



Environment and Resource Management MSc

Vrije Universiteit Amsterdam - Fac. der Aard- en Levenswetenschappen - M Environment and Resource Management
- 2014-2015

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 2014 - 2015 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](#).

Inhoudsopgave

Expired programme components ERM	1
MSc ERM, spec. Climate and Water	1
MSc ERM, spec. Ecosystems Services	1
MSc ERM, spec. Energy Studies	1
MSc ERM, spec. Environmental Studies	2
optional modules	2
choose at least one of these courses	2
MSc ERM, compulsory courses for all themes	2
Vak: Aquatic Ecology (Periode 1, Periode 4+5+6)	3
Vak: Causes and Consequences of Environmental Change (Periode 1)	5
Vak: Climate and Policy (Periode 3)	7
Vak: Climate Modelling (Periode 3)	8
Vak: Energy System Transitions (Periode 3)	9
Vak: Environmental and Energy Policy Tools (Ac. Jaar (september))	10
Vak: Environmental Economics for ERM (Periode 2)	11
Vak: Environmental Policy (Periode 2)	13
Vak: Governance of Ecosystem Services (Periode 3)	15
Vak: International Development Issues in the Context of Sustainable Development (Ac. Jaar (september))	16
Vak: Methods of Environment and Resource Management (Periode 4)	19
Vak: Modern Climate and Geo-ecosystems (Periode 1)	20
Vak: Modern Climate Systems (Ac. Jaar (september), Periode 1)	21
Vak: Modern Geo-ecosystems (Ac. Jaar (september), Periode 1)	22
Vak: Research Project (Ac. Jaar (september))	23
Vak: Research Workshops (Periode 4)	24
Vak: Sedimentary Environments and Climate Archives (Periode 1)	24
Vak: Selected Issues: Global Environmental Governance (Periode 2)	25
Vak: Sustainable Energy Analysis (Periode 1)	26
Vak: Sustainable Land Management (Ac. Jaar (september), Periode 3)	27
Vak: Theories and Approaches in International Relations (Periode 1)	29
Vak: Value of Ecosystem Services (Periode 1)	30
Vak: Water and Policy (Periode 1)	32
Vak: Workshop in Global Environmental Governance (Periode 4)	34

Expired programme components ERM

Courses:

Name	Period	Credits	Code
Aquatic Ecology	Period 1, Period 4+5+6	6.0	AM_450137
Environmental and Energy Policy Tools	Ac. Year (September)	12.0	AM_468012
International Development Issues in the Context of Sustainable Development	Ac. Year (September)	6.0	AM_1029
Modern Climate Systems	Ac. Year (September), Period 1	3.0	AM_450185
Modern Geo-ecosystems	Ac. Year (September), Period 1	3.0	AM_450313
Sustainable Land Management	Ac. Year (September), Period 3	6.0	AM_1015

MSc ERM, spec. Climate and Water

Vakken:

Naam	Periode	Credits	Code
Climate and Policy	Periode 3	6.0	AM_450188
Water and Policy	Periode 1	6.0	AM_468023

MSc ERM, spec. Ecosystems Services

Vakken:

Naam	Periode	Credits	Code
Governance of Ecosystem Services	Periode 3	6.0	AM_468025
Value of Ecosystem Services	Periode 1	6.0	AM_468024

MSc ERM, spec. Energy Studies

Vakken:

Naam	Periode	Credits	Code
Energy System Transitions	Periode 3	6.0	AM_468019

Sustainable Energy Analysis	Periode 1	6.0	AM_468018
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MSc ERM, spec. Environmental Studies

Opleidingsdelen:

- [optional modules](#)
- [choose at least one of these courses](#)

optional modules

Vakken:

Naam	Periode	Credits	Code
Climate Modelling	Periode 3	6.0	AM_450004
Modern Climate and Geo-ecosystems	Periode 1	6.0	AM_1124
Sedimentary Environments and Climate Archives	Periode 1	6.0	AM_450330
Selected Issues: Global Environmental Governance	Periode 2	6.0	S_SIGEG
Theories and Approaches in International Relations	Periode 1	6.0	S_TAIR
Workshop in Global Environmental Governance	Periode 4	12.0	S_WGEG

choose at least one of these courses

Vakken:

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
Value of Ecosystem Services	Periode 1	6.0	AM_468024
Water and Policy	Periode 1	6.0	AM_468023

MSc ERM, compulsory courses for all themes

Vakken:

Naam	Periode	Credits	Code
Causes and Consequences of Environmental Change	Periode 1	6.0	AM_1049
Environmental Economics for ERM	Periode 2	6.0	AM_468020
Environmental Policy	Periode 2	6.0	AM_468021
Methods of Environment and Resource Management	Periode 4	6.0	AM_1135
Research Project	Ac. Jaar (september)	18.0	AM_468017
Research Workshops	Periode 4	6.0	AM_1136

Aquatic Ecology

Vakcode	AM_450137 ()
Periode	Periode 1, Periode 4+5+6
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	prof. dr. J.E. Vermaat
Lesmethode(n)	Werkcollege, Practicum
Niveau	400

Doel vak

1. Acquire an understanding of the complexity and biotic richness of aquatic ecosystems and the importance of the medium, water, in shaping this.
2. Acquire an understanding of the links between aquatic ecology and water quality, and develop the capacity to interpret patterns from the one into those of the other field
3. Be able to understand, summarise, and debate papers from the primary literature selected to deepen the subjects presented with help of the text book
4. Be able to design, carry out and report on a limited field study in the waters around Amsterdam and test a self-developed hypothesis

Inhoud vak

This is an introductory course to for earth scientists interested in water that want to enrich their expertise with ecology. It can also serve to add a view on aquatic habitats for ecologists that mainly have been exposed to terrestrial habitats so far. The subject is presented at a master's level with a focus on independent exploration in the field and primary literature. The course will be taught from a basic textbook, Dobson & Frid (2009), as starting point, with excursions to papers providing depth to the chapters.

Characterisation of the content: 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.

Onderwijsvorm

1. plenary lectures (5 x 4 = 20 hrs). Lecture format: Vermaat discusses chapter content, students give a brief presentation on deepening papers. 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 debate on the accompanying paper.
2. comparative fieldwork in small groups of 2-4 students: spatial gradients among and within water bodies around Amsterdam (field 2 d, lab processing 2 d), concluded by 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)
3. literature study for deepening presentations and field work report.

Toetsvorm

Written exam (60%), fieldwork report (30%), oral presentations (both on book and lab work, content and quality, 10%). The written exam is open book.

Literatuur

Book: Dobson M & Frid C., 2009. Ecology of Aquatic Systems, 2nd edition. Oxford University Press, 321 pp; ISBN: 9 780199 297542

Selected deepening papers (liable to change, will be communicated at start of course):

Rivers

Poole GC, 2002. Fluvial landscape ecology: addressing uniqueness within the river discontinuum. *Freshwat Biol* 47, 641-660.

Lamouroux N, Poff NL, Angermeier PL, 2002. Intercontinental convergence of stream fish community traits along geomorphic and hydraulic gradients. *Ecology* 83, 1792-1807

Estuaries

Bishop MJ, Kelaher BP, Smith MPL, York PH, Booth DJ, 2006. Ratio-dependent response of a temperate Australian estuarine system to sustained nitrogen loading. *Oecologia* 149, 701-708.

Soetaert K, Middelburg JJ, Heip C, 2006. Long-term change in dissolved inorganic nutrients in the heterotrophic Scheldt estuary (Belgium, The Netherlands) *Limnol Oceanogr* 51, 409-423.

Coastal Seas

Bianchi TS, Westman P, Andren T, Rolff C, Elmgren R, 2000.

Cyanobacterial blooms in the Baltic Sea: natural or human-induced? *Limnol Oceanogr* 45, 715-726.

McQuatters-Gollop A, Raitsos DE, Attrill M, Edwards M, Lavender S, Mee L, 2007. A new long-term chlorophyll dataset reveals a regime shift in North Sea phytoplankton biomass unconnected to nutrient levels. *Limnol. Oceanogr.* 52, 635-648.

Open Ocean

Worm B, and many others, 2006. Impacts of biodiversity loss on ocean ecosystem services. *Science* 314, 787-790.

Beaugrand G, 2009 Decadal changes in climate and ecosystems in the North Atlantic Ocean and adjacent seas. *Deep Sea Res II* 56, 656-673.

Aanbevolen voorkennis

Basic statistics, introduction in hydrology

Doelgroep

MSc Earth Sciences (all tracks), MSc Hydrology, MSc Biology, MSc Ecology

Causes and Consequences of Environmental Change

Vakcode	AM_1049 ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. A.J.A. van Teeffelen MSc
Examinator	dr. A.J.A. van Teeffelen MSc
Docent(en)	dr. A.J. Gilbert, dr. M. Hisschemoller, dr. M.H. Lamoree, dr. P.H. Pattberg, prof. dr. F.H.B. Biermann, prof. dr. ir. P.H. Verburg, dr. A. Kalfagianni, dr. ir. J. van Vliet, dr. ir. C.J.E. Schulp, dr. A.J.A. van Teeffelen MSc
Lesmethode(n)	Hoorcollege, Werkgroep, Computerpracticum
Niveau	400

Doel vak

To develop a common knowledge base about the causes and consequences of environmental change and about how different disciplines perceive and address environmental problems. By the end of this course, students should be able to:

- 1.classify and illustrate the diversity of environmental problems;
- 2.explain key concepts from the natural and social sciences as they apply to the analysis of environmental problems;
- 3.explain causality for a selection of environmental problems, using the DPSIR framework in particular;
- 4.evaluate frameworks and indicators used in analysing environmental trends;
- 5.explain the role of the economic system and the function of policy and governance in dealing with environmental problems;
- 6.demonstrate skills, notably: writing, framing, presenting, and reviewing.

Inhoud vak

At present, unsustainable modes of consumption and production worldwide threaten to alter core functions of the earth system. Anthropogenic climate change and the accelerating loss of biodiversity are two pressing problems that receive much media attention. However, there are many other environmental problems at scales varying from local to global. These include for example: declining bluefin tuna populations; unforeseen effects of contaminants; human protein needs and disruption of the nitrogen cycle; and the invasion of the Wadden Sea by foreign species such as the Pacific oyster. In short, more sustainable development pathways are urgently needed. Identifying such pathways requires an interdisciplinary understanding and the involvement of numerous academic disciplines, including the natural and social sciences.

To provide such integrated understanding, this course will introduce students to one prominent analytical framework, called 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 disentangling of complex problems, taking into account also limits to fully understanding such problems, for example inadequate scientific knowledge, uncertainty with regards to the benefits of environmental remediation (and particularly when the costs are known), reluctance of societies to acknowledge or to deal with environmental change, or scale mismatches between a problem and its management.

DPSIR may be seen to comprise two 'arms': causes of environmental change (Drivers, Pressures, States), and consequences of environmental change (Impacts and Responses). Because the impacts and responses are covered in other ERM courses, notably environmental economics and environmental policy in Period 2, this course places more emphasis on causality. Topics range from land use, fisheries, poverty, the setting of environmental standards, stakeholders, and climate change. These topics have been selected to highlight the breadth of challenges for environment and resource management, as well as to illustrate different disciplinary perspectives. The natural science perspective attempts to understand how environmental problems emerge. The economic perspective focuses on the growth debate (does economic growth increase social welfare?) and the use of economic instruments to redress the impacts of environmental change and to implement policy. The social science perspective assesses how environmental policy and governance can modify or redirect the patterns of behaviour that are common, if not inherent, in our societies.

Onderwijsvorm

The course comprises two types of activities. The first takes place in classes, where information is presented through lectures, presentations, workshops, debates, seminars and documentaries. This involves 55-60 hours, including student presentations for their assignment. The second takes place in students' own time, and comprises reading, preparation of presentations, and an assignment.

- Class: 50 hours
- Reading and exam preparation: 45 hours
- Assignment & peer review: 35 hours
- Presentations: 30 hours

Toetsvorm

- group activities (two presentations) worth 30% of the final grade
- assignment and peer review worth 30% of the final grade
- exam worth 40% of the final grade.

Literatuur

Boersema, J. & L. Reijnders (eds.) 2009. Principles of Environmental Sciences. Springer, Berlin. Chapters 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12 (pp 207211), 13, 14, 21 (pp 445 – 451, excluding boxes), 23, 26, 27, 28.

Tietenberg, T.H. & L. Lewis. 2014. Environmental economics and policy. Pearson New International Edition. 6th Edition. Chapter 6 (pp 111136). Chapter 14 (pp 317342).

Doelgroep

Students who have completed their bachelor's degree. Masters' students.

Climate and Policy

Vakcode	AM_450188 ()
Periode	Periode 3
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. P.H. Pattberg
Examinator	dr. P.H. Pattberg
Docent(en)	dr. P.H. Pattberg
Lesmethode(n)	Werkcollege
Niveau	400

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 Fifth 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

Aanbevolen voorkennis

Basic knowledge of social science concepts such as governance

Doelgroep

Students with an interest in governance and policy

Climate Modelling

Vakcode	AM_450004 ()
Periode	Periode 3
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	prof. dr. H. Renssen
Examinator	prof. dr. H. Renssen
Docent(en)	prof. dr. H. Renssen, dr. M.J. Waterloo, prof. dr. A.J. Dolman, dr. D.M.V.A.P. Roche
Lesmethode(n)	Werkcollege, Computerpracticum
Niveau	400

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.

Toetsvorm

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

Literatuur

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

Overige informatie

The course is open for participation to students from alternative M.Sc. programmes at the VU University Amsterdam, or from other universities. If you are a professional and wish to attend this course you can also participate on a contract basis. In both cases please do contact the course coordinator to find out if you fulfill the background knowledge requirements and for enrollment procedures.

Energy System Transitions

Vakcode	AM_468019 ()
Periode	Periode 3
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. M. Hisschemoller
Examinator	dr. M. Hisschemoller
Docent(en)	dr. M. Hisschemoller
Lesmethode(n)	Werkgroep
Niveau	400

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_468012 ()
Periode	Ac. Jaar (september)
Credits	12.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. R. Janssen
Examinator	dr. R. Janssen
Docent(en)	dr. P.J.H. van Beukering, dr. A.J. Gilbert, dr. R. Janssen, drs. A.J. Wagtendonk, dr. W.J.W. Botzen, dr. E. Vasileiadou, dr. A. Kalfagianni, dr. ir. J. van Vliet, M.A.H. Schouten MSc, R. Janssen MSc, prof. dr. J. Gupta
Lesmethode(n)	Hoorcollege, Computerpracticum, Excursie, Werkcollege, Werkgroep, Deeltoets extra zaalcapaciteit
Niveau	400

Doel vak

The objective of the course is to provide the students with an overview of relevant methods and techniques for environmental resource management and to teach them how to apply these methods. At the end of the course students should know which types of methods are available, for which problems they can be used and what the strengths and weaknesses of the methods are in practice.

Inhoud vak

This course includes the following six classes of tools:

1. Systems analysis and simulation: use of simulation software

- (STELLA);
2. Scenario analysis
 3. Spatial analysis: use of Geographic Information Systems (ArcGIS);
 4. Stakeholder analysis
 5. Multicriteria analysis (MCA): use of decision support software (DEFINITE);
 6. Valuation and cost-benefit analysis (CBA); use of CBA software (DEFINITE);

Systems analysis and scenario analysis are run as parallel courses (see the time table). You will need to make a choice on the first day of the course. Spatial analysis and Stakeholder analysis are also run as parallel courses. You will need to make a choice at the beginning of the second week. Your choice in the first week is independent of your choice in the second week. Multicriteria analysis and Cost benefit analysis are obligatory for all students.

Onderwijsvorm

Lectures, Practicals in computer lab, Assignments, Group project
Total contact hours 120

Toetsvorm

The first five weeks of this course are lecture weeks. For each tool there is a separate exam. The total exam grade is calculated as the average of the four tool exams. Note that you do not have to pass each tool exam as long as your average is 5.5 or higher.

The exams of the first two tools are combined and take place at the end of the spatial analysis/stakeholder analysis lectures. The exams of the MCA and CBA tools are also combined and take place at the end of the CBA lectures.

The exams (see time table for time and place) will be closed book examinations. , i.e. you will NOT be allowed to consult any course material during the examination. You can bring a simple non-programmable calculator, but no mobile phone, laptops, I-pads or other tablets.

Material relevant for the examination can be found in the Reader on Blackboard. Subjects taught in lectures and practicals are also material for the exam. Example exams for all tools and their answers can be found with the course documents on Blackboard.

The final mark for this course is calculated as the weighted (60% exam - 40% project) average of the total exam grade and the project report. However, students have to pass both the exam and the report (>-5.5).

Literatuur

Reader 'Environmental and Energy Policy Tools'

Doelgroep

Students must at least hold a Bachelor's degree from a university or an institute of higher vocational education (with a minimum of three years of full-time study).

Overige informatie

Prof dr A.C.Petersen; Prof Dr J.Gupta;

Environmental Economics for ERM

Vakcode	AM_468020 ()
Periode	Periode 2

Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. P.J.H. van Beukering
Examinator	dr. P.J.H. van Beukering
Docent(en)	dr. P.J.H. van Beukering
Lesmethode(n)	Werkcollege, Werkgroep
Niveau	400

Doel vak

This module gives an introduction to the economic analysis of environmental problems, and aims to give an overview of economic environmental policy instruments in different policy contexts from the local through to the global level. A critical cause of environmental problems is that not all of the costs (including environmental) caused by economic agents are borne by those responsible for generating them.

This problem will be conceptualized in this course through the notion of externalities. There are various instruments and institutional arrangements for addressing such externalities. Criteria for their selection and evaluation will be studied. Applications of environmental policies at various administrative levels (i.e. local, national, international), different economic sectors and different country contexts will be discussed. This course tackles some of the most pressing environmental problems that our planet faces today, such as the depletion of fish stocks, climate change, environmentally-induced poverty, and environmental effects of trade and globalization.

The overarching objective of this course is to familiarize students with the economic analysis of environmental problems. 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

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 are environmental regulations necessary or when are self-regulation / economic instruments more appropriate?
- How are poverty, development, and the environment interlinked, and what is the role of globalization in stimulating or hampering sustainable development?
- How to derive optimal levels of pollution and resource use from a societal perspective?
- Which economic policy instruments are available, and what are their (dis)advantages in view of the selection criteria and in specific country contexts?
- What are critical and debatable assumptions of core policy insights within environmental economics, such as related to economic costs-benefit analysis of cli-mate policy?

In this course "Environmental Economics", one distinct subject will be

addressed per week. This implies that various activities (e.g. (guest) lectures, interactive events) will take place on a weekly basis addressing a distinct central topic. The subjects and lectures are as follows:

- Policy instruments (Week 1)
- Government versus self-regulation (Week 2)
- Optimal resource use (Week 3)
- International trade and the environment (Week 4)
- Risk and uncertainty (Week 5)
- Poverty and the environment (Week 6)

Toetsvorm

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

Literatuur

Tietenberg, T. and Lewis, L. (2014). Environmental Economics & Policy. Pearson Education Limited, International Edition, Sixth Edition. (updated information: 21 August, 2014)

Vereiste voorkennis

This course is suited for students with a broad range of disciplinary backgrounds. A background in economics is no prerequisite.

Doelgroep

This course is suited for students with a broad range of disciplinary backgrounds. This course provides some of the fundamental building blocks for the MSc Environmental and Resource Management (ERM). It provides the basic framework for economic re-search methods, such as cost-benefit analysis and environmental valuation, which be treated in the ERM course Environmental Policy Tools. We encourage students who are more interested in only theoretical/mathematical analysis to follow the environmental economics course provided by the Faculty of Economics and Business Administration.

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. To stress the societal importance of environmental economics, guest lecturers performing in this course typically come from outside academia, and include among others:

- Dr Anniek Mauser (Director Sustainability - Unilever);
- Dr Bertholt Leeftink (Deputy Secretary General - Ministry of Economic Affairs)
- Dr Mathijs Bouman (Economic Journalist / Commentator - FD, RTL-Z)
- Prof Ruud Huirne (Director Food & Agri - Rabobank)
- Carel Drijver (Director Marine Department - WWF)
- Dr Sander de Bruyn (Chief Economist - CE Delft)
- Danielle Hirsch (Director - Both Ends)

Environmental Policy

Vakcode	AM_468021 ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels

Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. A. Kalfagianni
Examinator	dr. A. Kalfagianni
Docent(en)	dr. A. Kalfagianni, mr. T.F.M. Etty LLM
Lesmethode(n)	Werkcollege, Hoorcollege
Niveau	400

Doel vak

The overall aim of the ERM master program is to enable students to develop abilities and multidisciplinary techniques which will allow them to apply to societal problems relating to natural resources and the environment. Environmental Policy contributes to this overall aim by introducing students to the actors, institutions and instruments relevant in the design and implementation of environmental policies at the local, national and supranational levels. Accordingly the course objectives -defined rather broadly are the following:

1. Give a basic understanding of the public and private actors and institutions involved in environmental governance at local, national and supranational levels.
2. Be able to evaluate the effectiveness and legitimacy of actors and institutions involved in environmental governance at local, national and supranational levels.
3. Understand and be able to explain, analyze and propose solutions regarding the complexity of decision-making structures, procedures and negotiations of environmental issues.
4. Apply the knowledge learned on the basis of two written assignments , a role-play (simulation) game and a written exam.

Inhoud vak

The course consists of four main components: (A) National Environmental Governance, (B) European Environmental Governance, (C) Global Environmental Governance, and (D) Private Environmental Governance. More specifically, part A introduces basic concepts related to environmental governance particularly at the national level. Part B introduces the history, principles, institutions and processes of EU environmental governance. Part C introduces the history, principles and institutions of global environmental governance. Finally, part D introduces newly emerging environmental governance initiatives beyond the state, discussing developments involving private actors and institutions. A general introduction and a conclusion on future prospects of environmental policy round up the course.

Onderwijsvorm

The course is worth 6 ECTS points which corresponds to 150 hours of work per student.

Toetsvorm

2 written assignments (20%) – a mid-term exam (40%) and a final exam (40%)

Literatuur

currently being revised; it will become available in September

Doelgroep

Master students

Governance of Ecosystem Services

Vakcode	AM_468025 ()
Periode	Periode 3
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	prof. dr. ir. R. Brouwer
Examinator	prof. dr. ir. R. Brouwer
Docent(en)	dr. P.H. Pattberg
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

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 incorporated into policy making and how the provisioning of ecosystem services can be safeguarded are much more scarce. 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. After having participated in this module, students should be able to assess and form judgments on:

- The characteristics of ecosystems and biodiversity and how these relate to the governance of ecosystem services and biodiversity worldwide
- What policy instruments are available at different governance levels and what the strengths and the weaknesses of the different policy instruments are.
- The trade-offs associated with the protection of ecosystems and biodiversity and how the interests of local communities can be incorporated in ecosystem and biodiversity governance.
- The current best practice examples of ecosystem services and biodiversity governance and ways forward to safeguard the protection of ecosystem service provisioning in the long run.

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 concept of ecosystem services, and its critiques, discuss the different types of policy instruments at different governance levels, introduce the existing national and international legal frameworks for ecosystem and biodiversity conservation, discuss the challenges associated with payments for ecosystem payments, and their effective design, introduce the concept of

community co-management and private-public partnerships in ecosystem service provisioning, and provide an understanding of the different policy instruments available to govern ecosystems and protect biodiversity at multiple scales.

Onderwijsvorm

This course has 6 credits. This implies that there is a study load of 168 hours on students. The course has 32 contact hours; 7 lectures, 2 working sessions, 1 presentation session and 1 concluding session/wrap up. For each of the lectures, we selected 3 academic papers for you to study; in total 21 papers, plus the power points. In addition, we expect you to select an additional 4 peer-reviewed papers for your case study paper. The readings are provided as full papers and aim to give you a broad understanding of the issue concerning ecosystem and biodiversity governance as befits a master's programme. The structure of the lectures in class will help you identify the key questions on which you will be examined.

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 (which will become available December 2013. It will contain 21 academic papers. If you want to get an impression of the literature requirements please contact the coordinator for last year's study manual).

Aanbevolen voorkennis

Students are encouraged to also take course 468024 'Values of ecosystem services and biodiversity'.

Doelgroep

MSc students Environmental Resource management (doctoral students or other MSc students are also welcome: please contact the coördinator)

Overige informatie

Several guest lecturers will give presentations, like for example from the Initiative Sustainable Trade (IDH-on certification), IUCN (on community co-management), the Dutch Environmental agency (PBL- on legal frameworks for ecosystem protection) and the Dutch development bank (FMO- on financing biodiversity protection). Given the heavy study load, students are discouraged to register for more than one specialization course.

International Development Issues in the Context of Sustainable Development

Vakcode	AM_1029 ()
Periode	Ac. Jaar (september)
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. A. Kalfagianni
Examinator	dr. A. Kalfagianni

Docent(en)	dr. P.H. Pattberg, prof. dr. F.H.B. Biermann, dr. A. Kalfagianni, prof. dr. J. Gupta
Lesmethode(n)	Werkcollege
Niveau	500

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 first part of 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 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.

Inhoud vak

The course focuses 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.

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.

Onderwijsvorm

Lectures and debate, workshops

Dates of VU Workshops

- 16 September: What is development
- 14 October: New actors in development cooperation
- 4 November: Non-state actors and development
- 25 November: Urbanization and development
- 2 December: Environment and development
- 16 December: student presentations
- 20 December: final examination

Toetsvorm

The final mark of this course is composed of three parts:

1. A written exam, which counts for 50% of the course grade.
2. A paper of 2.000 words, which counts for 30% of the course grade. The students 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 and between academic and political perspectives on the issues.
3. A short summary in blog format of (one of) the SID lectures' central topics which will be later discussed in class, which counts for 20% of the course grade. In collaboration with SID one or more of the best student summaries will appear on the SID blog page (see <http://sid-nl.org/sidblog/>).

Active participation in the workshops and attendance of the SID lectures are obligatory. In order to pass, all parts should at least be marked with a 5.0 and the final score must be higher than a 5.5.

Literatuur

Textbooks and Reference Volumes

Desai and Potter. (2008). The Companion to Development Studies. Hodder

Journals

- World Development
- Journal of Development Studies
- Journal of International Development
- Development & Change
- European Journal of Development Research
- Studies in Comparative International Development
- Third World Quarterly
- Journal of Human Development and Capabilities

Major Sources for Policy Papers on Development

- World Bank
- OECD Development Assistance Committee
- Oxfam: <http://www.oxfam.org>
- The Bretton Woods Project: <http://www.brettonwoodsproject.org/>
- The Initiative for Policy Dialogue: <http://www0.gsb.columbia.edu/ipd>

Doelgroep

Aimed at Master's students with global, international and developmental interests. For more information please contact dr. Agni Kalfagianni (a.kalfagianni@vu.nl).

Overige informatie

Period: September-January, with one SID lecture per month on a Monday evening, 5-7 pm (see separate SID program). Accompanying VU lectures and workshops are all held as well on Monday evenings, 5.15 – 7.15 pm, room WN-M648 (except for Tuesday 4 November).

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:

agni.kalfagianni@vu.nl

Methods of Environment and Resource Management

Vakcode	AM_1135 ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. P.J. Ward
Examinator	dr. P.J. Ward
Lesmethode(n)	Werkcollege
Niveau	400

Doel vak

The objective of the course is to provide the students with an overview of relevant methods and techniques for environmental resource management and to teach them how to apply these methods. At the end of the course students should know which types of methods are available, for which problems they can be used and what the strengths and weaknesses of the methods are in practice.

Inhoud vak

This course provides an overview of the more technical tools that can be used to support environmental and resource management. For each class of tools an introduction is given, followed by a seminar or tutorial in which the tool is actually used. The students apply the tool to a (simplified) problem and reflect on the results.

This course includes the following six classes of tools:

1. Systems analysis and simulation: use of simulation software (STELLA);
2. Scenario analysis
3. Spatial analysis: use of Geographic Information Systems (ArcGIS);
4. Stakeholder analysis
5. Multicriteria analysis (MCA): use of decision support software (DEFINITE);
6. Valuation and cost-benefit analysis (CBA); use of CBA

Onderwijsvorm

This course provides an overview of the more technical tools that can be used to support environmental and resource management. For each class of tools an introduction is given, followed by a seminar or tutorial in which the tool is actually used. The students apply the tool to a

(simplified) problem and reflect on the results.

Toetsvorm

Exams

There are four lecture weeks with an exam on Friday in week 4. The exam includes sections on all six tools. According to the subjects selected in the first two weeks each student selects Systems Analysis OR Scenario Analysis, Spatial Analysis OR Stakeholder Analysis. CBA and MCA is included for all students. The total exam grade is calculated as the average of the four tool exams. Note that you do not have to pass each tool exam as long as your average is 5.5 or higher.

The exams (see time table for time and place) will be closed book examinations. , i.e. you will NOT be allowed to consult any course material during the examination. You can bring no calculator, no mobile phone, laptops, I-pads or other tablets. Material relevant for the examination can be found in the Reader on Blackboard. Subjects taught in lectures and practicals are also material for the exam. Example exams for all tools and their answers can be found with the course documents on Blackboard.

Resit

A resit will be organized in July. If you choose to do a resit you will have to do the whole exam again. You cannot resit only part of the exam.

Literatuur

See the study manual on BB

Modern Climate and Geo-ecosystems

Vakcode	AM_1124 ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. G.M. Ganssen
Examinator	dr. G.M. Ganssen
Lesmethode(n)	Excursie, Werkcollege
Niveau	400

Doel vak

In the first part the course gives an introduction of modern atmospheric and oceanic processes which form an important basics for the reconstruction of the climate of the past. Next to important basic parameters which trigger the modern circulation of both spheres, atmosphere and oceans, the main circulation patterns will be discussed together with the implications for the global climate.

In the second part the modern ocean changes and their implications for the geoecosystems will be discussed. Together, this will form the basic understanding of processes which govern changes in the geological past.

Inhoud vak

- the basic parameters and properties for atmospheric and ocean processes leading to the formation and circulation of air and water masses
- characterization of climatic regions of the world from the poles to the tropics

- special features of the climate systems like the monsoon, ENSO and NAO systems
- the effect of ocean changes on geoecosystems now and in the recent past

Onderwijsvorm

Lectures and workshops, literature reading, oral and written presentations by the students and discussing the results and quality of the presentation

Toetsvorm

Written exam after week 2 about the basics (50% of the grade)
oral and written presentation of a topic (second part of the course, 50% of the grade)

Literatuur

Lecture notes (powerpoints of the presentations by the teacher), selected papers and Ruddiman, W.F., 2013. Earth's Climate: past and future. W.H. Freeman and Company New York.

Vereiste voorkennis

Some basic knowledge of the climate system, interest in climate change

Doelgroep

Students from the geo and environmental study areas

Intekenprocedure

Subscription via BB

Modern Climate Systems

Vakcode	AM_450185 ()
Periode	Ac. Jaar (september), Periode 1
Credits	3.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. G.M. Ganssen
Examinator	dr. G.M. Ganssen
Docent(en)	dr. G.M. Ganssen
Lesmethode(n)	Werkcollege
Niveau	400

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. Knowledge of the modern climate processes forms the basis for understanding Climate Change today and in the past.

Knowledge to gain about:

- the basic parameters and properties of atmospheric and ocean examples
- processes leading to the formation and circulation of air and water

masses

- characterization of climatic regions of the world from the poles to the tropics
- special features of the climate systems like the monsoon, ENSO and NAO systems

Onderwijsvorm

Lectures and workshops, literature reading.

Toetsvorm

Written exam

Literatuur

Lecture notes, selected papers and Ruddiman, W.F., 2008. Earth's Climate: past and future. W.H. Freeman and Company New York.

Modern Geo-ecosystems

Vakcode	AM_450313 ()
Periode	Ac. Jaar (september), Periode 1
Credits	3.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. G.M. Ganssen
Examinator	dr. G.M. Ganssen
Docent(en)	dr. G.M. Ganssen
Lesmethode(n)	Werkcollege, Excursie
Niveau	400

Doel vak

To understand the interactions between the geo-, bio-, hydro- and atmosphere in a selected number of modern terrestrial and marine geo-ecosystems. Special focus is given on both the natural processes and the human impact during the Anthropocene.

Inhoud vak

Anthropogenic changes to the Earth's climate, land, oceans and biosphere are now so huge and rapid that the concept of a new geological epoch defined by the action of humans, the Anthropocene, is widely and seriously debated.

Knowledge to gain about:

- scale, magnitude and significance of modern environmental change especially in relation to Earth's geological history.

Onderwijsvorm

Lectures, literature study, student presentations (45 minutes, teaching each other by lecturing) and essay writing.

Toetsvorm

Oral presentation, written essay

Literatuur

Lecture notes, selected papers.

Research Project

Vakcode	AM_468017 ()
Periode	Ac. Jaar (september)
Credits	18.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	drs. M.I. Tromp Meesters
Examinator	drs. M.I. Tromp Meesters
Docent(en)	drs. M.I. Tromp Meesters
Lesmethode(n)	Werkcollege
Niveau	500

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 much as possible, and can be proposed by the students themselves or be proposed by the supervisors.

There are two options:

- Internal research project. A research placement at the Institute for Environmental Studies (IVM), or within the VU.
- 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.

Research Workshops

Vakcode	AM_1136 ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	prof. dr. F.H.B. Biermann
Examinator	prof. dr. F.H.B. Biermann
Lesmethode(n)	Werkcollege
Niveau	400

Sedimentary Environments and Climate Archives

Vakcode	AM_450330 ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. F.J.C. Peeters
Examinator	dr. F.J.C. Peeters
Docent(en)	dr. F.J.C. Peeters, dr. C. Kasse, dr. S.J.P. Bohncke, dr. M.A. Prins
Lesmethode(n)	Excursie, Werkcollege
Niveau	400

Doel vak

To learn and understand how environmental and 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 and eolian 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 and report of the field excursion to Zuid-Limburg.

Literatuur

Lecture notes, selected papers.

Aanbevolen voorkennis

Bachelor courses: Terrestrial environments (450097), Climate Science (450240);

Master courses: Modern Climate Systems (450185), Modern Geo-ecosystems

Doelgroep

Course is part of the Master program Earth Surface Processes, Climate and Archives; Master students Earth and Environmental Geoscience; Master students in Paleoclimatology.

Selected Issues: Global Environmental Governance

Vakcode	S_SIGEG ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Sociale Wetenschappen
Coördinator	dr. P.H. Pattberg
Examinator	dr. P.H. Pattberg
Docent(en)	dr. P.H. Pattberg
Lesmethode(n)	Werkgroep
Niveau	500

Doel vak

- To increase students' knowledge of major empirical developments in Global Environmental Governance;
- To train students in identifying the policy relevance of the results of political research as well as detecting pitfalls and shortcomings;
- To invite reflection on the policy relevance and strategic consequences of research;
- To develop students' academic writing skills.

Inhoud vak

This course introduces students to the current state of research within the field of global environmental governance. Global environmental change is one of the great challenges humankind is facing today. Humans

now influence almost all biological and physical systems of the planet. Scientists today see mounting evidence that the entire earth system now operates well outside the normal state exhibited over the past 500,000 years, and that human activity is generating change that extends well beyond natural variability – in some cases, alarmingly so – and at rates that continue to accelerate. The perennial question from a social science perspective is how to organize the co-evolution of societies and their surrounding environment, in other words, how to develop effective and equitable governance solutions for today's global problems. This course builds on Theories and Approaches: International Relations and Political Concepts and Processes by teaching students how to apply core concepts of political science to substantial issues in international studies. At the same time, students will be made aware of the current state of research within the field of global environmental governance. This knowledge will be useful in the upcoming workshop later in the program.

Governance refers to the phenomenon that many public functions increasingly seem to be assumed and carried out by actors other than the government actors of the nation-state. In particular, the course further investigates three profound transformation in global environmental governance: (1) the increasing diversity of agency (i.e. the observation that authority to govern is vested not only in governments and public actors but in a host of non-state actors as well); (2) the institutionalization of novel governance mechanisms and instruments beyond international agreements (e.g. private certification schemes in global forest politics); and (3), the increased fragmentation of global environmental governance into a number of functionally interlinked but increasingly conflictive policy domains (e.g. the potential overlap between climate change and biodiversity governance). For each type of empirical transformation discussed above, a selection of important examples will be analyzed. Students are encouraged to make their own contributions in the form of one essay that presents original research and one class presentation that critically discusses a concrete empirical example of global environmental governance.

Onderwijsvorm

Seminar

Toetsvorm

Written assignment (50%) + class participation (10%) + group presentation (40%)

Literatuur

We will use the following text book: Biermann, Frank, and Philipp Pattberg, editors (2012): Global Environmental Governance Reconsidered. Cambridge, MA: MIT Press.

A reading list will be made available via Blackboard.

Doelgroep

MSc students Political Science

Overige informatie

This course is compulsory for students in the track Global Environmental Governance and optional for students in the other Master tracks.

Sustainable Energy Analysis

Vakcode	AM_468018 ()
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Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	prof. dr. ir. R. Brouwer
Examinator	prof. dr. ir. R. Brouwer
Docent(en)	prof. dr. J.J.C. Bruggink, E. Papyrakis
Lesmethode(n)	Werkcollege, Hoorcollege
Niveau	400

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

25 hs for the Dragon's Den assignment and 195 hs for lectures.

Toetsvorm

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

Literatuur

Reader with open source literature

Sustainable Land Management

Vakcode	AM_1015 ()
Periode	Ac. Jaar (september), Periode 3
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	drs. W.A.M. Tuijp
Examinator	drs. W.A.M. Tuijp
Docent(en)	dr. W.R.S. Critchley
Lesmethode(n)	Werkcollege
Niveau	400

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 programs. Socio-economic factors including population/land tenure/gender/incentives/marketing and labeling. 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 (about 38 hours in total) 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

"Where the land is greener" WOCAT, Eds Liniger and Critchley, plus additional supporting literature.

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 former students:

"I think this course gives a good overview and helps students with a non environmental background to understand essential issues."

"Good job, keep on going! Continue to be part of the ERM programme."

"Whereas other courses focus on scientific dimension of environmental problems SLM is also about the human dimension of environmental solutions. It is one of the few courses that gives a positive perspective for practical solutions. Whereas other courses try to inject "knowledge" theoretical problems and solutions."

"The course was a great launch pad for my thesis research. "

"This should be a specialization track! Sustainable Land Management 2 would be very interesting and give students more time to learn about the topics."

For more information please contact Wendelien Tuyp (w.a.m.tuijp@vu.nl)

Theories and Approaches in International Relations

Vakcode	S_TAIR ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Faculteit der Sociale Wetenschappen
Coördinator	dr. P.H. Pattberg
Examinator	dr. P.H. Pattberg
Docent(en)	dr. P.H. Pattberg
Lesmethode(n)	Werkgroep, Hoorcollege
Niveau	400

Doel vak

Objectives and learning goals:

- To provide students with an 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 (increasing their reflexive knowledge of both the main traditions and of paradigmatic change);
- 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

Seminar. 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. The total amount of reading will be about 80 pages per session.

Toetsvorm

Participation, including three pieces of homework (30%) and one final essay (70%).

Literatuur

The course is based on Scott Burchill et al (2013). Theories of International Relations, 5th ed. London: Palgrave (to be bought). A reader will be made available.

Doelgroep

MSc Political Science students.

Value of Ecosystem Services

Vakcode	AM_468024 ()
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Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	dr. P.J.H. van Beukering
Examinator	dr. P.J.H. van Beukering
Docent(en)	dr. P.J.H. van Beukering
Lesmethode(n)	Hoorcollege
Niveau	400

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. 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. 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. Quantification and apportionment of ecosystem services and biodiversity are major challenges. This course aims to assess the importance of ecosystem services and biodiversity for nature, the economy and people.

Inhoud vak

The course focuses on an understanding of what specific services are provided by ecosystems, how these are linked to biodiversity. It attempts to remain close to the practicality of 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 are covered (e.g. wildlife, flora). Next to main and guest lectures and debate, the course contains a six-week case study carried out in groups of 3-4 students. The subjects addressed in this group assignment either come from real "clients" such as governmental and non-governmental organizations, or can also be developed by the students themselves. The main objective of the assignment is to apply the skills taught in the course in a real life example. More details of the assignment are provided below.

After having participated in this module, students should be able to answer the following questions:

1. How do ecosystems produce ecosystem services and how are ecosystems changing over time and space?
2. How does biodiversity relate to ecosystem services?
3. What services do ecosystems and biodiversity provide and how can these services be measured?
4. What is the social and economic importance of the ecosystem services and biodiversity and what drives these economic and cultural values?
5. What instruments are available to mobilize payments for ecosystem services necessary for sustainable management of ecosystems and biodiversity?
6. What is the role of ecosystem services in alleviating poverty?
7. How to conduct a rapid appraisal of ecosystem services taking into account the above-mentioned issues?

Onderwijsvorm

- A group case study presentation and a final report
- The course ends with a closed book exam
- The exam weighs 70%, the group assignment (presentation & final report) 30%
- Students must pass all (5.5 or higher)

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

The main written source is a book (i.e. Bouma and Van Beukering 2014) which is especially written for this specialization in Ecosystem Services, and which will be available as a hard copy in February 2015. Students will receive a digital copy of the relevant Chapters, free of costs.

Bouma, J. and P.J.H. van Beukering (2014). Ecosystem services: from concept to practice. Cambridge University Press (In Press).

In addition, several freely downloadable journal articles and papers are part of the reading material.

Vereiste voorkennis

Students do not require a specific disciplinary background, although affinity with ecology and economics is useful.

Doelgroep

Students with an interest in the link between the natural environment and society. This interest may vary widely, possibly including topics such as nature conservation, tourism, food production, poverty, international trade, education, and landscapes.

Overige informatie

The course is taught by Dr Pieter van Beukering and Prof Dr Peter Verburg (IVM-VU University)

Guest lectures are provided by:

- Dr Rudolf de Groot (Wageningen University)
- Dr Ben ten Brink (PBL, Netherlands)
- Dr Roel Slootweg (SEVS)
- Dr Mathew Parr (IUCN)

Water and Policy

Vakcode	AM_468023 ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	Fac. der Aard- en Levenswetenschappen
Coördinator	prof. dr. J.C.J.H. Aerts
Examinator	prof. dr. J.C.J.H. Aerts
Docent(en)	prof. dr. J.C.J.H. Aerts, drs. R. Lasage, prof. dr. ir. R. Brouwer, dr. D. Huitema, dr. H. de Moel, prof. dr. J. Gupta

Lesmethode(n)	Hoorcollege, Computerpracticum
Niveau	400

Doel vak

The objective of this course is to understand how water related processes such as floods and droughts influence our society and what role water management plays in addressing and tackling these issues. This course aims to provide students a multi-disciplinary understanding of water management, including the physical dimensions of the hydrological cycle and coastal processes, the policy, law and long term trends such as climate change and land use change. 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.

Key goals for students to reach at the end of the course are:

- To understand the complexity of various water related issues (e.g. scarcity, floods, and droughts) and to assess the economic and social impacts
- To learn what kind of measures can be taken to alleviate water related problems and what kind of positive and negative effect these measures have on different users.
- To be able to systematically approach a complex and integrated water related issue and properly interpret data and information about this issue.

Inhoud vak

Water managers see themselves confronted with a continuous stream of increasingly credible scientific information on the potential magnitude of population growth, economic activities and climate change that increase the risk related to the earth hydrological system. It is expected that floods and droughts will increasingly affect societies and economies and new approaches in water management are needed to deal with these challenges. Furthermore, developing adequate water policies that can be used in practice is a difficult issue and is the result of a complex and long-lasting process from the national through to the local level. In this process, the science of the water- and socio-economic systems can play an important role by supplying policy makers with answers on e.g. the socio-economic effects of floods and droughts. Uncertainty in future trends further puts new challenges to water management and risk based techniques can be helpful in dealing with these uncertainties. Finally, water management increasingly needs to cooperate with spatial planners, especially in large cities, to address increasing risk from storm surges and sea level rise.

Onderwijsvorm

This course consists of several sessions going into different subjects related to water management. These sessions will consist of lectures by the professors with interactive discussion; two practical assignments, and student presentations. Apart from these sessions, you will team up in pairs of two students to write papers on water related issues and adaptation in cities, which will be peer-reviewed by other students.

Activity Hours

1 Attending and contributing to sessions (12 times 3 hrs) 36 hours

2 Readings associated with lectures 28 hours

4 Paper: literature review (32 hours), writing (24 hours), peer review (8 hours) 64 hours

5 Exam preparation 40 hours

TOTAL 168 hours

Toetsvorm

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

Literatuur

The literature for this course consists of various academic papers and chapters. These papers will be published 3 days before the lecture

Doelgroep

MSc students Environment and Resource Management (ERM), MSc Hydrology; Earth Sciences and Economics(ESE).

Workshop in Global Environmental Governance

Vakcode	S_WGEG ()
Periode	Periode 4
Credits	12.0
Voertaal	Engels
Faculteit	Faculteit der Sociale Wetenschappen
Coördinator	prof. dr. F.H.B. Biermann
Examinator	prof. dr. F.H.B. Biermann
Docent(en)	prof. dr. F.H.B. Biermann, S.C. van der Hel BSc
Lesmethode(n)	Werkgroep
Niveau	600

Doel vak

To train students in critically evaluating political science research, in particular in the area of global environmental governance; To guide students in the process of designing theory-guided research projects, alone or in working groups; To train students in selecting and applying the appropriate methods and techniques of data collection and analysis to carry out research projects; To enhance the abilities of students in academic writing and reporting on research for discussion; To invite critical theoretical and normative reflection on the research results; To train students to work in small research teams.

Inhoud vak

In this workshop, students will be divided in working groups that focus on different themes relating to international (environmental) relations and global environmental governance, ranging from the effectiveness of different global governance architectures to questions of accountability, legitimacy, and justice. The workshop will build on introductory lectures; joint discussion sessions on key readings in international relations and global environmental governance; individual and team research that leads to review essays and to a longer essay (in the style of a journal article) on one of the themes; and class presentations and discussions of research findings. Students will be asked to critically evaluate the research of others (looking at contrasting examples of research); to develop own theory-guided or policy-oriented research designs jointly with fellow students in the area of global environmental governance; and to carry out that research in small groups as well as individually. Students can build upon this in developing a design for their Master's Thesis.

Onderwijsvorm

Tutorial. Students will work in small groups, and report on their work both orally and in writing.

Toetsvorm

Individual assignments and group work well as in-class participation.

Literatuur

Selected articles and books

Vereiste voorkennis

Participation in Selected Issues in Global Environmental Governance (S_SIGEG) is required.

Doelgroep

MSc students in political science and international relations.