. The course includes:
- an overview of the science of climate change, its impacts (IPCC Fourth Assessment Report) uncertainties, mitigation, adaptation; - climate change policy options at multiple levels of governance; - analysis of the political challenges in climate change and the positions of different countries and actors; - assessment of the international legal instruments including the Climate Change Convention and the Kyoto Protocol, - assessment of the economics of climate change including analysing the flexible mechanisms (Emission trading, Clean Development Mechanisms, Reducing Emissions from Deforestation and Forest Degradation) and options for Post Kyoto measures; and paper discussions on a topical area of climate governance.

**Onderwijsvorm**
The course consists of 7-8 interactive lectures including class presentations and uses modern didactic approaches, films, and role play to help the students internalize many of the concepts and theoretical approaches developed.
Toetsvorm
The students will be examined on the basis of a paper (50%) and a closed book written examination (50%). Students must get a grade of 5.5 in each to pass in the examination.

Literatuur
Reader

Climate Modelling

<table>
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<tr>
<th>Vakcode</th>
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<td>Fac. der Aard- en Levenswetenschappen</td>
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<tr>
<td>Coördinator</td>
<td>prof. dr. H. Renssen</td>
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<td>prof. dr. H. Renssen</td>
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<tr>
<td>Lesmethode(n)</td>
<td>Werkcollege, Computerpracticum</td>
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Inhoud vak
Geological archives show convincingly that the climate system experiences variability on a wide range of time-scales. For Quaternary studies, climate variations at the following time-scales are most important: glacials-interglacials, millennia and centuries-decades. This course focuses at the mechanisms behind these variations, thereby using climate models as a tool, i.e. numerical computer models in which the dynamics of the climate system are calculated. The combination of these models and geological data will be treated extensively. The course consists of lectures giving an overview of climate models and their application (different types for different time-scales) and of discussion meetings, in which students discuss the recent literature in detail. In this way the course considers case studies for the different time-scales and deals with recent developments in climate modelling. The following two questions are central to the course:
1) What is the driving mechanism behind climate change at a particular time-scale?
2) How can we optimise the combination of climate models and geological data in order to increase our understanding of climate evolution?

Onderwijsvorm
Lectures, discussion meetings and computer exercises.
18h lectures, 17k work group, 7.5h computer practical, 7.5u student presentations

Toetsvorm
Compulsory participation in discussion meetings, computer exercises, oral presentation and written exam.

Literatuur
Lecture notes and selected papers (made available through Blackboard).

Energy System Transitions
Doel vak
The learning objectives are to gain insight into:
- The way government and the energy sector deals with environmental issues, including the way they steer innovation;
- The concepts of industrial transformation and transition management and;
- The scientific and political debates with respect to key energy options.

Inhoud vak
Energy policies are increasingly based on the premise that government alone cannot guarantee improvement of environmental conditions and that the technological advances will not suffice given the complexity of the current environmental problems. A change toward sustainability (transition, industrial transformation) involves issues of socio-technical innovation as well as cultural and institutional transformations of the systems. Such a change, although radical in character, will be gradual in practice as it is believed to last 25 years or more. An important new debate has emerged about the scale at which these socio-technological and institutional changes should take place in order to achieve desired sustainability goals. Theoretical and historical aspects of system innovation and a transition towards sustainability will be addressed. The objective is to give students a critical perspective, and to make the link to questions of social and political shaping of transition processes. In working groups, the students gain experience with exploring options to stimulate long-term transition processes by using a backcasting method.

Onderwijsvorm
Lectures and workshops.

Toetsvorm
A written closed book examination (50%) and a short (1000-2000 words) paper (50%). Both the paper and the examination must be a 5.5 or higher. Not only the material in the reader, but also the material presented during the classes will be examined in this course.

Literatuur
Reader composed of scientific papers selected by the lecturers

Environmental and Energy Policy Tools

Vakcode AM_468019 ()
Periode Periode 3
Credits 6.0
Voertaal Engels
Faculteit Fac. der Aard- en Levenswetenschappen
Coördinator dr. M. Hisschemoller
Docent(en) dr. M. Hisschemoller
Lesmethode(n) Werkgroep
Niveau 400
Toetsvorm
Open book examination and a group report about an application of one of the methods discussed. The examination and the report grades weigh equally. Students must pass both (5.5 or higher).

Literatuur
Reader ‘Environmental and Energy Policy Tools’

Environmental Economics for ERM

Doel vak
This module aims to give an overview of economic policy instruments for managing environmental problems from an interdisciplinary perspective from the local through to the global level. Moreover, it will discuss the relevance of economic instruments in a large variety of policy contexts.

A critical cause of environmental problems is that not all costs falling on economic agents are borne by those responsible for generating them. This problem will be conceptualised in this course through the notion of externalities. There are various economic instruments and institutional arrangements for addressing such externalities. Criteria for their selection and evaluation will be discussed. Applications of environmental policies at various administrative levels (i.e. local, national, international), different economic sectors (i.e. water, waste, forestry, fisheries, biodiversity, trade) and different country contexts will be discussed. The course will also discuss international trade and investment related issues, as well as tackle major environmental problems, like climate change. The course will, furthermore, attempt to build bridges between economic policy instruments and other governance instruments.

After following this course, students should be able to judge how well certain policy instruments and institutional arrangements perform in terms of effectiveness, efficiency and the distribution of welfare in society.
Inhoud vak
This module will present the economic approach to environmental policy, as it has been developed in the field of environmental economics. After having participated in this module, students should be able to answer the following questions:

What is the fundamental nature of environmental problems from an economic perspective, in relation to notions like externalities, public goods and free riding, and what does this imply for the feasibility of (easy) solutions?
Under which conditions is environmental regulation necessary or not (Coase theorem)?
Which criteria should be used to select environmental policy instruments, and to what extent are such criteria complementary or conflicting (normative theory)?
Which policy instruments are available, and what are their (dis)advantages in view of the selection criteria (in general or in particular applications) and in specific country contexts?
What are critical and debatable assumptions of core policy insights within environmental economics?

Toetsvorm
Assignment (35%), closed-book exam (65%)

Literatuur

Overige informatie
This course will provide a sound balance between theoretical lectures and guest lectures by academic and policy experts of a relevant field of environmental economics. Several interactive sessions stimulate active learning of students.

Environmental Policy

<table>
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<td>Docent(en)</td>
<td>dr. A. Kalfagianni, E.E. Massey MSc, mr. T.F.M. Etty LLM</td>
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Doel vak
Public action to address environmental problems – also called environmental governance- nowadays comes from nation states and a plethora of other actors. In this course, you will learn what environmental governance is and how some of the actors operate that provide for it. Specifically, you will learn to understand how governments operate, how international bodies - like the European Union-work in the environmental domain, and how civil society, transnational
corporations, and local government actors are involved in environmental governance.

Inhoud vak
1. How can we conceptually understand environmental governance?
2. What is the role of governments in environmental governance? What is a policy, and when do we speak of a government policy? How do issues come to the attention of governments, how is policy made? How are policies implemented and enforced? How can policy be evaluated?
3. How can ordinary citizens participate in environmental governance? What role for scientists and local governments?
4. How does the European Union affect environmental governance? Which institutions does the EU have, and which environmental policies does it have?
5. Which global organizations are active in the domain of environmental governance? Which laws structure their behavior and which principles do they apply?
6. Which actors beyond the state participate and influence environmental governance? How can we evaluate their effectiveness and legitimacy?

Toetsvorm
1. A written exam. This counts for 85% of the course grade;
2. One written assignment. Participation is obligatory and your grade must be sufficient (5.5 out of 10). The share in the course grade is 15%;
3. Policy exercise. A policy exercise on EU burden sharing mechanism. The group will be split in two and the two halves will participate during different dates. Participation is obligatory and your activity level during the exercise must be sufficient.

Literatuur
Reader ‘Environmental policy’

Governance of Ecosystem Services

<table>
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<td>Coördinator</td>
<td>dr. J.A. Bouma</td>
</tr>
<tr>
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<td>dr. J.A. Bouma, prof. dr. J. Gupta</td>
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<td>Lesmethode(n)</td>
<td>Hoorcollege, Werkcollege</td>
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<td>Niveau</td>
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</table>

Doel vak
The governance of ecosystem services and biodiversity is in its infancy. The current governance system has evolved through ad-hoc measures taken at national (e.g. protection of forests and wetlands), supranational (e.g. EU Bird's directives) through to international levels (e.g. Convention of Biological Diversity). However, the governance of comprehensive approaches to ecosystem and biodiversity protection has yet to emerge. There is considerable literature on the linkages between biodiversity, ecosystems and ecosystem services and their (economic)
value, but studies and policies on how these values can be effectively
translated into revenues and how the provision of ecosystem services can
be safeguarded are much more scarce. Governing ecosystem services is
complicated because of the public good externalities associated with
ecosystem service provision, the different value systems involved, the
trade-offs between allocating scarce resources for ecosystems as against
other critical national priorities, the issue of who is to pay for these
services and who benefits from these services, and the high transaction
costs of effective enforcement and control. Governing ecosystem services
is also difficult because of the crucial role that ecosystem services
play in human survival, and the often unclear and sometimes pluralistic
distribution of user and property rights. Finally, governing ecosystems
is difficult because of the complex, and often uncertain, relations
between biodiversity and ecosystem service provision and the fact that
biodiversity protection and ecosystem service provision both have
important threshold effects.

This course will discuss the emerging literature; address policy and
legal frameworks for ecosystem and biodiversity governance, identify and
debate on the different instruments for ecosystem management; elaborate
on the multi-scale and multidimensional challenges of ecosystem
services; and discuss the politics and economics of this complex and
emerging field.

Inhoud vak
The course will focus on how ecosystems are currently managed and what
would be required to safeguard the provision of ecosystem services in
the long run. It will discuss the economics, politics, law and policy
aspects of ecosystem governance, emphasize the adaptive capacity of
governance systems, the role of modern science through to the knowledge
of traditional communities in ecosystem governance and provide an
understanding of the interrelated issues at the multiple levels of
governance. The course will help students understand, design and apply
the literature to the actual management of ecosystem services and
biodiversity, including the management of forests, protected areas,
global food production and fisheries.

Toetsvorm
The students will be asked to select a topic which will form the basis
for a presentation and a paper. The course ends with a closed book
examination. The examination will count for 50% of the final results,
the paper for the other 50%.
Students should pass both paper and exam.

Literatuur
See study manual

Overige informatie
Students are encouraged to also take course AM_468024 (Values of
ecosystem services and biodiversity).

International Development Issues in the Context of Sustainable Development

<table>
<thead>
<tr>
<th>Vakcode</th>
<th>AM_1029 ()</th>
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<td>Faculteit</td>
<td>Fac. der Aard- en Levenswetenschappen</td>
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Doel vak
This course aims to provide Master’s students at Dutch universities with a broad perspective of the complexity and interrelatedness of both scholarly studies and the practical and political dimensions of international development issues in the context of sustainable development. The course is also relevant for PhD candidates in the earlier phases of their trajectory, notably for PhD candidates in the context of the CERES and SENSE Research Schools.
The course is built around the annual series of lectures by internationally renowned experts at VU University, organized by the Society for International Development (Dutch Chapter), which focus on different themes every year. These lectures will be complemented by 5 additional lectures and workshops that will provide a common academic basis. The workshops will help students to relate the basic course material with the highly topical SID lectures.

Learning goals
After studying this course, students should:
• Be able to define and explain key concepts of relevance to international development in the context of sustainable development;
• Understand the causes and impacts of international development challenges;
• Be able to identify, explain and analyze the various principles, declarations and policy options for coping with international development challenges;
• Be able to understand the key political challenges that may hamper the adoption of such policy options at international level and at the North-South, North-North, South-South level;
• Be able to analyze the key challenges that may hamper the implementation of relevant policy options at multiple levels of governance;
• Be able to make links between the general theoretical issues and the individual SID lectures and to integrate the information; and
• Be able to make a judgment about how international development issues need to be addressed in the 21st century.

Inhoud vak
The course will focus on:
a) The evolving nature of development (economic, social and environmental) challenges;
b) Development & Development Cooperation: the history of development cooperation and lessons learnt; prognosis about the future of development cooperation;
c) The role of the state and state sovereignty;
d) Grand challenges
e) Globalisation.

Onderwijsvorm
1. 9 SID Lectures with opportunities for interaction in which the students will participate together with policy advisors and NGO-staff.
2. 5 VU lecture and interactive workshops of 2 hours each will be
held, each covering one major perspective on international development and international relations. These lectures will be given by the course professors. Students will receive reading assignments, and will discuss the upcoming and past SID lectures. The professor(s) of the course will help the students in small groups to connect the major perspectives to the overall theme of the year's series and to the individual SID-lectures.

3. 1 separate 2 hour workshop will be held to allow the students to present their research papers – and to receive feedback from their colleagues.

Toetsvorm
The final mark of this course is composed of two parts:
1. A written exam, which counts for 50% of the course grade.
2. A paper of 2.000 words, which counts for 50% of the course grade. The student will choose one topic, to be approved by the course coordinator, for his/her paper, demonstrating the students' progress and achievements in knowledge, understanding and personal well-founded opinion on international development, in relation to the student's own disciplinary background, to the interrelations between the relevant academic disciplines en between academic and political perspectives on the issues.
Participation in the workshops and attendance of the SID lectures are obligatory. In order to pass, both parts should at least be marked with a 5.0 and the final score must be higher than a 5.5.

Literatuur
If this provisional outline for the course is seen as acceptable, we will suggest names for each of the 5 VU lectures and – in consultation with the suggested lecturers – relevant reading.

Doelgroep
Aimed at Master's students with global, international and developmental interests.

Overige informatie
For more information please contact dr. Agni Kalfagianni (a.kalfagianni@vu.nl).
Planning: throughout the Academic Year, from September – June, with one lecture per month on a Monday evening, 5-7 pm, with the exception of the first SID lecture which will take place on a Tuesday (September 25). Accompanying VU lectures and workshops are all held as well in evening hours, 5.30– 7.30 pm. The first VU lecture will take place on September 17 at WN F630.
Registration: until September 9 with one of the following ways:
1. VU students: registration through VUnet
2. Students from other universities: register as a “bijvak”student, after registration at the VU, the course can be booked through VUnet
3. Non students: please contact the course co-ordinator

Modern Climate Systems

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**Doel vak**
To understand the physical and chemical processes that control atmosphere and ocean.

**Inhoud vak**
This introductory course gives a (short) overview into the physical and chemical processes driving the atmosphere and the ocean. First the basic parameters and properties will be described, followed by examples for the formation and circulation of air and water masses. The different climatic regions of the world from the poles to the tropics will be highlighted and various compounds and features of the climate systems like the monsoon, ENSO and NAO systems will be explained. This knowledge of the modern climate processes forms the basis for understanding Climate Change today and in the past.

**Onderwijsvorm**
Lectures and workshops, literature reading.

**Toetsvorm**
Written exam, oral and written presentation.

**Literatuur**

**Modern Geo-ecosystems**

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**Doel vak**
To understand the interactions between the geo-, bio-, hydro- and atmosphere in a selected number of modern terrestrial and marine geo-ecosystems, thereby focussing on both the natural processes and the human impact during the Antropocene.

**Inhoud vak**
Anthropogenic changes to the Earth’s climate, land, oceans and biosphere are now so great and so rapid that the concept of a new geological epoch defined by the action of humans, the Anthropocene, is widely and
seriously debated. Questions of the scale, magnitude and significance of these environmental changes, particularly in the context of the Earth's geological history, provide the basis for this course. Natural and human impacts on a selected number of modern terrestrial and marine geo-ecosystems will be highlighted and (partly) illustrated in the field (excursion to Texel).

**Onderwijsvorm**
Lectures, field trip, literature study, student presentations and essay writing.

**Toetsvorm**
Oral presentation, written essay, written exam

**Literatuur**
Lecture notes, selected papers.

**Philosophy of Political Science and Research Methods**

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**Doel vak**
The objective of this course is to enable students to critically reflect upon the methodological choices involved in political science research and to justify their own choices, linking the levels of epistemology, methodology and techniques.

More specifically, the course aims to enable students to:
- recognise and reflect upon various research traditions in the social and political sciences (positivist, hermeneutical and critical approaches) and the ideas about the relation of theory and observations that they involve;
- familiarise students with the formulation of a research design and the application of suitable political science techniques to the analysis of political phenomena;
- justify methodological choices in setting up a research design.

**Inhoud vak**
Led by the question 'What is good political science?', students are taught to identify different criteria that have been proposed to demarcate 'good' political science, and to reflect upon the validity of these criteria. We will be looking at the level of research techniques as well as that of methodology and of epistemology. Linking this knowledge to their research work for other courses and their thesis, students are expected to explicate their methodological positions and to be able to justify them against alternative approaches. Thus students are to develop their insight in addressing research questions and in developing appropriate research designs.

The course is structured as a seminar in which students participate actively and learn how to apply research techniques while reflecting upon them in a critical way. The assignments allow the students to link
the class teachings to their own research interests.

**Toetsvorm**

**Literatuur**
* Additional literature will be announced in due course via Blackboard.

**Vereiste voorkennis**
Admission to the MSc Political Science or to the Masters in Social Research, track; Political Science.

**Doelgroep**
Master students.

**Overige informatie**
Please note: this course is not taught during the academisch year 2011-2012. Only a clean sweep test is provided.

### Political Concepts and Processes

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**Doel vak**
The aim of this course is to familiarize students with central concepts and approaches relevant to both International Relations and Comparative Political Science research. Specifically: 1) to develop students' knowledge of the history and the foundations of Political Science in relation to the philosophy of the social sciences; 2) to provide insight in the position, role and capabilities of main political actors; 3) to place the study of domestic and international politics in a broader theoretical context; 4) to train students' ability to identify and apply core concepts of Political Science; 5) to stimulate critical theoretical and normative reflection.

**Inhoud vak**
We focus on whether and how central concepts used in Political Science are affected by the current (global) phenomenon of transnationalization. We try to learn from the history of Political Science as a discipline and we study the current state of the art in various fields of research, including the development of theory and of methods of (comparative) political inquiry. For example, we deal with notions of ‘democracy’ and ‘democratisation. What does this concept mean? How do democratic processes work? What is the role of institutions, the judicial system, of political parties and interest
groups in modern societies? How is 'democracy' developed over time? How is it used in the various sub-disciplines? How is 'democracy' (national, European, global) affected by the processes of European integration and of transnationalization? Similarly, we explore how the meaning and use of other central concepts have changed over time, and how the phenomena they describe are being shaped by current forces of transnationalization and European regional integration. In addition, we use the history of Political Science to illustrate which approaches have been used in research in the past and how methods of analysis have developed and changed over time, from purely descriptive approaches to modern techniques of political inquiry and critical reflection. Finally, we will apply selected Political Science concepts to concrete contemporary issues in politics, exploring to which extent and how the structure of domestic politics is increasingly being influenced by Europeanization and globalization and how the interaction between International Relations theory and Comparative Political Science is gradually developing in the study of international politics and the EU.

Toetsvorm
The clean sweep test is a 'hand in assignment'. For information about the assignment contact the course coordinator. Find the hand in dates on: http://www.fsw.vu.nl/en/students/schedules/clean-sweep-tests/index.asp.

Literatuur
Selection of articles from major journals (to be announced).

Vereiste voorkennis
Admission to the MSc Political Science or to the Masters in Social Research, track Political Science.

Doelgroep
Master students.

Overige informatie
Please note: this course is not taught during the academisch year 2011-2012. Only a clean sweep test is provided.

Research Project

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<td>Coördinator</td>
<td>drs. M.I. Tromp Meesters</td>
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Doel vak
The objectives of this course are:
To become acquainted with environmental research and policy in practice;
To apply the theoretical frameworks elaborated in the former ERM
courses in a specific context;
To apply the disciplinary knowledge and skills, obtained in former
studies and ERM courses to a real life problem;
To write an environmental report independently.

Inhoud vak
The subject is chosen based on the interest of the students (as
expressed in their personal development plan) and the supervisors.
There are two options:
Internal research project. A research placement at the Institute for
Environmental Studies (IVM).
External research project. A research placement externally, e.g. at a
company or an (international) governmental organisation. The Institute
for Environmental Studies (IVM), as an internationally oriented
research organisation, has a large network of outstanding environmental
institutes and (non) governmental organisations that can supervise
students doing research externally.

Onderwijsvorm
The main product of this course is an environmental report that
includes an introduction, a research question, a methodological
section, results, discussion and conclusion. Independent, individual
(peer reviewed and grey) literature research, gathering data from
databases, interviews and modelling are some of the methods possible.

Toetsvorm
The products of this course are an environmental report and a
presentation. It may include a computer model, a website or another
multimedia product. The actual research, including the Master thesis
contributes 90% to the final grade, and the presentation 10%.

Literatuur
The literature review is depending on the subject and the option
chosen.

Vereiste voorkennis
Students must have obtained a minimum of 18 EC in the ERM programme by
the 15th of February, 2013, and must have participated in the team work
assignment of the course Environmental and Energy Policy Tools (AM_
468012).

Aanbevolen voorkennis
Students are strongly recommended to have followed: Environmental
Economics (AM_468020) and Environmental Policy (AM_468021)

Overige informatie
The Research Placement is subject to the FALW Work Placement and
Thesis Regulations. These regulations require detailed written
agreements between supervisor and student that specify the conditions
for the Research Project. Please consult the Faculty's website for more
information.

Sedimentary Environments and Climate Archives

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Doel vak
To learn and understand how climate changes are recorded in marine, coastal and terrestrial depositional environments and to understand the recording process as a function of the dynamics of these environments.

Inhoud vak
The course deals with the sedimentology, geochemistry and stratigraphy of marine, coastal, fluvial, lacustrine, eolian, and periglacial palaeoclimate records. The focus is on those processes relevant for understanding how climate/environmental change is recorded in the different palaeoclimate archives. In addition, the susceptibility of key aspects of those environments to climate-change impacts will be addressed. Marine and terrestrial palaeoclimate records receive equally attention.

Onderwijsvorm
Lectures, literature study, group discussions.

Toetsvorm
Written exam.

Literatuur
Lecture notes, selected papers.

Aanbevolen voorkennis
Bachelor courses: Terrestrial environments (AB_450097), Palaeo-oceanography, palaeoclimatology and meteorology (AB_450240); Master courses: Modern Climate Systems (AM_450185), Modern Geoecosystems (AM_450313).

Sustainability and Growth

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<td>Fac. der Aard- en Levenswetenschappen</td>
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<tr>
<td>Coördinator</td>
<td>dr. A.J. Gilbert</td>
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<tr>
<td>Docent(en)</td>
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Doel vak
Sustainability & Growth uses the DPSIR analytical framework to present the breadth of environmental problems, and the different disciplines employed in the analysis of their causes, effects and possible
solutions. It is the first course in the Environmental and Resource Management (ERM) programme and is followed by all students from all specialisations. It serves to develop a common base of knowledge that subsequent courses will develop further. By the end of this course, students should be able to:
• classify and illustrate the diversity of environmental problems;
• explain the concepts of sustainability and growth, as well as other key concepts from the natural and the social sciences;
• explain causality for a selection of environmental problems;
• evaluate frameworks and indicators used in analysing environmental trends;
• explain the roles of stakeholders and policy in dealing with environmental problems;
• analyse an environmental problem using the DPSIR framework;
• demonstrate skills, notably writing, framing, presenting, and reviewing.

Inhoud vak
Without economic growth, we would not enjoy our current lifestyles. Economic growth is also needed to repair the environmental damage we have already done. Consequently sustainability cannot be achieved without growth. Identification of a path to sustainability is fraught with difficulties because many environmental problems have become ‘wicked’. Wicked problems are typically associated with strong moral, political and professional issues, such that there may be little consensus about what the problem is, let alone how to resolve it. Sustainable development is seen as having three main components: the environment, the economy, and the society. These three components provide the basic disciplines addressed in this course – natural, economic and social sciences. The course draws on an analytical tool, the Drivers-Pressures-States-Impacts-Responses (DPSIR) framework. DPSIR serves to structure problems and to identify different disciplinary contributions to understanding, analysing and dealing with problems. It contributes to the taming of ‘wicked’ problems, even if this is limited to identifying where ‘wickedness’ lies such as inadequate scientific knowledge or uncertainty with regards to the benefits of environmental remediation. DPSIR may be seen to comprise two ‘arms’: causality of environmental problems (=DPS); and consequences of environmental problems (=IR). Because I and R are covered in other ERM courses, Sustainability and Growth emphasises causality. Topics range from fisheries, to poverty, to the setting of environmental standards, to the inclusion of stakeholders, to climate change.

Onderwijsvorm
The course involves lectures, student presentations, student reviews, workshops, debates, seminars and a documentary

Toetsvorm
The final grade for Sustainability & Growth is derived from:
1) group activities worth 30% of the final grade
2) an assignment and peer review worth 30% of the final grade
3) an exam worth 40% of the final grade.
To pass the course, students must receive a grade exceeding 5.0 (out of 10) for the exam and their overall grade must exceed 5.5. There is one re-sit of the exam. Students who are graded 5.5 or lower for the assignment have one opportunity to revise it.
Literatuur
Available via the online reader on Blackboard:
Sciences. Springer, Berlin. Chapters 1, 2, 4, 5, 6, 7, 8, 10, 11, 12 (pp
207-211), 13, 14, 23, 26.
Required text for Environmental Economics.
Addison-Wesley, Boston. Chapters 6 (pp 104-118), 14 (pp 301-322), and 20
(pp 458-466).

Vereiste voorkennis
Admittance to ERM

Doelgroep
Students interested in a broad understanding of the environmental
sciences.

Sustainable Energy Analysis

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Doel vak
After following this course the students are able to:
- Make use of scientific information about major energy resources and
conversion processes to assess the economic and environmental impacts
of existing and new technologies in the energy sector;
- Apply this scientific information in the widely different contexts of
industrialised, emerging and least developed nations;
- Assess the potential; and implications of using wind, solar and
biomass; technologies in both rich and poor nations;
- Evaluate the sustainability implications of different; fossil fuel;
technology choices in a comprehensive and balanced way;
- Explain the environmental risks and supply potential of nuclear
energy.

Inhoud vak
The role of conventional and renewable energy on the road towards
sustainability forms the main topic of this module. Energy use drives
economic development while at the same time causing persistent
environmental problems. Assessing energy technology in the light of the
long- term transition towards sustainability requires a basic
understanding of available energy resources and conversion processes
including their environmental impacts and opportunities for performance
improvement. Moreover, the potential role of energy technologies is
strongly dependent on the stage of economic development of the region
and sector where it will be applied. The following subjects will be
dealt with in more detail:
- Introduction to energy technology assessment and global energy use patterns;
- Biomass technology applications in developed and developing nations
- Wind and solar technology applications in developed and developing nations
- Fossil fuel resources and sustainability;
- Nuclear energy resources and sustainability.

Onderwijsvorm
Lectures, team assignment and workshop

Toetsvorm
A written exam (80%) and a team presentation on the assignment (20%).

Literatuur
Reader with open source literature

Sustainable Land Management

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Doel vak
What are the enabling and limiting factors to sustainable land management? How can smallholder farmers in the developing world adapt to climate change? What can farmers in developing countries – and especially Africa – do to improve their food security? Can organic agriculture help feeding the world? Are biofuels the solution for our energy needs of tomorrow?

These and many other questions will be discussed during this interdisciplinary course. Its main focus is on what can be done about the problems of soil erosion and land degradation, and their relevance to climate change and poverty reduction. "Sustainable Land Management" is a new approach that involves both people and technical issues. The course spans a wide range of topics, including environmental problems, history of approaches, conservation technologies in the field, indigenous knowledge, working with local people, and skills in research and development in the tropics. There is a combination of theory and practice, with a strong emphasis on illustrated case studies from over 20 countries.

Inhoud vak
Environmental degradation and rural poverty: processes and impact.
History of conservation: from failed approaches to new concepts in rural development; principles and practices of Sustainable Land Management (SLM). Agriculture in Development. SLM technologies: humid areas/dry areas. International environmental protocols and their impact on rural
development programmes. Socio-economic factors including population/land tenure/gender/incentives/marketing and labelling. Energy and biofuels; biodiversity, genetic modification and organic production. ICTs in rural development. Indigenous knowledge and local innovation, Participatory learning and action, including research methodology).

Onderwijsvorm
Interactive lectures with illustrated case studies supplemented by group work activities; conducted and examined in English.

Toetsvorm
One topic will be chosen by each student for a paper of 3,000 words based on further reading (50% mark). There will also be a final examination (50% mark).

Literatuur

Doelgroep
Aimed at Master’s students with environmental and developmental interests: especially those with some geography/earth science/hydrological/biological/ecological/environmental background, but social scientists can also benefit from this course.

Overige informatie
Comments from students who attended the SLM course in 2011:
“I will strongly recommend it for future students, and feel it should be mandatory for the ERM program.”
“I think this course gives a good overview and helps people/students with a non environmental background to understand essential issues.”
“Whereas other courses focus on scientific dimension of environmental problems SLM is also about the human dimension of environmental solutions. It is of the few courses that give a positive perspective for solutions, practical solutions. Whereas other courses try to inject “knowledge” theoretical problems and solutions.”
“I loved the course. Thank you so much for all the insight views and personal stories. It made the course very unique and special.”
For more information please contact dr. William Critchley (wrs.critchley@vu.nl) or Wendelien Tuyp (w.a.m.tuijp@vu.nl)

Theories and Approaches in International Relations

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Doel vak
This course provides students with an encyclopaedic overview of the traditions, approaches, (meta-) theories and key concepts in the field of International Relations (IR) broadly conceived. Its principal aim is to provide the students with a common basis with regard to the
theoretical foundations of IR. More concretely it aims:
- to provide students with an encyclopaedic overview of the theoretical foundations of IR, thus enabling them to analyse concrete historical developments from various theoretical perspectives;
- to teach students to critically reflect upon the meta-theoretical foundations - and their methodological and normative implications - of (social science) theory and thus to develop students' knowledge of the history and the foundations of the philosophy of social sciences (increasing their reflexive knowledge of both the main traditions and of paradigmatic change);
- to advance students' understanding of the epistemological issues involved doing political research and thereby rendering them capable of developing coherent research designs
- to familiarize students with the critical assessment of political science literature, in particular by placing it within a historical context and by reflecting upon both the social constitution of theory as well as its socially constitutive effects;

Inhoud vak
Whereas IR traditionally (and narrowly) defined deals almost exclusively with relations between states, the 'discipline' has moved much beyond such a narrow state-centrism in order to embrace a much broader conception of world politics in which there is attention to both state and non-state actors and both interstate and other global social structures. This broader conception of world politics is point of departure for this introductory course and is in fact taken one step further by departing from the notion that contemporary world politics is of a fundamentally transnational nature. Thus, politics is not just between states but also the political struggle between various transnational interest groups, movements and social forces. Although there is no world polity, there is a European polity, and internationally there are numerous international organizations that constitute institutionalized structures of global governance. Policy, finally, is not just produced by states as foreign policy, but also by the aforementioned international organizations and by the EU. A second characteristic is that although we consider IR as a mature sub-discipline of political science which is grounded in various approaches and methods of general political science (and therefore clearly linked to the other stream of the MSc in Political Science), we also recognize the contributions from other disciplines (including philosophy, economics, sociology, anthropology, and law) to the field and stress the importance of interdisciplinary research. This course is structured as a historical overview of the development of the discipline, placed in a wider historical context of 'real-world' developments in the global system - stressing the obvious links between those developments and the development of theory - as well as in a wider social science context, trying to see how IR theory developed in relation to other disciplines and to wider debates within the social sciences. Next to the historical context considerable attention is given to the meta-theoretical assumptions (and methodological implications thereof) underlying various approaches and theories as we believe that these are key to understanding the major debates, and that - for their own research - it is important that students critically reflect upon those assumptions.
Onderwijsvorm
Tutorial. Building on prior knowledge of students (i.e., students from our Bachelor’s programme are assumed to have basic knowledge of the IR and European integration literature used in the bachelor, and students coming from outside to have an equivalent knowledge), students will work through the literature in tutorial form. For each session students must prepare one page in which they answer one or several critical questions pertaining the prescribed literature. The total amount of reading will be about a 100 pages per session.

Toetsvorm
Testamur based on participation; (30 %) and three essays (70 %).

Literatuur
* Reading list (will be available during first class).

Vereiste voorkennis
Admission to the MSc Political Science or to the Masters in Social Research, track; Political Science.

Doelgroep
Master students of the specialized tracks International Relations & Transnational Governance and Global Environmental Governance.

Intekenprocedure
It is obligatory to sign up for a course, for more information on dates to sign up, go to www.fsw.vu.nl/schedules.

Value of Ecosystem Services

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Doel vak
One of the hot topics in environmental management today is the concept of ecosystem services. This concept can be defined as the benefits that people obtain from ecosystems. Quantification and apportionment are major challenges. Important ecosystem services are food, fuel, timber and water provision, carbon storage and sequestration, soil formation, climate and disease regulation, aesthetic benefits and spiritual values. Biodiversity, or the variety of life forms that populates and modifies our earth, can be seen as the main underlying asset from which all ecosystem services are produced. By putting ecosystem services central in the debate on nature conservation, the societal benefits of nature conservation and the need to align conservation and development goals are stressed. This course aims to assess the importance of ecosystem services and biodiversity for nature, the economy and people in both
developed and developing countries.

**Inhoud vak**
The course focuses on an understanding of what specific services are provided by which component of ecosystems, how these are linked to specific elements of biodiversity and the problems arising from scaling and multiple roles. It attempts to remain close to the practicality of specific quantification. It will then continue to address the economics of ecosystem services. Various ecosystems (e.g. forests, coral reefs, wetlands, rivers) and forms of biodiversity is covered (e.g. wildlife, flora). Next to lectures and debate, the course contains a two-week case study carried out in groups of 3-4 students. Task is to quantify all services in a specific ecosystem by means of a rapid appraisal method. During the previous lectures, students have developed their research protocol, which then will be ready for application in the case study.

After having participated in this module, students should be able to answer the following questions:
- What is an ecosystem and how are ecosystems changing over time and space?
- What services do ecosystems and biodiversity provide and how can these services be measured?
- What is the economic importance of the ecosystem services and biodiversity and what drives these economic and cultural values?
- What instruments are available to mobilise payments for ecosystem services necessary for sustainable management of ecosystems and biodiversity?
- How to conduct a rapid appraisal of ecosystem services taking into account the above-mentioned issues?

**Toetsvorm**
A group case study presentation and a final report;
The course ends with a closed book exam;
The exam weighs 70%, the presentation 10% and the final report 20%.
Students must pass all (5.5 or higher).

**Literatuur**
To be announced

**Overige informatie**
Participants can chose their preferred ecosystem services study from a given list of cases selected. Nature conservation organisations in the Netherlands can host these case studies. In this way, the group assignments can result in a useful output for managers of these hosting organisations.

**Water and Policy**

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Doel vak
To understand, analyze and be able to form a judgment about how water related processes influence our society and what role water management plays in addressing and tackling these issues.

Inhoud vak
This course aims to provide students
(a) multi-disciplinary understanding of water management, including the physical dimensions of the problem
(b) explore the governance trends (principles, policies and instruments) from local through to global levels to address these problems.
This course consists of lectures demonstrating different approaches to water management including Integrated Water Resources Management (IWRM) for international case studies. There will also be practicals to experience the data and methods as used are used in water management to base decisions making on. It puts emphasis on the uncertainty of future trends and how risk management methods can be helpful for water managers for dealing with these uncertainties. Finally, students will pair up in groups of two persons in order to investigate a topic in detail and report on that. This will be done by writing a paper on the subject, which will be peer-reviewed by fellow students.

Onderwijsvorm
Lectures, practicals, paper writing, peer-review and discussing

Toetsvorm
Written exam (50%), essay (40%) and peer-review (10%)

Literatuur
Lecture notes, selected articles and chapters

Doelgroep
MSc students ERM, Earth and Economy, and Earth Sciences

Workshop Governance for Sustainable Development

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