



Spatial, Transport and Environmental Economics (MSc)

Vrije Universiteit Amsterdam - School of Business and Economics - M Spatial, Trans and Environmental Ec - 2017-2018

The Master in Spatial, Transport and Environmental Economics is a one-year programme designed for the economist with an interest in urban and regional, transport or environmental economics. It allows you to specialize in these three fields, but also offers the opportunity to combine courses from these fields.

To support successful participation in the master's programme in Spatial, Transport and Environmental Economics, we refresh knowledge of mathematics (derivatives, Lagrange multipliers and matrix algebra) and programming (econometrics and data management using software Stata) in the last week of August. Students with a valid VUnet ID can then get access to all of the course materials on Canvas.

The master's programme takes one year. The programme's study load is 60 credits.

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Master Spatial, Transport and Environmental Economics - Specialization Environmental Economics

Human activity is now the dominant influence on the Earth's climate and natural environment. The specialization Environmental Economics is about the economics of environmental quality, development and adoption of alternative energy sources, international competition and trade, global warming and climate change policies. It discusses why the management of the environment and natural resources cannot be left to the free market and how governments should intervene to reduce pollution and prevent overexploitation of resources. You will learn about models which are used to investigate the effects of climate change, to study different policy scenarios and to determine the social costs of carbon. We will discuss and apply empirical methods to value environmental services. Furthermore, you will learn why countries rich in natural resources (e.g., oil) often have such a disastrous economic performance.

Opleidingsdelen:

- [Master STREAM - Environmental Economics - Core courses](#)
- [Master STREAM - Environmental Economics - Elective courses](#)
- [Master STREAM - Optional](#)

Master STREAM - Environmental Economics - Core courses

Five courses plus a thesis is obligatory within this specialization.

Vakken:

Naam	Periode	Credits	Code
Applied Econometrics for Urban, Transport and Environmental Economics	Periode 1	6.0	E_STR_AEUTE
Economics of Climate Change	Periode 2	6.0	E_STR_ECC
Environmental Economics	Periode 4	6.0	E_STR_EEC
Microeconomics for Urban, Transport and Environmental Economics	Periode 1	6.0	E_STR_MEUTE
Research Project Spatial Economics	Periode 3	6.0	E_STR_RPSEC
Thesis	Ac. Jaar (september)	18.0	E_STR_THS

Master STREAM - Environmental Economics - Elective courses

Choose 2 courses from the list. For the specialization Environmental Economics, the following electives are recommended:

- Transport Economics
- Urban Economic Challenges and Policies

You also have the option to choose only one course from the list and a second course from another specialization within the master Spatial,

Transport and Environmental Economics.

Vakken:

Naam	Periode	Credits	Code
Empirical Transport Economics	Periode 4	6.0	E_STR_ETE
Geographic Information Systems	Periode 2	6.0	E_STR_GIS
Regional and Urban Economics	Periode 2	6.0	E_STR_RUE
Transport Economics	Periode 2	6.0	E_STR_TREC
Urban Economic Challenges and Policies	Periode 4	6.0	E_STR_UECP

Master STREAM - Optional

On top of the master's programme, you may opt for an Internship.

Vakken:

Naam	Periode	Credits	Code
Internship	Ac. Jaar (september)	0.0	E_STR_INT

Master Spatial, Transport and Environmental Economics - Specialization Transport Economics

The specialization Transport Economics focuses on the economics of transportation. We pay attention to road transport and pricing, aviation, public transport and maritime transport. We examine the economic consequences of a range of policies related to transport infrastructure improvements, road pricing, pricing of airports and the deregulation of public transport. We discuss and apply theoretical and empirical methods to determine the supply of and demand for transportation and to assess the usefulness of different policy options.

Opleidingsdelen:

- [Master STREAM - Transport Economics - Core courses](#)
- [Master STREAM - Transport Economics - Elective Courses](#)
- [Master STREAM - Optional](#)

Master STREAM - Transport Economics - Core courses

Five courses plus a thesis is obligatory within this specialization.

Vakken:

Naam	Periode	Credits	Code
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Applied Econometrics for Urban, Transport and Environmental Economics	Periode 1	6.0	E_STR_AEUTE
Empirical Transport Economics	Periode 4	6.0	E_STR_ETE
Microeconomics for Urban, Transport and Environmental Economics	Periode 1	6.0	E_STR_MEUTE
Research Project Spatial Economics	Periode 3	6.0	E_STR_RPSEC
Thesis	Ac. Jaar (september)	18.0	E_STR_THS
Transport Economics	Periode 2	6.0	E_STR_TREC

Master STREAM - Transport Economics - Elective Courses

Choose 2 courses from the list. For the specialization Transport Economics, the following electives are recommended:

- Regional and Urban Economics
- Airline Business

You also have the option to choose only one course from the list and a second course from another specialization within the master Spatial, Transport and Environmental Economics. In case you choose the recommended course Airline Business, you are not allowed to choose the courses Network Analysis and Real Estate Management.

Vakken:

Naam	Periode	Credits	Code
Airline Business	Periode 4	6.0	E_BA_AIRB
Economics of Climate Change	Periode 2	6.0	E_STR_ECC
Environmental Economics	Periode 4	6.0	E_STR_EEC
Geographic Information Systems	Periode 2	6.0	E_STR_GIS
Regional and Urban Economics	Periode 2	6.0	E_STR_RUE
Urban Economic Challenges and Policies	Periode 4	6.0	E_STR_UECP

Master STREAM - Optional

On top of the master's programme, you may opt for an Internship.

Vakken:

Naam	Periode	Credits	Code
Internship	Ac. Jaar (september)	0.0	E_STR_INT

Master Spatial, Transport and Environmental Economics - Specialization Urban and Regional Economics

The specialization Urban & Regional Economics is about the good and the bad of cities and regions from an economic perspective. For example, cities offer high wages, opportunities to find a spouse, and beautiful museums, but also pollution, congestion, crime, high housing prices. Hence, we focus on economic analysis of policy issues related to location decisions of firms and households, desirability of spatial agglomeration, spatial development and real estate markets. We will discuss and apply empirical methods to analyse policies in this field.

Opleidingsdelen:

- [Master STREAM - Urban and Regional Economics - Core courses](#)
- [Master STREAM - Urban and Regional Economics - Elective courses](#)
- [Master STREAM - Optional](#)

Master STREAM - Urban and Regional Economics - Core courses

Five courses plus a thesis is obligatory within this specialization.

Vakken:

Naam	Periode	Credits	Code
Applied Econometrics for Urban, Transport and Environmental Economics	Periode 1	6.0	E_STR_AEUTE
Microeconomics for Urban, Transport and Environmental Economics	Periode 1	6.0	E_STR_MEUTE
Regional and Urban Economics	Periode 2	6.0	E_STR_RUE
Research Project Spatial Economics	Periode 3	6.0	E_STR_RPSEC
Thesis	Ac. Jaar (september)	18.0	E_STR_THS
Urban Economic Challenges and Policies	Periode 4	6.0	E_STR_UECP

Master STREAM - Urban and Regional Economics - Elective courses

Choose 2 courses from the list. For the specialization Urban and Regional Economics, the following electives are recommended:

- Transport Economics
- Geographical Information Systems
- Empirical Transport Economics
- Environmental Economics

In addition, you may choose only 1 out of the 3 courses Network Analysis, Airline Business, and Real Estate Management.

You also have the option to choose only one course from the list and a second course from another specialization within the master Spatial, Transport and Environmental Economics.

Vakken:

Naam	Periode	Credits	Code
Airline Business	Periode 4	6.0	E_BA_AIRB
Economics of Climate Change	Periode 2	6.0	E_STR_ECC
Empirical Transport Economics	Periode 4	6.0	E_STR_ETE
Environmental Economics	Periode 4	6.0	E_STR_EEC
Geographic Information Systems	Periode 2	6.0	E_STR_GIS
Network Analysis	Periode 2	6.0	E_BA_NA
Real Estate Management	Periode 5	6.0	E_BA_REM
Transport Economics	Periode 2	6.0	E_STR_TREC

Master STREAM - Optional

On top of the master's programme, you may opt for an Internship.

Vakken:

Naam	Periode	Credits	Code
Internship	Ac. Jaar (september)	0.0	E_STR_INT

Airline Business

Vakcode	E_BA_AIRB (61452050)
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	dr. A.J.H. Pels
Examinator	dr. A.J.H. Pels
Docent(en)	dr. A.J.H. Pels, dr. M.G. Lijesen
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak

The aviation sector is a popular topic in the media. Airport noise, airport expansion, airport privatization, airline alliances, airline bankruptcies, new aircraft design etc. etc. frequently are the topic of heated debate. This course looks at recent developments in the airline industry from a scientific perspective. The deregulation of the aviation markets in 1978 (in the U. S.) and in the 1980s and 1990s (E. U.) led to some drastic changes in airline strategies and management styles. The origins and consequences of these changes are considered in this course.

Inhoud vak

Why did you pay more (or less) for your ticket than the person sitting next to you in the aircraft. Why do KLM and easyJet have different network types? How does competition from Emirates influence KLM and Schiphol? Why should we (or shouldn't we) open a secondary airport? By the end of this course, the student can answer such questions, and explain recent developments in the airline industry using basic economic knowledge on pricing, cost structures, and network design. Furthermore, the insights can be used to explain developments in other transportation sectors as well. Airline pricing, airline cost and network design are three important aspects that will be discussed throughout the course. The lectures specifically deal with the following topics:

- Airline markets
- Airline pricing
- Airline output and market structure
- Airline cost
- Network design
- Network competition
- Network management
- Revenue management
- Aviation policy

Onderwijsvorm

lectures

students need to choose two (out of four) tutorials. The topics for the tutorials are based on current policy problems. Students need to review relevant literature and prepare short presentations on the topic. In a boardroom like meeting, students discuss their findings with other students to come to a final decision.

Toetsvorm

Paper, written examination

Literatuur

A selection of articles will be announced in the study guide; lecture slides.

Vereiste voorkennis

The course 'Transport Economics and Management' is highly recommended. Students that did not follow this course have to contact the coordinators in advance.

Applied Econometrics for Urban, Transport and Environmental Economics

Vakcode	E_STR_AEUTE ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	dr. H.R.A. Koster
Examinator	dr. H.R.A. Koster
Lesmethode(n)	Hoorcollege, Werkgroep
Niveau	400

Doel vak

The main objective of this course is to provide an overview of econometric research methods in spatial economics and to teach you how to apply these methods to real-world data.

Inhoud vak

Public policies need to be evaluated in order to understand their effectiveness and correct validation of economic theory can only be achieved with empirical research. The main objective of this course is to provide an overview of econometric research methods in spatial economics and to teach you how to apply these methods to real-world data. After following this course, you will:

- have an advanced understanding of the mathematical and statistical concepts underlying regression analysis;
- understand the importance of and difficulties in estimating causal effects as opposed to correlations in spatial economics problems;
- know how to appropriately interpret regression results of various estimators and know which one to apply in particular situations, depending on (i) the nature of the data (cross-sectional / panel / qualitative data) and (ii) the task at hand (i.e., valuation of public policies, testing of economic theories or estimating parameters as derived from theory);
- understand and know how to apply techniques that are commonly in use in urban, regional, environmental and transport economics and policy: spatial econometrics; spatial interaction models, discrete choice models and quasi-experimental set-ups;
- be able to apply these methods independently to typical datasets in spatial economics and other domains (including labour economics and public economics) using the software package STATA.

Onderwijsvorm

Lectures (12) and tutorials (6)

Toetsvorm

Written examination (75 percent): some questions on the theoretical prerequisites but mainly interpretation of regression outputs and sketches of solution strategies for the estimation of particular parameters in well-defined situations.

Assignment (25 percent) in small groups: Assignments are to be handed in before the tutorials and discussed there. Some assignments relate to the derivation of theoretical propositions of the estimators and their properties, but the main focus is hands-on computer exercises applying the theoretical concepts to real-world data using the software package STATA and correct subsequent interpretation of the results.

Literatuur

Stock, J.H. and Watson, M.W. (2011). Introduction to econometrics, 3rd edition. :Upper Saddle River, NJ: Pearson Education.

Train, K. (2009). Discrete choice methods with simulation. Cambridge: Cambridge University Press. Chapters 2 and 3.

Gibbons, S., & Overman, H. G. (2012). Mostly Pointless Spatial Econometrics? *Journal of Regional Science*, 52(2), 172-191.

Angrist, J.D., Pischke, J.-D. (2009). Mostly Harmless Econometrics: An Empiricists Companion. Princeton: Princeton University Press. Chapters 1, 2, 3.1, 4.1, 5.1, 6.1, 8.1 and 8.2.

Except for Stock and Watson, the accompanying literature is downloadable from Canvas.

Aanbevolen voorkennis

An active knowledge of mathematical tools and econometric techniques is required. Please apply for the the Math and STATA refresher otherwise.

Overige informatie

Students are strongly(!) advised to follow the Math Refresher and Introduction to STATA courses that are given from August 26 to 30, during the last week before the courses start officially

Economics of Climate Change

Vakcode	E_STR_ECC ()
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	dr. S. Poelhekke
Examinator	dr. S. Poelhekke
Docent(en)	prof. dr. R.S.J. Tol, dr. S. Poelhekke
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

This course focuses on climate change: one of the greatest challenges of our time. What can the science of economics teach us about its causes and potential solutions? What are the costs and benefits of climate change? Should we tax carbon, cap-and-trade emission rights, or subsidize solar and wind power? Why is it so difficult to sign environmental agreements such as 'Kyoto' and 'Paris' despite the high stakes? Does trade harm the environment? Will our industry move abroad if we take a leading role and 'go it alone'?

After having completed this course, you will know the answers to the above questions and be able to enter into the economic policy debate well informed.

Moreover, you will:

- have a deep understanding of the fundamental difficulties and complexities of environmental policy making in an international context;
- have gained insights in the economics of international agreements and international trade;
- are able to apply to theory to cases such as climate change, acidification and ozone depletion;
- have sharpened your economic analysis in the group discussions and improved your presentations skills.

Inhoud vak

The course consists of lecturers teaching the state- of- the- art, and students giving presentations on seminal papers in the literature.

The lectures cover the following topics (provisional scheme)

- Introduction: Externalities and environmental policy
- Economic impacts of climate change
- Climate change policy making: instruments and costs
- The economics of acidification and ozone depletion
- Trade the environment: pollution havens versus factor endowments
- International environmental agreements

The first eight lectures are on the economics of climate change and climate policy, and also on the problems of acidification and ozone depletion. The following subjects are analysed. What is climate change, and what are its causes and consequences? What are the economic impacts of climate change? What are the costs of emission reduction? How can emission reductions be achieved? What lessons do acidification and ozone policy hold for climate policy? What is optimal and equitable climate policy? How likely is this in reality? Are there effective and acceptable alternatives to optimal climate policy?

The last six classes are on the relationship between trade and the environment. Common wisdom is that trade is the source of many environmental problems. One of the main reasons for this is that governments are afraid that domestic environmental policies will reduce the home economy's international competitiveness and hence environmental policies are set too lax. In the first four lectures we analyze to what extent this fear is correct, both theoretically and empirically. We compare how the trade-off between international competitiveness and the environment depends on the type of pollutant (local pollutants such as PM10, or transboundary pollutants, such as SO₂) as well as on the size of the domestic economy. In lectures 5 and 6 we turn to the issue of international agreements. Writing down a protocol which requires countries to reduce their emissions of CO₂ or SO₂ is easy (see for example the Kyoto Protocol), but what are the incentives for countries to actually join the coalition? And what is the role of trade sanctions therein?

Toetsvorm

essay
presentations
take home exam

Literatuur

Books:

- Perman et al., Natural Resource and Environmental Economics, Addison Wesley, 4th edition, 2011.
- Richard Tol, Climate Economics: Economic Analysis of Climate, Climate Change and Climate Policy, Edward Elgar Publishing, 29 aug. 2014
- 208 pagina's
- Copeland and Taylor, Trade and the Environment, Princeton University Press, 2003

Articles (tbd):

- Nordhaus, William D & Yang, Zili, 1996. "A Regional Dynamic General-Equilibrium Model of Alternative Climate-Change Strategies," American Economic Review, vol. 86(4), pages 741-65.
- Hoel, Michael & Shapiro, Perry, 2003. "Population mobility and transboundary environmental problems," Journal of Public Economics, Elsevier, vol. 87(5-6), pages 1013-1024, May.
- Scott Barrett, Self-Enforcing International Environmental

Agreements, Oxford Economic Papers , New Series, Vol. 46, Special Issue on Environmental Economics (Oct., 1994), pp. 878-894.

- Santiago J. Rubio & Alistair Ulph, 2006. "Self-enforcing international environmental agreements revisited," Oxford Economic Papers, Oxford University Press, vol. 58(2), pages 233-263, April.
- de Zeeuw, Aart, 2008. "Dynamic effects on the stability of international environmental agreements," Journal of Environmental Economics and Management, Elsevier, vol. 55(2), pages 163-174, March.
- Levinson, Arik. 2009. "Technology, International Trade, and Pollution from US Manufacturing." American Economic Review, 99(5): 2177-92.
- Wolfgang Keller and Arik Levinson, "Pollution Abatement Costs and Foreign Direct Investment Inflows to U.S. States", The Review of Economics and Statistics, 2002, vol. 84, issue 4, pages 691-703.
- Steven Poelhekke and Frederick van der Ploeg, "Green havens and pollution havens", The World Economy, forthcoming.

Vereiste voorkennis

Microeconomics.

Empirical Transport Economics

Vakcode	E_STR_ETE ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	prof. dr. J.N. van Ommeren
Examinator	prof. dr. J.N. van Ommeren
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

This course aims to familiarize students with applied empirical transport research and how to interpret recent applied work to evaluate important transport policies. The course consists of lectures, interesting home assignments and tutorials where assignments will be discussed. In the lectures, we explain recent developments in empirical strategies in transport research that are theoretically founded and which help you to examine transport policies from a welfare perspective. The lectures are based on a book and recently published articles. Active participation of the students is vital and class discussions will be an important part of all lectures. Home assignments induce you to engage in econometric analysis of (real) transport data, and to interpret the policy implications of data analysed. During the tutorials we will discuss the results.

After the course, you will be able to:

- Perform applied/empirical research in transport economics in a wide range of settings
- Critically evaluate research done by others
- Evaluate the effect of policies and understand the theoretical underpinning behind this

Inhoud vak

This course covers key topics in contemporary empirical transport research and policies. Key topics discussed (and applied in the assignments) include:

- applied discrete choice demand analysis (e.g. to estimate value of time)
- applied panel data analyses (e.g. to estimate variation in travel time as a function of congestion)
- applied instrumental variables approach (to estimate demand functions for inland shipping in order to determine the welfare effects of low water in the river Rhine)
- analysis of (car/airport) congestion, global warming and other externalities
- analyse several empirical studies of parking policy (e.g., cruising; taxation of employer parking)
- understand company car tax policy (within the OECD) and the effect on welfare
- competition and market power (of several types of transport companies)
- regulation and deregulation (of transport companies)
- transport investment and pricing
- improve your understanding of location decisions of households and the relationship with commuting
- competitive tendering in transport: for example, we discuss tendering policies that determine which companies will build or operate our (road) infrastructure and show recent evidence how competitive tendering of public transport reduces costs.

Onderwijsvorm

Lectures, tutorials and assignments.

Toetsvorm

Assignments 30%,

Written examination 70%

Written examination: at least a 5.0

Literatuur

- Train, K., 2009. Discrete Choice Methods with Simulation, 2nd edition. Cambridge University Press, Cambridge. Freely downloadable from <http://elsa.berkeley.edu/books/choice2.html>
- many empirical articles

Aanbevolen voorkennis

Transport Economics is recommended

Environmental Economics

Vakcode	E_STR_EEC (60442040)
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	prof. dr. C. Fischer
Examinator	prof. dr. C. Fischer
Docent(en)	dr. G.C. van der Meijden
Lesmethode(n)	Hoorcollege

Doel vak

The course aims to teach students why natural resource management should not be left to the free market. After following this course, students are able to characterize several types of market failure and to explain how each of these causes environmental problems, such as overexploitation of natural resources and air pollution. Moreover, students will be able to explain which policy instruments can be used by the government to tackle environmental problems that arise in a market economy. Students will also learn how to use stated and revealed preference methods to value the environment. Finally, students will be taught how renewable resources (such as forestry and fisheries), and non-renewable resources (such as fossil fuels) should optimally be exploited from a social welfare perspective and how the optimal exploitation differs from the exploitation in a market equilibrium. There is also a lecture on the economic impact of natural resources, and whether these are a curse or a blessing.

The course consists of lectures, homework assignments, tutorials, and presentation/discussion sessions. The lectures are aimed at developing a thorough understanding of key economic, environmental and ethical aspects of environmental problems, and of the link between theory, methods and empirical analysis. The goal of the homework assignments that will be discussed during the tutorials is to practice the use of modern economic methods to analyse and solve problems in the field of environmental economics. The presentation/discussion sessions are intended to improve the participants' economic reasoning and communication skills. In these sessions, students will present a journal article in class, and they are expected to participate in a group discussion afterwards.

After following this course, you:

- can explain why, and under which conditions, the free market does not result in an efficient outcome.
- are capable of showing how externalities can be 'internalized' by using market instruments, like Pigouvian taxes, quotas and tradable permits, etc.
- are able to advise environmental policy makers on which policy instruments to use under different circumstances in order to correct the market outcome
- use stated and revealed preference methods to attach a monetary value to environmental services
- can explain how non-renewable resources like fossil fuels, are exploited in a market economy and how the exploitation differs from the optimum
- can show how renewable resources, like fishery and forestry, are exploited in a market economy and how the exploitation differs from the social optimum
- are able to describe and explain the optimal climate policy in the global economy and to explain how sub-optimal climate policies can lead to a 'Green Paradox', in the sense that the problem of climate change is aggravated instead of diminished upon the introduction of those policies
- are able to describe the most important interactions between the economy and the environment, and their relationship with sustainable development.
- are able to explain why resource rich countries often suffer from low rates of economic growth, and what they can do to avoid this so-called

Resource Curse.

- are able to work with simple mathematical models to analyse the effects of environmental policy and to determine the time profile of renewable and non-renewable resources, both in the optimum and in the market equilibrium
- have improved your presentation and discussion skills

Inhoud vak

The following topics will be dealt with in the course:

- interaction between the economy and the environment
- environmental policy: Pigouvian taxes, quotas, and tradable emission permits
- non-renewable resource use: scarcity and market structure
- renewable resource use: fishery and forestry
- non-renewable resource use and climate change
- climate policy and the 'Green Paradox'
- sustainable development
- welfare economics and market failures
- resource-rich economies and the 'Resource Curse'
- theory and methods for environmental valuation

The topics for the group discussions and student presentations can be chosen by the participants. They should be based on articles published in scientific journals.

Onderwijsvorm

Lectures, assignments, student presentations, and group discussions.

Toetsvorm

Written exam (60%), assignments (30%), and presentation/participation (10%). Passing the course is conditional on the exam grade being 5.0 or higher.

Literatuur

To be announced.

Aanbevolen voorkennis

Advanced microeconomics.

Geographic Information Systems

Vakcode	E_STR_GIS (60452030)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	dr. E. Koomen
Examinator	dr. E. Koomen
Docent(en)	dr. E. Koomen, dr. E. Simao Da Graca Dias
Lesmethode(n)	Hoorcollege, Computerpracticum
Niveau	400

Doel vak

For economists, the spatial-economic market model of Von Thünen (1780-1850) was a major breakthrough in their spatial thinking. During this course, we will see how this spatial thinking has evolved from Von

Thünen's time to the world of today.

The aim of this course is to make students understand the importance of space and distance as key factors in applied research, in particular in the fields of regional, urban, transport and environmental economics. The students will be introduced into the theoretical and methodological issues of GIScience and GISystems and they will be trained in how GIS can assist and extend research.

At the end of the course students:

- can carry out a spatially explicit analysis in which they apply relevant theories and concepts as discussed during the lectures
- know how to use GIS software and tools in their analysis
- will be able to explain what GIS is and how it can be used in business processes, government policy planning and scientific analysis

Inhoud vak

This course introduces students to the role of location in (spatial) economics. It focuses on the informational value of location and on how to use the factor location when doing analysis.

The following list of core issues will be discussed during the lectures and practiced with during the tutorial/practical hours and the GIS assignment:

- introduction to GIS (data types and data storage)
- collecting spatial data
- setting up a spatial analysis
- spatial analysis methods
- visualisation of spatial data

Onderwijsvorm

The course consists of a combination of lectures in which the core concepts are explained and assignments in which the spatial concepts are applied in practice using GIS- software and spatial data. Active participation of the students is expected in all lectures and practical assignments.

Toetsvorm

Written interim examination: 50 percent

Assignments: 50 percent

(Each to be completed with a minimum score of 5.0)

Literatuur

Academic papers provided through the digital learning environment.

Doelgroep

This is an elective course in the STREEM programme that is also open to students from other Master programmes who have an interest in the analysis of spatial patterns and processes.

The course provides links with the STREEM core courses Regional and Urban Economics (period 2), Transport Economics and Environmental Economics (period 4), and with the course Advanced Methods (period 1) as it includes spatial data research performed in these domains during the lectures and using spatial data from these fields during the tutorials.

Internship

Vakcode	E_STR_INT ()
Periode	Ac. Jaar (september)

Credits	0.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	prof. dr. J.N. van Ommeren
Examinator	prof. dr. J.N. van Ommeren

Microeconomics for Urban, Transport and Environmental Economics

Vakcode	E_STR_MEUTE ()
Periode	Periode 1
Credits	6.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	dr. A.J.H. Pels
Examinator	dr. A.J.H. Pels
Docent(en)	dr. A.J.H. Pels, prof. dr. E.T. Verhoef, prof. dr. J.L. Moraga Gonzalez, dr. C.L. Behrens
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak

The aim of this course is to equip the student with the microeconomic toolbox that is required to be able to structure and analyze economic and policy questions in the fields of urban, regional, transport and environmental economics from the economic viewpoint. These tools are indispensable to successfully follow the remainder of the program.

By the end of the course the student will:

- be familiar with the main microeconomics principles, and know how to analyze microeconomic problems using mathematical tools
- be familiar with the theory of spatial competition
- be familiar with the theory of cost functions for network sectors
- know the main concepts of consumer choice and firm behavior, and their relevance for economic and welfare analysis
- be able to evaluate economic policy with regard to efficiency, and know of the limitations to economic policy
- know possibilities and limitations in applied policy fields, such as welfare analysis, regulation of industry, cost benefit analysis, and policy coordination and competition

Inhoud vak

The first three weeks the lectures coincide with the lectures of Advanced Microeconomics, code E_EC_AMIEC. We refer to the description of that course for more information.

The last three weeks differ between the two courses. This course (Microeconomics for Urban Transport and Environmental Economics) will deal with topics that are of special interest in urban, regional, environmental and transport economics and policy.

The following topics are addressed:

- Applied welfare analysis

- Cost Benefit Analysis
- Cost functions: economies of scale, scope, density and networks
- Market structures in network sectors
- Product and price differentiation (including spatial competition)
- Market failures and public policy
- Government failures: Policy coordination and competition

Onderwijsvorm

There will be two lectures each week in which the emphasis is on the teacher's explanation of the essential material. Active participation of the students is, however, expected in all lectures: class discussions and making small exercises to better comprehend the material will be part of all lectures. The tutorials will be devoted to discussion of problem sets and exercises, where active participation of students is again required.

Toetsvorm

take- home interim examination and written interim examination

Vereiste voorkennis

Participants are expected to have a basic understanding of microeconomic theory (bachelor level, e. g. Varian's Intermediate Microeconomics).

Aanbevolen voorkennis

Students wishing to refresh their math skills are encouraged to attend the course "Math Refresher".

For more information about Math Refresher, see Canvas.

Network Analysis

Vakcode	E_BA_NA (61422100)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	dr. T. de Graaff
Examinator	dr. T. de Graaff
Docent(en)	dr. T. de Graaff
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak

Firms and consumers typically operate in various types of networks. These can be both physical networks (such as transport and communication networks) and non-physical networks (such as information networks). The main objective of this course is to give you a basic understanding of economic network theory, which enables you to identify the relevance and consequences of networks for firms as well as for consumers.

After following this course, you:

- have a basic understanding of the fundamental economic principles underlying applied network theory;
- understand the role and behavior of various agents (government, consumers and firms) within network sectors;
- are able to understand the economic impacts that various forms of

networks (i.e., transport networks, consumer networks, information networks, clustering of firms) have on the nature, size and behavior of firms;

- are able to determine optimal firm and consumer behavior conditional on the nature of the network;
- and have used applied network theory with (stylized) cases studies, in order to determine optimal firm or consumer behavior in combination with the nature of the network.

Inhoud vak

The economic principles behind networks and their consequences for both firms and consumers form the backbone of this course. The lectures specifically deal with the following topics:

- basic applied network theory;
- government interventions in network sectors;
- clustering and spill-over effects between firms;
- network sectors (e.g. telecom, transportation, energy);
- information and communication goods;
- switching costs and lock-in effects;
- network externalities.

In the working groups we will make use of the software package R, as it is capable of optimizing, analysing and plotting network structures (amongst many other things). A basic understanding of R is recommended but not necessary, as tutorials will be provided and working groups typically constitute of in-class hands-on assignments as well.

Onderwijsvorm

Lectures and working groups concentrate on the application of network theory on stylized case studies.

Toetsvorm

Written interim examination (75%) and assignments (25%)

Literatuur

- Syllabus
- Selected papers

Vereiste voorkennis

Transport Economics and Management (or knowledge of microeconomics at a bachelor level)

Real Estate Management

Vakcode	E_BA_REM (61452040)
Periode	Periode 5
Credits	6.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	prof. dr. J. Rouwendal
Examinator	prof. dr. J. Rouwendal
Docent(en)	prof. dr. J. Rouwendal, dr. F. Hamelink
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

The course provides an introduction to the understanding and the analysis of real estate markets and the investment alternatives available to both debt and equity investors. A large part of the focus will be on residential real estate. Students study both the owner occupied and rental markets and pay particular attention to financial aspects, in particular the mortgage market. The secondary market for mortgages, where institutional investors invest in pools of mortgages, is analysed in detail, in particular in light of the recent financial crisis. The last part of the course deals with other forms of real estate that institutional investors may invest in. This part will cover other property types (offices, commercial real estate, etc.) and investment vehicles, such as REITS. Although the course takes an international perspective, special attention is given to the Dutch situation.

Inhoud vak

Students study the characteristics of mortgage loans used by households to finance the purchase of a house, the functioning of the Dutch housing market including the role of policy interventions (notably mortgage interest deductibility and spatial planning), and the role of housing corporations. The secondary market for debt related to this financing is analysed with a focus on the various instruments (such as CDOs and CMOs) that have played an important role in the current financial crisis. Finally, students also look at the other side of the financing of real estate, namely, students take the perspective from an (institutional) investor, such as a pension fund, who considers real estate as one of many available asset classes. Students will study the main characteristics in terms of risk and returns of the different forms of real estate available to the investor (such as investing in mortgage pools, investing in buildings, securitised real estate, etc.), as well as by property type (such as residential versus commercial real estate). After following this course, students should be able to understand:

- the main characteristics of the most popular types of mortgage loans;
- the pros and cons of fixed rate and adjustable rate mortgages;
- the impact of fiscal measures on mortgage payments;
- the role of the housing corporations on the Dutch rental housing market;
- the importance of the secondary market in mortgages, as well as the available instruments for institutional investors such as pension funds;
- the risk and returns characteristics of the main investment vehicles in real estate available to an institutional investor.

Real Estate Management is a joint effort of the departments of Spatial Economics and Finance.

Onderwijsvorm

Lectures, including a guest lecture by a real estate specialist.

Toetsvorm

Written examination. Duration 2 h and 45 min. Open questions. No interim results.

Literatuur

- Baum, A.E. & Hartzell, D. (2011). Global Property Investment: Strategies, Structures, Decisions. Wiley-Blackwell, ISBN: 978-1-4443-3528-6, Paperback, 576 pages;
- additional course material, mainly academic papers, that will be provided on Canvas.

Regional and Urban Economics

Vakcode	E_STR_RUE (60442140)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	prof. dr. H.L.F. de Groot
Examinator	prof. dr. H.L.F. de Groot
Docent(en)	prof. dr. H.L.F. de Groot, prof. dr. J. Rouwendal
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

The aim of this course is to provide students with an advanced introduction in the field of regional and urban economics. Students learn the theoretical and empirical methods applied in the field, and get a good understanding of the fundamental questions that are addressed in the field and the current state of affairs in the literature. They are trained to critically read and properly understand contributions in the leading journals in the field. At a more specific level, after having taken this course, students have a good understanding of the New Economic Geography Model, are familiar with the theoretical foundations of agglomeration economies and their empirical relevance, understand the theoretical foundations of and can apply spatial interaction modelling, are familiar with regional growth theories, understand the function of regional labour and housing markets, and have a good understanding of the determinants of urban structures.

Inhoud vak

This course covers advanced topics in theoretical and empirical research on regional and urban economics. Key issues are location and potential reasons for clustering of economic activity, spatial interaction (migration, trade, FDI and commuting), patterns of regional economic convergence and divergence, the role of geographic factors in explaining regional economic growth performance, the impact of (spatial) externalities of knowledge production, urban size and growth, urban land use, housing markets and the functioning of regional labour markets. The topics are addressed from a theoretical as well as an empirical perspective.

Onderwijsvorm

Lectures and Tutorials

Toetsvorm

Written exam (70 percent; individual assessment) and Assignments (30 percent; group assessment). A minimum grade of 5.0 for the exam is required.

Literatuur

- Brakman, S., J.H. Garretsen and C. van Marrewijk (2009): The New Introduction to Geographical Economics, Cambridge University Press, Cambridge.
- Ciccone, A. and R.E. Hall (1996): 'Productivity and the Density of Economic Activity', American Economic Review, 86, pp. 54-70.
- Gallup, J.L., J.D. Sachs and A.D. Mellinger (1999): 'Geography and Economic Development', International Regional Science Review, 22, pp. 179-232.
- Glaeser, E.L. and M.E. Kahn (2003): 'Sprawl and Urban Growth', in: J.V. Henderson and J.-F. Thisse (eds), Handbook of Urban and Regional Economics, Volume 4, Chapter 56, Elsevier, Amsterdam.
- Glaeser, E.L., H.D. Kallal, J.A. Scheinkman and A. Shleifer (1992): 'Growth in Cities', Journal of Political Economy, 100, pp. 1126-1151.
- Krugman, P. (1991): 'History and Industry Location: The Case of the US Manufacturing Belt', American Economic Review, 81, pp. 80-83.

Research Project Spatial Economics

Vakcode	E_STR_RPSEC (60432070)
Periode	Periode 3
Credits	6.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	dr. M.G. Lijesen
Examinator	dr. M.G. Lijesen
Docent(en)	prof. dr. H.L.F. de Groot
Lesmethode(n)	Werkgroep
Niveau	400

Doel vak

The ultimate goal of this course is to strengthen essential practical skills that characterize a good economist. One of the learning objectives of the Research Project is to provide you with hands-on experience on how to conduct a literature search and how to properly report on it. These are skills for which there are no standard recipes and can only be 'learned by doing'. At a lower, more pragmatic level, another goal is to allow you to make a head start with your Master's Thesis.

After following this course, you:

- are able to master a certain field of literature
- can identify the relative contributions of different articles to this field
- can identify remaining blind spots in the field that provide fertile soil for further research
- have the ability to present this knowledge in a structured way, both as a written report and in the form of an oral presentation

Inhoud vak

A critical attitude towards scientific papers is essential for a professional economist. During this research project, you are asked to

identify a topic and review a coherent set of around 10 key scientific papers (approximately 250 pages) around this topic. You formulate a research question that allows you to reflect on the papers and put them into perspective. You write a critical and coherent evaluation (of around 10 pages in normal print) in which you present the essence of the papers studied, discuss the relatively strong and weak aspects of the different papers, where relevant compare and confront the different insights from the different papers with respect to the research question, and identify issues for possible further analysis. The evaluation should be written in a paper format, viz. it should contain an introduction with a clear problem statement, a proper structure, a clear and well- founded conclusion, list of references, etc.

Onderwijsvorm

Group meetings with presentations. Students will be assigned the role of discussant of one fellow student during the process of the research project. These group meetings are complementary to the daily supervision of each student.

Toetsvorm

The examination consists of a written report and an oral presentation of your results. The report will be graded by your supervisor and a second reader. The main criteria in the evaluation relate to the problem statement, your review and analysis of the literature, your conclusion and discussion, as well as the structure and design of your report, your oral presentation and the degree of independence in working.

Literatuur

No required literature. Suggested literature:

- Hart, Chris, Doing a literature review: releasing the social science research imagination. Sage: LA, London 2008, ISBN 978 0 7619 5975 5.
- Brett Davies, Martin: Doing a succesful research project: using qualitative or quantitative methods. Palgrave MacMillan: New York, 2007, ISBN 1 4039 9379 3.
- Hall, G.M. (ed.) How to Write a Paper. BMJ Books, London, 2003, ISBN 0 7279 1728 5.

Thesis

Vakcode	E_STR_THS ()
Periode	Ac. Jaar (september)
Credits	18.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	dr. M.G. Lijesen
Examinator	dr. M.G. Lijesen
Lesmethode(n)	Werkgroep
Niveau	500

Inhoud vak

The MSc thesis finalizes your MSc program and provides you with an opportunity to apply what you have learned. In the period after your graduation, your thesis is also acts as a showcase of your abilities.

As you are graduating as a master of science, your thesis should show your ability to set up and conduct research, as well as report about it. Your thesis can either take the form of a report or a scientific paper. The latter is more challenging, and would provide a good start for a submission to a scientific journal. The choice between these forms is yours, but it would be wise to discuss it with your supervisor

Transport Economics

Vakcode	E_STR_TREC (60432050)
Periode	Periode 2
Credits	6.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	dr. A.J.H. Pels
Examinator	dr. A.J.H. Pels
Docent(en)	dr. A.J.H. Pels, dr. V.A.C. van den Berg
Lesmethode(n)	Hoorcollege, Werkcollege
Niveau	400

Doel vak

The aim of this course is to provide students with an advanced knowledge of contemporary transport economics, considering both intra-city transport (e.g. congested road traffic, urban transit) and inter-city transport (notably aviation). Students

- learn theoretical and empirical methods applied in the field of transport economics and in related fields, such as transport planning.
 - get a good understanding of the fundamental policy questions that are addressed in the field, and the methods with which these are addressed.
 - learn the current state of affairs in the literature.
- are trained to critically read and properly understand contributions in the leading journals in the field.

Inhoud vak

This course covers advanced topics in theoretical and empirical research on urban transport economics. Key issues are value of time and reliability; cost functions and scale economies for various modes; congestion analysis in static and dynamic formulations; network equilibrium and optimum for deterministic and stochastic network models; first-best and second-best pricing in static and dynamic networks; investment analysis under first-best and second-best pricing; industrial organization aspects of intra-city (e.g. roads and transit) and inter-city (e.g. airports and airlines) transport; public transport and maritime topics. The topics are addressed from a theoretical as well as an empirical perspective.

Toetsvorm

written interim examination: 70 percent
 assignments: 30 percent (paper review tutorial 10 percent, network optimization tutorial 10 percent, methods tutorial 10 percent)

Literatuur

- Small, K.A. and E.T. Verhoef, The Economics of Urban Transportation. Routledge, 2007.

- Additional literature for more specialized topics will be announced at the start of the course.

Aanbevolen voorkennis

Microeconomics for urban, transport and environment economics or a similar course

Urban Economic Challenges and Policies

Vakcode	E_STR_UECP ()
Periode	Periode 4
Credits	6.0
Voertaal	Engels
Faculteit	School of Business and Economics
Coördinator	prof. dr. J. Rouwendal
Examinator	prof. dr. J. Rouwendal
Lesmethode(n)	Hoorcollege
Niveau	400

Doel vak

The aim of this course is to introduce the students to applications of urban economics to policy-relevant issues. After taking this course, students should be able to judge the strengths and weaknesses of using various economic tools and methods in concrete policy situations.

Inhoud vak

In the course a number of relevant urban economics issues are analyzed using state-of-the art methods of urban economic analysis. The list is partly determined in a brainstorm session in which students are asked to suggest relevant topics. Subjects discussed include the current state-of-the art practice of hedonic price method for the valuation of non-market goods, the application of residential sorting models to urban policy questions, the study of social interactions (segregation, gentrification) in an urban context, clustering of firms within cities and the spatial structure of contemporary cities. Attention is paid to welfare economic issues (needed for policy evaluation), and econometric methods (needed for appropriate analysis of causal relationships). Guest lectures provide a bridge between academic and policy-induced research. Towards the end of the course students write a short essay in which they propose appropriate policy measures to deal with a relevant urban economic issue.

Onderwijsvorm

Lectures, guest lectures and tutorials

Toetsvorm

Written exam (70%) and 3 assignments (3x10%)

Literatuur

Scientific papers and lecture notes

Aanbevolen voorkennis

