UE10 Algebra refresher

Course title - Intitulé du cours	UE10 Algebra refresher
Level / Semester - Niveau /semestre	M2 / S1
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	BLANCHET ADRIEN
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	15
TA Hours - Volume horaire TD	
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	Anglais

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

email: Adrien.Blanchet@ut-capitole.fr

office: MF213

office hours: On Tuesday 2 PM - 3:30

Course's Objectives - Objectifs du cours :

This Algebra refresher course is dedicated to an overview of all the notions of Algebra which are requested to attend the Master in TSE. These notions are supposed to be known by the students. The lectures will consist in a quick reminder with only a few proof rather than a proper lecture. References to classical books will be provided during the lectures. Exercises will be provided to the students together with a few corrections in order to review the different methods wchch will eb used in the sequel of the year.

Chapter 1: vector spaces

sub-vector spaces, basis, change of basis, kernel, image, rank-nullity theorem, linear applications with applications to the resolution of linear systems

Chapter 2: reduction of endomorphism

determinant, diagonalisation, Jordan's trigonalisation, Cayley-Hamilton's theorem, application to the power and exponential of a matrix

Chapter 3: Euclidean spaces

quadratic form, Gauss' reduction, scalar product, Cauchy-Schwarz inequality, orthogonal basis, orthogonal group

Chapter 4: Projection

projection on a sub-vector space, orthogonal projection, distance to a sub-vector space, separation theorem

Prerequisites - Pré requis :

All the notions stated above.

Practical information about the sessions - Modalités pratiques de gestion du cours :

No laptop, no tablets, no phone.

The students are supposed to be on time an to come regularly.

The above outline is the planned lecture but it can easily be changed to fit the students' requests. This will be discussed in class

Grading system - Modalités d'évaluation :

No grade.

Bibliography/references - Bibliographie/références :

Any lecture of linear algebra.

Green Cost Benefits Analysis

Course title - Intitulé du cours	Green Cost Benefits Analysis
Level / Semester - Niveau /semestre	M2 / Semestre 1
School - Composante	TSE
Teacher - Enseignant responsable	TREICH NICOLAS
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	
TP Hours - Volume horaire TP	
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	Anglais

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

Nicolas Treich ntreich@toulouse.inra.fr MS 213 Preferred interaction: during the break of the class, and by email.

Course's Objectives - Objectifs du cours :

Course description: The main objective of the class is to provide students with a presentation of the central concepts used in benefit cost analysis (BCA). BCA is the main economic method to evaluate a public policy, and is largely used in public institutions and private organizations worldwide. The course is policy oriented, and the notions will be presented intuitively with the help of real world examples. The first part of the class is a general introduction to BCA (e.g., to the notion of opportunity cost, or that of willingness to pay). The second part considers more advanced topics (e.g., the treatment of uncertainty or equity in BCA), and the last part is based on students' presentations of case studies. The class is complementary to other classes taught at TSE including classes on public economics, policy evaluation and environmental evaluation. The teaching method is based on class discussions, that is, the course is interactive, and active oral participation from students is strongly encouraged. The slides will be distributed in advance so that students can prepare themselves to the class

Prerequisites - Pré requis :

No prerequisites.

Practical information about the sessions - Modalités pratiques de gestion du cours :

Course organisation: Course meets: Mondays, 14.00 – 17.00, starting September 24 Instructor/faculty: Nicolas Treich (ntreich@toulouse.inra.fr) Office: MS 213, Manufacture des Tabacs

Grading system - Modalités d'évaluation :

Requirements and grading system: Students are expected to attend ALL sessions and to participate in class discussion. At the end of the term (i.e. part 3), each student will make a presentation of a paper relevant to BCA. Papers must be approved in advance by the instructor. Presentations will last approximately 20 minutes with 10 minutes discussion. Grade will be based on this presentation (10 points), and general involvement in class discussion (10 points).

Bibliography/references - Bibliographie/références :

Some references Pearce, Atkinson and Mourato, 2006, "CBA and the Environment, Recent Developments", OECD. [broad and accessible with technical annexes] Boardman et al., 2006, "CBA: Concepts and practices", Pearson. [broad, good basic economics] Kopp, Krupnick and Toman, 1997, "CBA and Regulatory Reform: An Assessment of the Science and the Art", RFF. [nontechnical economic paper summarizing state of knowledge on BCA] Adler and Posner, 2001, "CBA, Legal, Economic and Philosophical Perspectives", Chicago UP. [collected papers by top social scientists, critical toward BCA] Layard and Glaister, 2003, "CBA", Cambridge UP. [reprinted papers by top economists, technical] Sunstein, 2002, "Risk and Reason: Safety Law and the Environment", Cambridge UP. [legal perspective on BCA] Bateman et al., 2002, "Economic Valuation with Stated Preference Techniques", Edward Elgar. [presentation of survey techniques, especially contingent valuation] Fuguitt and Wilcox, 1999, "CBA for Public Sector Decision Makers", Quorum Books. [economic, nontechnical] US Environmental Protection Agency, National Center for Environmental Economics, "Guidelines for Preparing Economic Analyses," http://yosemite.epa.gov/ee/epa/eed.nsf/pages/Guidelines.html [EPA guidance for conducting BCA] Graham, 2008, "Saving Lives through Administrative Law and Economics," University of Pennsylvania Law Review 157: 395-540. [overview of US procedure and recommendations for improvement in risk policymaking; Graham was head of OIRA 2001-2006] Greenstone, M. & Gayer, T., Quasi-experimental and Experimental Approaches to Environmental Economics, Journal of Environmental Economics and Management, 2009, 57, 21 – 44. [overview of ex post program evaluation approaches]

Outline (provisory): Part 1: Basics 1- Introduction to benefit-cost analysis 2- Calculation of benefits 3- Calculation of costs Part 2: Advanced 4- Equity 5- Uncertainty 6- Bounded rationality 7- Ex ante versus ex post policy evaluation 8- Happiness research, and other evaluation criteria Part 3: Students' presentations

Policies and Business Strategies for a Green Economy

Course title - Intitulé du cours	Policies and Business Strategies for a Green Economy
Level / Semester - Niveau /semestre	M2 / S1
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	Stefan AMBEC
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	0
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

e-mail: stefan.ambec@tse-fr.eu

office MS 113

Course's Objectives - Objectifs du cours :

This course provides economic methods and tools to address environmental issues in economics at the graduate level. It analyzes policy instruments to mitigate pollution from economic activities, to preserve biodiversity and natural resources in different contexts. It also deals with green business strategies.

The course combines economic analysis with empirical investigations on various issues such as water and air pollution, waste management and climate change. The economic background will be presented in class. It is motivated and illustrated by real-word applications. The final goal is to posit policy recommendations for addressing environmental problems. The lectures will be complemented by problems to be solved by students. A Problem set will be provided each lecture. It is strongly recommended to work on the problem set before the next lecture.

COURSE OUTLINE:

- Introduction: Why we should care? What should we do?
- Efficient Pollution
- Choice of instruments: emission standards, tax or permits
- Diffuse and stock pollution (space and time)
- Innovation and productivity
- Production and market power

- General equilibrium and behavioral effects
- Environmental risk
- Common-pool resources
- Self-regulations as green business strategies

Prerequisites - Pré requis :

Good knowledge of intermediate microeconomics and basic mathematics for economists.

Grading system - Modalités d'évaluation :

Mid-term exam (30%), final exam (60%) and participation in class (10%). The exams include knowledge and understanding questions and problems. Sample of exams will be available on Moodle.

Bibliography/references - Bibliographie/références :

Lecture notes and problem sets will be posted on Moodle.

I will borrow from the following textbooks:

Baumol W.J. and W.E. Oates: The theory of environmental policy, Cambridge University Press 1988

Kolstad C.D.: Environmental Economics Oxford University Press 2000

Sterner, T. and J. Coria: Policy Instruments for Environmental and Natural Resource Management, RFF Press 2012

Phaneuf D. and T. Requate: A Course in Environmental Economics, Cambridge Unversity Press 2016

as well as from research and policy papers on the topic. References will be available on the slides and on Moodle.

Other useful books:

Antweiler W Elements of Environmental Management, University of Toronto Press 2014

Anderson T. and G. Libecap Environmental Markets, Cambridge University Press 2014

Probability refresher

Course title - Intitulé du cours	Probability refresher
Level / Semester - Niveau /semestre	M2 / S1
School - Composante	TSE
Teacher - Enseignant responsable	VOLTCHKOVA_EKATERINA
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	15
TA Hours - Volume horaire TD	/
TP Hours - Volume horaire TP	/
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	

Teaching staff contacts - Coordonnées de l'équipe pédagogique :
ekaterina.voltchkova@tse-fr.eu office MF305

Course's Objectives - Objectifs du cours :
The purpose of this refresher course is to recall the basic notions and results of the probability theory used in probability, statistics, and econometrics courses of the M1 program.
Course content
1. Basic notions of probability: sample space, events, probability measure.
2. Examples of probability spaces, discrete probability space, combinatorial problems, counting rules.
3. Independence and conditional probability, theorem of the total probability, Bayes' theorem.
4. Random variables. Definitions and examples of discrete and absolutely continuous distributions such as Bernoulli, binomial, Poisson, uniform, exponential, normal.
5. Expectation, general moments, characteristic function.
6. Random vectors. Joint distribution, moments. Gaussian vectors.
7. Conditional distribution and expectation.

Prerequisites - Pré requis :
Basic mathematical calculus, including derivatives and integration.

Grading system - Modalités d'évaluation :
There is no grading for this refresher course.

Bibliography/references - Bibliographie/références :
Konrad Menzel: Introduction to statistical methods in economics(MIT Open Course Ware: https://ocw.mit.edu/courses/economics/14-30-introduction-to-statistical-methods-in-economics-spring-2009/),Robert B. Ash: Basic probability theory,or any other textbook on basic probability theory at your disposal.

Professional Development

Course title - Intitulé du cours	Professional Development
Level / Semester - Niveau /semestre	M2 / S1
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	BRIOT
Other teacher(s) - Autre(s) enseignant(s)	Sarah Haté
Other teacher(s) - Autre(s) enseignant(s)	Clare Boland
Other teacher(s) - Autre(s) enseignant(s)	Barbara Moore
Other teacher(s) - Autre(s) enseignant(s)	Delphine Bentolila
Other teacher(s) - Autre(s) enseignant(s)	Alexandra Artero
Lecture Hours - Volume Horaire CM	12
TA Hours - Volume horaire TD	0
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	Anglais

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

lorna.briot@ut-capitole.fr - MA006

sarah.hate@ut-capitole.fr

clare.boland@ut-capitole.fr

barbara.moore@ut-capitole.fr

alexandra.artero@ut-capitole.fr

delphinebentolila@ut-capitole.fr

Please send an email directly to your teacher if you have any questions.

Course's Objectives - Objectifs du cours :

Building your LinkedIn profile ,assessing your personality type, your strengths and weaknesses and learning how to talk about your studies and experience is an immense challenge. The Professional development module offered to first and second year master students (in English or in French) consists of 8 sessions. The facilitator provides input, encourages oral interaction, and practical exercises to practice the skills involved to motivate and empower participants to confront the job market successfully and to find the perfect internship. The following will be covered in the module.

- Linkedin Workshop
- Self-Discovery
- Internship Strategy
- Writing a CV
- Covering letters
- Interviews
- Networking

- Career Guidance

Prerequisites - Pré requis :

All students must consult the Professional Development Moodle page before attending and bring a cv to the second class on 14th September.

Practical information about the sessions - Modalités pratiques de gestion du cours :

Laptops and tablets may be used during some of the sessions, students will be informed when to bring them to class.

Participation is extremely important and will be taken into consideration for the final grade.

If students arrive late they will not be accepted and will be counted as absent.

Grading system - Modalités d'évaluation :

Professional Development is graded by a final evaluation.

Grading

- 50% - Easyrecrue Evaluation
- 25% - Professional Attitude / Participation and absences/ cv and cover letter
- 25% - Internship Strategy and Business Networking Preparation

Bibliography/references - Bibliographie/références :

All the following resources can be found on the Professional Development Moodle page :

- Cover letters
- Cv's
- E-reputation
- Linkedin
- Internship Strategy
- Interviews
- Work Environment
- Networking
- Self perception
- Skills and career opportunities
- Testimonies

Session planning - Planification des séances :

Session 1 : Linkedin and E-reputation workshop

Sessions 2 and 3: Introduction and Module Presentation / Easyrecrue / Describing oneself and one's skills / First draft of the cv / Communication Skills

Sessions 4 and 5: Debrief Easyrecrue / Professional Attitude / Expectations in the workplace / Internship Strategy/ Networking tips / Cover Letter

Session 6 and 7: Public Speaking Skills / Elevator Speech / Interview Skills / Evaluation Easyrecrue

Sessions 8 and 9: Business Networking Day Preparation / Final draft cv and cover letter/ Internship Strategy Feedback

Sustainable Development

Course title - Intitulé du cours	Sustainable Development
Level / Semester - Niveau /semestre	M2 / S1
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	AMIGUES Jean-Pierre
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	
TP Hours - Volume horaire TP	
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

email: jean-pierre.amigues@inra.fr
Office number: MS 110
Office hours: Monday 2PM-6PM Tuesday 2 PM-6 PM
interaction through e-mails (for appointments or inquiries)

Course's Objectives - Objectifs du cours :

The objective of the course is to provide a strong theoretical background in dynamic modelling of natural resources and environmental economics issues. The punching line of the lecture is: Is economic growth the best Nature enemy? To explore the issue, the course browses through different topics:

1) Growth and natural resource scarcity: Do there exist real 'limits' to growth? What is a 'sustainable development'? What may be a 'fair' allocation of natural resources between present and future generations?
2) Growth and the environment. Is more or less growth the best way to deal with pollution problems? How to manage optimally climate change?
3) Technical progress and the environment: Should we believe that more advanced or 'green' techniques could solve all environmental problems? How a 'green' growth innovation policy should be designed?

These different topics are studied through the lenses of dynamic macroeconomic models, extended to accommodate environmental problems. The two first part require basic knowledge of optimal growth theory (the Ramsey-Solow model). The third part borrows from the modern endogenous growth literature (Romer and Shumpeterian growth).

The course uses intensively standard optimal control methods. A basic knowledge of these techniques is expected, a 'survival kit' can be provided during the lecture.

Two main skills are developed in the lecture :
- The ability to think economics in dynamic terms, that is be able to make explicit the time dimension of any economic activity (inter-temporal trade-offs, dynamic consistency);
The ability to build a critical view of many terms of the current debate on the environmental impacts of global changes (put environmental issues in a macro perspective).

- The lecture compacts 40 years of achievements on the outlined topics in a nutshell. It is useful for all students involved in consultancy about environmental problems, providing them with firm conceptual foundations for empirical analysis or simulation exercises. It is also interesting for all students who plan to enter an academic activity in the field of environmental economics.

Prerequisites - Pré requis :

A decent knowledge of macro-economics is needed to follow the lecture in comfortable conditions, in particular in modern growth theory.

A basic knowledge of optimal control techniques is desirable although the main elements are provided when needed.

Practical information about the sessions - Modalités pratiques de gestion du cours :

Laptops and tablets are welcome

The students are expected to attend the courses.

A comprehensive set of lecture notes is provided through the moodle platform (more than 300 pages by now...) The notes include extra material not treated during the courses. They also contains exhaustive formal derivations (proofs and calculation) mainly sketched during the lecture.

Grading system - Modalités d'évaluation :

The grading system combines:
- A group 'project'. By group of 3 or 4, the students are expected to study a topic relevant to environmental economics, build an oral presentation and provide a short draft.
- A final exam where the students are asked to perform a synthesis of one topic of the lecture.

The final grade is 1/2 , 1/2 for the project and the written final exam.

There is no TA for this course. I interact constantly with the groups to help them: find good bibliographical references, comment on preliminary drafts and so on.

I announce very early the deadlines and they are strict ones. I supervise regularly during the semester the group matching process, the choice of topics for the 'project' and the degree of achievement of the different groups.

Bibliography/references - Bibliographie/références :

Arrow K, Dasgupta P., Goulder L., Mumford K. and K. Oleson, (2013), Sustainability and the measurement of wealth: further reflection, Environment and Development Economics, 18(4), 504-516.

Asheim G., (1997), Individual and collective time-consistency, The Review of Economic Studies, 64(3), 427-443.

Asheim G., (1997), Adjusting green NNP to measure sustainability, Scandinavian Journal of Economics, 99(3), 355-370.

Asheim G., Mitra T. and B. Tungodden, (2012), Sustainable recursive social welfare functions, Economic Theory, 49(2), 267-292.

Barnett, H. J. and C. Morse, (1963) Scarcity and growth: The economics of natural resources scarcity, Johns Hopkins Press, Baltimore.

Becker R., (1982), Intergenerational equity: The capital-environment trade-off, Journal of Environmental Economics and Management, 9, 165-182.

Cass D. and T. Mitra, (1991), Indefinitely sustained consumption despite exhaustible resources, Economic Theory, 1(2), 119-146.

Dasgupta P. and G. Heal, (1974) The optimal depletion of exhaustible resources, Review of Economic Studies, Symposium, 3-28.

Dasgupta P. and G. Heal, (1979) The economics of exhaustible resources, Cambridge University Press, Cambridge, MA.

Dasgupta P. (2004), Human wellbeing and the natural environment, Oxford University Press.

Groth, C., (2006), A new growth perspective on nonrenewable resources, Discussion paper, 06-26, University of Copenhagen.

Kemp M. C. and N. G. Long, (1980), Exhaustible resources, optimality and trade, North Holland, Amsterdam.

Hartwick J. M. (1977), Intergenerational equity and the investing of rents from exhaustible resources,American Economic Review, 67, 972-974.

Heal G., (1998), Valuing the future. Economic theory and sustainability, Columbia University Press, New-York.

Hotelling H., (1931), The economics of exhaustible resources, Journal of Political Economy, 39, 137-175.

Krautkraemer J., (1998), Nonrenewable resource scarcity, Journal of Economic Literature, 36(4), 2065-2107.

Mitra T., Asheim G., Buchholz W and C. Withagen, (2013), Characterizing the sustainability problem in an exhaustible resource model, Journal of Economic Theory, 148(5), 2164-2182.

Pezzey J. C. and M. Toman, (2002), The economics of sustainability, Ashgate, Dartmouth. Smith, V. K., (1979) Scarcity and growth reconsidered, Johns Hopkins Press, Baltimore.

Smith V. K. and J. V. Krutilla, Eds, (1984), Explorations in natural resources economics, Johns Hopkins Press, Baltimore.

Solow R. M., (1974) Intergenerational equity and exhaustible resources, Review of Economic Studies, Symposium, 29-45.

Solow R. M., (1974), The economics of resources or the resources of economics, American Economic Review, Papers and Proceedings, 64, 1-14.

Stiglitz J. E., (1974), Growth with exhaustible natural resources: Efficient and optimal growth paths,The Review of Economic Studies, Symposium Issue, 1-52.

Stiglitz J. E. (1974) Growth with exhaustible natural resources, the competitive economy, Review of Economic Studies, Symposium, 123-137.
Vousden, N. (1973) Basic theoretical issues in resource depletion, Journal of Economic Theory, 6(2), 126-143.
Tahvonen O. and S. Salo, (2001), Economic growth and transitions between renewable and nonrenewable energy sources, European Economic Review, 45, 1379-1398.
Barett S. and M. Toman, (2010), Contrasting future paths for an evolving climate change regime, Policy research WP series, 5164, The World Bank.
Brock W. and M. S. Taylor, (2005), Economic growth and the environment: A review of theory and empirics, in Handbook of Economic growth, vol 1 B (P. Aghion and S. N. Durlauf Eds), Elsevier, Amsterdam, 1749-1821.
Brock W. and M. S. Taylor, (2010), The green Solow model, Journal of Economic Growth, 15(2), 127-153.
Chakravorty U., Magné B. and M. Moreaux, (2006), A Hotelling model with a ceiling on the stock of pollution, Journal of Economic Dynamics and Control, 30(12), 2875-2904.
Cropper M., (1980), Pollution aspects of nuclear energy use, Journal of Environmental Economics and Management, 7(4), 334-352.
D'Arge R. C. and K. C. Kogiku, (1973), Economic growth and the environment, The Review of Economic Studies, 40, 61-77.
Dixit A., Hammond P. and M. Hoel, (1980), On Hartwick's rule for regular maximin paths of capital accumulation and resource depletion, The Review of Economic Studies, 47(3), 551-556.
Farzin Y. H. and O. Tahvonen, (1996), Global carbon cycle and the optimal time path of a carbon tax,Oxford Economic Papers, 48, 515-536.
Fischer C., Withagen C. and M. Toman, (2004), Optimal investment in clean production capacity,Environmental and Resources Economics, 28(3), 325-345.
Fisher A. C., Krutilla J. V. and Cichetti, C. J., (1973), The economics of environmental preservation: A theoretical and empirical analysis, American Economic Review, 62(4), 605-619.
Forster B. A., (1973), Optimal capital accumulation in a polluted environment, Southern Economics Journal, 39, 544-547.
Grossman G. M. and A. B. Krueger, (1995), Economic growth and the environment, Quarterly Journal of Economics, 110(2), 353-377.
Keeler E., Spence M and R. Zeckhauser, (1972), The optimal control of pollution, Journal of Economic Theory, 4, 19-34.
Kousky C., Rostapshova O, Toman M. and R. Zeckhauser, (2009), Responding to threats of climate change mega-catastrophes, Discussion paper, dp-09-45, Resources for the Future.
Krautkramer J. A. Optimal growth, resource amenities and the preservation of natural environments,The Review of Economic Studies, 52(1), 153-170.
Nordhaus W., (1992), Lethal models 2: The limits to growth revisited, Brookings Papers on Economic Activity, 2, 1-43.
Selden T. and D. Song, (1995), Neoclassical growth, the J curve for abatement and the inverted U curve for pollution, Journal of Environmental Economics and Management, 29(2), 162-168.
Smulders S. and C. Withagen, (Green growth: lessons from growth theory, Policy research WP series 6230, The World Bank.
Smulders S. and Y. Zemel, (2012), Announcing climate policy: can a green paradox arise without scarcity? Journal of Environmental Economics and Management, 64(3), 364-376.

Shafik, (1992), Economic growth and environmental quality: Time series and cross country evidence. Background papers, 904, The World Bank.
Torras M. and J. K. Boyce, (1998), Income, inequality and pollution: A reassessment of the environmental Kuznet's curve hypothesis, Ecological Economics, 25(2), 147-160.
Wang Y. C., (2013), Functional sensitivity of testing the environmental Kuznet's curve hypothesis,Resource and Energy Economics, 35(4), 451-466.
Acemoglu D., Aghion P., Bursztyn L. and D. Hemous, (2012), The environment and directed technical change, American Economic Review, 102(1), 131-166.
André F. J. and S. Smulders, (2012), Fueling growth when oil peaks: Directed technological change and limits to efficiency. CES-IFO WP 3977.
Barrett S., (2006), Climate treaties and 'breakthrough' technologies, American Economic Review,96(2), 22-25.
Bovenberg L. and S. Smulders, (1996), Transitional impacts of environmental policy in an endogenous growth model, International Economic Review, 37(4), 861-893.
Bovenberg L. and S. Smulders, (1995), Environmental quality and pollution augmenting technological change in a two-sector endogenous growth model, Journal of Public Economics, 57(3), 369-391.
Grimaud A. and L. Rougé, (2003), Nonrenewable resources and growth with vertical innovations: optimum, equilibrium and economic policies, Journal of Environmental Economics and Management, 45, 433-453.
Goulder L. H. and K. Mathai, (2000), Optimal CO2 abatement in the presence of induced technological change, Journal of Environmental Economics and Management, 39, 1-38.
Jaffe A. B., Newell R. G. and R. N. Stavins, (2002), Environmental policy and technological change,Environmental and Resource Economics, 22, 41-69.
Kamien M. I. and N. L. Schwartz, (1978), Optimal exhaustible resources depletion with endogenous technical change, The Review of Economic Studies, 45(1), 179-196.
Popp D., (2002), Induced innovation and energy prices, The American Economic Review, 92(1), 160-180.
Schou P., (2000), Polluting nonrenewable resources and growth, Environmental and Resources Economics, 13, 169-185.

Supplementary readings, textbooks

Acemoglu D, (2003), Labor and capital augmenting technical change, Journal of the European Economic Association, 1, 1-37.
Acemoglu D. and J. A. Robinson, (2012), Why nations fail: Origins of power, poverty and prosperity, Crown Publishers (Random House).
Galor O., (2011), Unified growth theory, Princeton University Press.
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John A. and R. Pecheninno, (1994), An overlapping generation model of growth and the environment, Economic Journal, 104, 1393-1410.
Gollier C., (2013), Pricing the planet's future. The economics of discounting in an uncertain world, Princeton University Press.
Hansen G. D. and E. C. Prescott, (2002), Malthus to Solow, American Economic Review, 92(4), 1205-

1217.
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Maddison A., (2007), Contours of the world economy 1-2030 AD: Essays in macroeconomic history, Oxford University Press.
Meadows D. H., (1972), The limits to growth, Universe books, New-York. Smil V., (1994), Energy in world history, Westview Press, Boulder.
Stern N., (2007), The economics of climate change: The Stern review, Cambridge University Press.

Technical books

Arrow K. J. and M. Kurz, (1970), Public investment, the rate of return and optimal fiscal policy, Johns Hopkins, London.
Becker R. A. and J. H. Boyd, (1997), Capital theory, equilibrium analysis and recursive utility, Basil Blackwell Publishers.
Leonard D. and N. G. Long, (1992), Optimal control theory and static optimization in economics,Cambridge University Press
Seierstad A. and K. Sydsaeter, (1987), Optimal control theory with economic applications, North Holland Amsterdam.
Weitzman M. L., (2003), Income, wealth and the maximum principle, Harvard University Press, Cambridge.

Session planning - Planification des séances :

The couse is divided in 3 'chapters' or parts. The outline is as follows:

Chapter I: Growth and natural resources

1. Overview and general context: a brief historical summary in resources economics.
2. The Malthusian trap
   - 2.1. A Ricardian economy.
   - 2.2. A Malthusian economy
3. A basic framework
   - 3.1. The model
   - 3.2. Hotelling rules and optimality conditions
   - 3.3. Efficiency
4. The pure cake-eating problem
   - 4.1. Hotelling rule for optimal plans
   - 4.2. Computing the optimum
   - 4.3. Comparative dynamics
5. Sustainability
   - 5.1. The Solow model
   - 5.2. Hartwick rule
   - 5.3. Maxmin paths and intergenerational justice
6. Appendix: Optimal growth in the Stiglitz-Dasgupta-Heal framework
7. Appendix: On the Hotelling rule

Chapter II: Growth and the environment

1. Overview
2 A basic framework

2.1 Optimal paths
2.2 Efficiency
2.3 Discussion
2.4 Appendix: Arbitrage interpretation of the efficiency condition
3 Environmental Kuznets curves
3.1 Overview
3.2 EKC Part I: A polluting growth model with a scale effect . .
3.3 EKC Part II: A polluting growth model without scale effect .
4 Polluting nonrenewable resources
4.1 Optimality and Efficiency
4.2 A simple example.
4.3 Small and Catastrophic Damages
4.4. Appendix: Derivation of the efficiency conditions in the polluting resources model
5 Appendix
5.1 Murky Age against Gold Age in a simple polluting growth model
5.2 The contribution of IAM's to the climate debate

Chapter III: Natural resources and endogenous technical change

1. Overview
2. A starter model
   2.1. Efficiency and optimality
   2.2. Steady states
3. Directed technical change
   3.1. Technical change biased toward the resource
   3.2. Multi-sectors R&D models
4. Appendix: Environment and directed innovation

Additional information

By experience, I expect to face a highly heterogenous audience: some of you have already a good knowledge of the course issues, for others it will be completely new. Your participation during the lecture is thus crucial. Never hesitate to ask me questions, even 'stupid' ones. There are no stupid questions, only stupid answers.

Your main job, a part attending the lecture, will be the group project. I let you completely free in the choice of the topic. Through the preceding years, students have explored: waste management in South Italy, 'blood diamond' trafficking, satellites pollution, long run human pressure on the environment since the Stone Age, Amazonian forests management, climate migrations, energy transition toward a carbon-free economy, the role of medias and internet social networks in the world environmental debate, among others...

All I expect is a scientific approach to the issues (not journalism) and a convincing treatment that could appear in an official agency report.

UE3 Valuing the Environment

Course title - Intitulé du cours	Valuing the Environment
Level / Semester - Niveau /semestre	M2 / S1
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	ANDERSSON HENRIK
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

Henrik Andersson

Email: henrik.andersson@tse-fr.eu

Office: MS210

Office hours: Mondays, 8:30-10:00, by prior appointment by email only.

Course's Objectives - Objectifs du cours :

The objectives of the course are to introduce the theoretical foundations of environmental valuation, present and describe the empirical methods used, and to discuss the implementation of estimated values in policy making. The main focus of the course will be the application of different valuation methods, such as hedonic pricing, contingent valuation, choice experiments, recreation values, etc. The aim is to provide the students who intend to pursue environmental, transportation, and/or health?related research, or policy decision making with an understanding and knowledge on preference elicitation for non-¬marketed goods.

COURSE OUTLINE

1. Introduction to environmental valuation

2. Non market valuation

   a. Revealed preference methods

   b. Stated preference methods

3. Health valuation

4. Experiments

5. Further topics

Prerequisites - Pré requis :

Good knowledge of intermediate microeconomics and econometrics.

Grading system - Modalités d'évaluation :

Students are required to complete two tasks during the class:

1. One paper critically discussing one or more articles from the reading list or other articles approved by the instructor. The paper is to be presented and discussed by another student at a seminar. The grade will be based on:

a. Quality and originality of the paper.

b. The role of discussant in the seminar.

c. Active participation in the seminar.

2. Take?home exams in which students will analyze data sets and answer specific questions.

Bibliography/references - Bibliographie/références :

The textbook of the course is:

Freeman A.M., Herriges, J.A., and D.L. Kling, "The Measurement of Environmental and Resource Values, RFF Press, 3rd edition, 2014.

The required reading is also based on peer?reviewed and published articles. Lecture notes, required readings, except the textbook, and any exercises will be made available through the Moodle course page.

Econometrics of Program Evaluation

Course title - Intitulé du cours	Econometrics of Program Evaluation
Level / Semester - Niveau /semestre	M2 / S2
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	Jacint ENRICH-MOYA
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	
TP Hours - Volume horaire TP	
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

E-mail address: jacint.enrich-moya@ut-capitole.fr - Office number: MF 007

Office(s) hours/day(s) of the week when students can drop by: Wednesday, 9.30-12.30

Preferred means of interaction: Questions that can be of general interest (comprehension, etc.) are to be raised preferentially in class or after class. Interactions by email or during office hours are dedicated to more specific questions (assignment, general comments about the course,...).

Course's Objectives - Objectifs du cours :

This course covers the basic theoretical knowledge and technical skills required for implementing microeconometric methods of estimation of causal or treatment effects.

The class will be structured in three broad sequences:

1/ The two fundamental problems of inference

1.1/ The fundamental problem of causal inference

1.2/ The fundamental problem of statistical inference

2/ Methods of causal inference

2.1/ Randomized Controlled Trials

2.1.1/ 4 designs: Brute Force, After self-selection, Eligibility, Encouragement

2.1.2/ Power analysis

2.2/ Natural Experiments (RDD, DID, IV)

2.3/ Observational methods (OLS, Matching)

3/ Additional notions

3.1/ Placebo tests

3.2/ Clustered and Stratified Designs

3.3/ Diffusion effects Goals of the class: - Understanding of the basic language to encode causality, - knowledge of the fundamental problems of inference and the biases of intuitive estimators, - understanding of how econometric methods recover treatment effects, - ability to compute these estimators along with an estimate of their precision using the statistical software R.

The students are not expected to know how to reproduce the mathematical derivations of the various results seen in class.

Prerequisites - Pré requis :

Students are expected to master the basic notions of statistical inference (population, sample, OLS, IV, unbiasedness, consistency, estimation of standard errors, testing, probit and logit). Therefore, some Econometrics training is required. M1 Intermediate Econometrics is a good benchmark for what is needed. Basic knowledge of how to implement these estimators with R is highly recommended. Knowledge of nonparametric estimation techniques (e.g. kernel estimation) is a plus (some estimators covered in class are nonparametric, even though we cover first their parametric forebears). Knowledge of Rstudio and Latex is a plus. Obviously, having taken the Program Evaluation class in M1 is a plus. For each notion, we will go further than the introduction done in the M1 class.

Practical information about the sessions - Modalités pratiques de gestion du cours :

I expect students to show up in class. All slides will be posted in advance along with lecture notes, but class interaction is crucial, for me to understand where students have problems and for students to have these problems solved. Also, I expect a lot of participation from students, especially around the exercises and the applied project. Laptops and tablets are accepted, but I reserve the option of reversing that authorization if attention in class falters.

Grading system - Modalités d'évaluation :

Evaluation will be made of three parts: report (10/20), oral presentation (7/20) and class participation (3/20). Students will work by groups of 3 or 4 at reproducing the results of a published paper using the same methodology AND an alternative methodology studied in class AND performing a power analysis AND a placebo test. Students will provide a report detailing their analysis and the code using the software R, so that the route to the results is apparent. In the report, I expect students to show their mastery of the basic skills learned in class (definition of treatment effects, understanding of confounding factors and sampling noise, understanding of estimation methods). Students will present their results orally in a 20 min session followed by 10 min of questions. They are expected to explain the goals of their work, the main results and the methods used to reach them. I expect students to be clear and focused on the main notions and results. Participation will be graded based on the following

metric: - not showing up to 2 classes w/o sending an email of explanation when not there: -1 - showing up to every class (sending an email of explanation when not there is expected): 0 - showing up + participation: (1 to 3 depending on the intensity) Project cooperation (vs competition) among groups will also be rewarded. Of course, cooperation doesn't mean cheating, which will be highly penalized.

Bibliography/references - Bibliographie/références :

There will be no textbook assigned for this class. Angrist and Pischke's two books "Mostly Harmless Econometrics" and "Mastering 'Metrics" cover a lot of the notions seen in class in a fun and interesting way. Most of the notions seen in class have been presented in Handbook chapters or review articles. Here are the most useful ones that will be uploaded on the Moodle webpage of the class:

- John DiNardo and David Lee, "Program Evaluation and Research Designs," in Handbook of Labor Economics, ed. by Orley Ashenfelter and David Card, 4a:463-536, Elsevier, 2011.
- Petra Todd, "Evaluating Social Programs with Endogenous Program Placement and Selection of the Treated," in Handbook of Development Economics, ed. by T. Paul Schultz and John A. Strauss, 4(60):3847-3894, Elsevier, 2007.
- Guido Imbens and Jeffrey Wooldridge, "Recent Developments in the Econometrics of Program Evaluation," Journal of Economic Literature, 47(1):5-86, 2009.
- Josh Angrist and Alan Krueger, "Empirical Strategies in Labor Economics," in Handbook of Labor Economics, ed. by Orley Ashenfelter and David Card, 3:1277-1366, Elsevier, 1999.
- Jim Heckman, Rob LaLonde and Jeff Smith, "The Economics and Econometrics of Active Labor Market Programs," in Handbook of Labor Economics, ed. by Orley Ashenfelter and David Card, 3:1865-2097, Elsevier, 1999.
- Esther Duflo, Rachel Glennester and Michael Kremer, "Using Randomization in Development Economics Research: A Toolkit," in Handbook of Development Economics, ed. by T. Paul Schultz and John A. Strauss, 4(60):3895-3962, Elsevier, 2007.
- Guido Imbens, "Nonparametric Estimation of Average Treatment Effects Under Exogeneity: A Review," Review of Economics and Statistics, 86:4-29, 2004.
- Guido Imbens and Thomas Lemieux, "Regression Discontinuity Designs: A Guide to Practice," Journal of Econometrics, 142:615-635, 2008. There are excellent blogs, websites and twitter accounts on the topic of causal inference and program evaluation. Here are the blogs and websites that I like the most:
- http://blogs.worldbank.org/impactevaluations/blog
- http://andrewgelman.com/
- http://freakonometrics.hypotheses.org/
- http://chrisblattman.com/
- https://www.povertyactionlab.org/
- http://www.g-feed.com/
- https://energyathaas.wordpress.com/
- https://epic.uchicago.edu/

Session planning - Planification des séances :

In class, all the notions and estimators will be introduced using a numerical example. The R code used to generate the results presented in class will be uploaded before on the moodle webpage of the class, as well as the slides of the class and a document we will use to extend and explain them. At the end of each class, a set of exercises based on the generated data will help the students reproduce the main notions seen in class with the generated data. The exercises are not part of the evaluation.

Ecosystem Management and Policies

Course title - Intitulé du cours	Ecosystem Management and Policies
Level / Semester - Niveau /semestre	M2 / S2
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	DESQUILBET – NGUYEN - SALANIE
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	0
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	English
TA and/or TP Language - Langue des TD et/ou TP	

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

Marion DESQUILBET: MS 206. Meeting on appointment, please mail to marion.desquilbet@inra.fr

Manh Hung N'GUYEN: MS 208. Meeting on appointment, please mail to manh-hung.nguyen@tse-fr.eu

François SALANIE: MS216. Meeting on appointment, please mail to francois.salanie@inra.fr

Course's Objectives - Objectifs du cours :

The rapid growth of human activities in the past fifty years has had profound effects on other species and on ecosystems, on which our own survival depends. Policies for environmental management are increasingly concerned by such biological and ecological issues, as witnessed for instance by new laws on biodiversity adopted by many countries (including France), or the debates on GMOs and antibiotic resistance. This class aims at providing the students with a set of tools to analyze the numerous issues that arise when economic activities involve living beings. The goal is to identify the sources of externalities and discuss the appropriateness of alternative policy instruments in a number of qualitatively different settings, such as the management of forests, livestock, fisheries, and ecosystems, and the use of pesticides, medical drugs, and genetically modified crops. To this end, ecology models will be introduced into otherwise standard economics models, and examples of successful and unsuccessful policies will be discussed. At the end of the class, students should be able to gather resources and data on ecological/economic issues, to analyze them, and to provide advices about policy design.

Prerequisites - Pré requis :

There are no prerequisites. We like rigor and enthusiasm.

Practical information about the sessions - Modalités pratiques de gestion du cours :

Be on time. Participate. Be active.

Grading system - Modalités d'évaluation :

30% of the grade is determined by attendance and participation; 40% of the grade will be determined by an individual term paper that aims at evaluating real policy in the light of the course material, and 30% by a final written exam.

1) Participation and attendance: be on time, participate.

2) For the term paper your mission is to :

- Choose a real regulatory policy (or law) related to an ecological or biological issue: for example, a policy against deforestation in Brazil, against over-fishing in Iceland, for protecting wetlands in Great Britain, for protecting ecosystems against invasive species, for regulating the use of genetically modified crops, for managing antibiotic prescription practices, etc...

- Write a report on this policy, as if you were the advisor in charge of evaluating the policy : first a summary of the situation, then a diagnosis of the policy, finally some suggestions for reform.

In particular, in the report you need to accurately identify the sources of economic and ecological/biological issues :

- for the economic issues this means identifying the externalities and the sources of these externalities: this should be quite straightforward since you are already familiar with this concept

- for the ecological/biological issues this means describing in what ways there is mismanagement of the ecological/biological resource at hand (the forest, the stock of fish, an invaded ecosystem, the biodiversity in a given ecosystem, etc), and the reasons for this mismanagement; for instance, is it because property rights are not well defined ? is it because information about the population is missing ? is it because the reproductive season is disrupted by human activity ? is it because the habitats are becoming too fragmented? etc.

The second part represents the element of this course which is meant to give you an edge in the competition for jobs in companies and organizations that evaluate economic and ecological consequences of human activities. Since this is likely the first time you are getting acquainted with ecological/biological issues, we will clearly not expect you to fully master these concepts. Instead, view it is as an opportunity to combine insights about the economic consequences of human activities with some insights about their ecological/biological consequences. The report should refer to relevant theory and to any relevant data that you'll find on the Internet. The report should include at least 10 pages written by you (this excludes for example tables or graphs that you reproduce from other sources), and a bibliography. You may also propose a modelling of the situation, but only if it is useful to your report.

3) The final exam : This will be a short exam (two hours), with mathematical problems that will resemble problems solved during the course.

Bibliography/references - Bibliographie/références :

A useful and simple reference is: Perman, R., Y. Ma, M. Common, M. Maddison, and J. Mc Gilvray (2011), Natural Resource and Environmental Economics, 4th edition, Addison Wesley, Harlow. (Chapters 14, 17, 18). Additional references will be provided on the course moodle

Session planning - Planification des séances :

The class will take place from January 2019 to March 2019. A sketch of the schedule and of the main themes is as follows: Environmental Policies: the case of fisheries Common Resources and Dynamics Epidemiology Agriculture and Ecology Resistance to antibiotics and pesticides Cost Benefit Analysis for chemicals Land sparing and land sharing Conservation contracts Environmental labelling Ecosystem and biodiversity

Energy Economics and Climate Policy

Course title - Intitulé du cours	Energy Economics and Climate Policy
Level / Semester - Niveau /semestre	M2 / S2
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	BERMUDEZ NEUBAUER LAFFORGUE LAMP
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	English
TA and/or TP Language - Langue des TD et/ou TP	

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

Stefan Lamp Toulouse School of Economics MS 102 Email: stefan.lamp@gmail.com

Gilles Lafforgue Toulouse Business School Email: g.lafforgue@tbs-education.fr

Mauricio Bermudez Neubauer Accenture Strategy, London Office Email: monobermudez@gmail.com

Course's Objectives - Objectifs du cours :

Over the past decades, energy markets have become some of the most dynamic markets of the world economy. Traditional fossil fuel and electricity markets have seen a shift from heavy regulation to market-driven incentives. At the same time, rising environmental concerns led to an array of new regulations and "environmental markets". The growth of renewable energy is another source of rapid change and brings a new set of technological and policy challenges to the table. This course on "Energy and Climate Change" is aimed at providing a detailed introduction to issues in energy markets and climate change economics. It is structured in three main blocks. Block one provides an overview on energy-related economic research. It starts with the discussion of underlying theoretical arguments for environmental regulation and develops on the use of economic incentives (pigovian fees, permit markets) as opposed to more prescriptive types of regulation. This block also discusses theoretical aspects of climate change modeling, taught by Gilles Lafforgue (Toulouse Business School). His lectures will introduce ceiling models and integrated assessment models that are used to evaluate long-term policies under uncertainty. Block two transitions to applied topics in energy supply and demand analysis. It will discuss, for example, how increasing supply of renewable (intermittent) energy sources impact electricity markets. The course also analyses demand-side topics such as the energy-efficiency gap and how behavioral economic policies are used to reduce energy consumption. Finally, block three focuses on policy-related questions concerning the EU-ETS market. This block is taught by a leading expert in the field: Mauricio Bermudez Neubauer (Principal Director, Accenture Strategy. This section

will provide an overview on the evolution of the EU-ETS and discuss challenges in emerging carbon markets. This block concludes by analyzing the causal impact of environmental regulation on firm outcomes.

Prerequisites - Pré requis :

This course does not have any formal prerequisites; however, it will be useful if students show a good understanding of intermediate microeconomics. Knowledge of applied econometrics (program evaluation) will be useful for the discussion of empirical papers.

Grading system - Modalités d'évaluation :

Students will be evaluated for the presentation of a research article and a final report. Attendance of the lectures is mandatory and class participation will be part of the final grade. o Paper presentation (40%) o Problem set, including an exercise on carbon trading (50%) o Attendance and class participation (10%)

Bibliography/references - Bibliographie/références :

As this is a constantly evolving field, readings are subject to change throughout the semester. The assigned reading will be announced on Moodle in advance. Starred readings are mandatory.

Textbooks : Kolstad, Charles D. (2010), Intermediate Environmental Economics, 2nd Ed., Oxford University Press Fourquet Roger. (editor) (2015), Handbook on Energy and Climate Change, Edward Elgar Pub. Policy Reports: World Bank (2017), State and Trends of Carbon Pricing IEA (2015) Energy and Climate Change, World Energy Outlook Special Edition IPCC (2014) Climate Change 2014, Synthesis Report RES21 (2016) Renewables 2016, Global Status Report Kolstad, Environmental Economics, 2nd Edition, Chapters 13 and 15 on "Property Rights" and "Spatial and Temporal Issues" (note: depending on the textbook version the chapter numbering might be different) Fowlie, M., Holland, S., & Mansur, E. (2012). What do emissions markets deliver and to whom? American Economics Review, 102(x), 965–993. Gennaioli, C., Martin, R., and Muûls, M. (2013). Using micro data to examine causal effects of climate policy. In: R. Fouquet (ed.) Handbook on Energy and Climate Change Greenstone, M & Gayer, T. (2009). Quasi-experimental and experimental approaches to environmental economics. Journal of Environmental Economics and Management, 57(1):21-44 Covert, T., Greenstone, M., & Knittel, C. R. (2016). Will We Ever Stop Using Fossil Fuels? Journal of Economic Perspectives, 30(1), 117–138. http://doi.org/10.2139/ssrn.2720633 Bornstein, S. & Bushnell, J. (2015). The US Electricity Industry After 20 Years of Restructuring Cullen, J. (2013). Measuring the Environmental Benefits of Wind-Generated Electricity. American Economic Journal: Economic Policy, 5(4), 107–133. Fabra, N., & Reguant, M. (2014). Pass-Through of Emissions Costs in Electricity Markets. American Economic Review, 104(9), 2872-2899. Liski, M. & Vehvilainen, I. (2016). Gone with the wind? An empirical analysis of the renewable energy rent transfer Reiss Peter C., & White, M. W. (2008). What changes energy consumption habits? Prices versus public pressures. RAND Journal of Economics, 39(3), 636–663. Gillingham, K., & Palmery, K. (2014). Bridging the energy efficiency gap: Policy insights from economic theory and empirical evidence. Review of Environmental Economics and Policy, 8(1) Allcott, H., & Mullainathan, S. (2010). Behavior and Energy Policy. Science, 327, 1204–1205. Fowlie, M., Greenstone, M. & Wolfram, C. (2015). Do Energy Efficiency Investments Deliver? Evidence from the Weatherization Assistance Program Ito, K., Ida, T. & Tanaka, M. (2016). Information Frictions, Inertia, and Selection on

Elasticity: A Field Experiment on Electricity Tariff Choice Martin, R., Muûls, M., & Wagner, U. J. (2015). The Impact of the European Union Emissions Trading Scheme on Regulated Firms: What Is the Evidence after Ten Years? Review of Environmental Economics and Policy, rev016. Greenstone, M., List, J. A., & Syverson, C. (2012). The effects of Environmental Regulation on the competitveness of U.S. Manufacturing. NBER Working Paper, 55–75. Martin, R., Muûls, M., De Preux, L. B., & Wagner, U. (2014). Industry compensation under relocation risk: A firm-level analysis of the EU emissions trading scheme. The American Economic Review, 104(8), 2482-2508. Martin, R., de Preux, L. B., & Wagner, U. J. (2014). The impact of a carbon tax on manufacturing: Evidence from microdata. Journal of Public Economics, 117, 1–14.

Session planning - Planification des séances :

1. Introduction, Empirical facts, Basic regulation, Pigovian fees
2. Markets and Property Rights; Empirical tools and methods
3. Climate Change Modelling I (Gilles Lafforgue)
4. Climate Change Modelling II (Gilles Lafforgue)
5. Energy Supply: Fossils and Renewables
6. Energy Demand, Energy Efficiency, and Behavioral Policies
7. Policy perspectives on the EU-ETS: history and future (1 day seminar, Mauricio Bermudez Neubauer)
8. Ex-post evaluation of the EU-ETS

Impact of Environmental Policies

Course title - Intitulé du cours	Impact of Environmental Policies
Level / Semester - Niveau /semestre	M2 / S2
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	GENTRY ELISSA
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	0
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	English
TA and/or TP Language - Langue des TD et/ou TP	

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

Elissa Gentry

Email: elissa.gentry@iast.fr

Office: ME 503.1

Office hours: Wednesdays, 8:30-10:00, by prior appointment only.

Course's Objectives - Objectifs du cours :

This course will expose students to a survey of empirical work in environmental economics. Students will take a hands-on role in presenting, analyzing, and discussing the material. Topics covered will include evidence on the existence of externalities and evidence regarding the efficacy of various policies in addressing such externalities. The aim is to teach students how to critically analyze empirical studies and provide a survey of the current evidence. The course will culminate in a report analyzing the evidence on a particular subtopic in environmental economics.

Course outline :

1. Evidence regarding the existence of externalities

2. Evidence regarding the effect of regulatory policies

(a) Market Mechanisms

(b) Regulation

(c) Taxes

(d) Subsidies

Prerequisites - Pré requis :

Students should have a basic knowledge of environmental concepts (i.e., externalities, command and control, and subsidies) and econometrics (i.e., OLS, IV, panel).

Grading system - Modalités d'évaluation :

Students will be graded on three major tasks:

1. Class Presentations: Students will present papers in class several times in the semester and lead the class in discussion and analysis.

2. Class Participation: Students are expected to read all the papers to be discussed in class and participate in analyzing each. Class participation will be graded based in

part on attendance and in part on contributions to discussions.

3. Written Report: Students will write a final report summarizing and analyzing the available evidence on a subtopic discussed in the class.

Bibliography/references - Bibliographie/références :

The required reading is based on peer-reviewed and published articles, which will be

available to students through the Moodle course page.

Micro-Finance, Land and Labor

Course title - Intitulé du cours	Micro-Finance, Land and Labor
Level / Semester - Niveau /semestre	M2 / S2
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	MIQUEL-FLORENSA JOSEPA
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	Anglais
TA and/or TP Language - Langue des TD et/ou TP	Anglais

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

Josepa (Pepita) Miquel-Florensa
Office: MF123bis
Office hours: By appointment
Email: pepita.miquel@tse-fr.eu

Course's Objectives - Objectifs du cours :

The aim of this course is to study the peculiarities of financial markets in developing countries, and how they affect households and Small and medium-sized enterprises (SMEs).

The first part of the course centers on households: their access to savings, credit and insurance. More in particular we will study ROSCAS (Rotating Credit and Saving Associations), Microfinance contracts and formal and informal insurance networks. The productive activities of the household (mainly agricultural), entrepreneurship and SMEs are the focus of the second part of the course. For them, we focus on access to credit, technological adoptions and barriers to access markets.

The course will cover both theoretical models and empiric papers.

Prerequisites - Pré requis :

Applied econometrics and Microeconomics (asymmetric information, contracts).

Basic knowledge of program evaluation is needed.

Practical information about the sessions - Modalités pratiques de gestion du cours :

Grading system - Modalités d'évaluation :

The grade will come from a project proposal - groups of 2 students - to be presented to the class (in the last weeks of the course) and handed the week of term exams. A preliminary one-page version of the proposal should be handed in by Feb. 22nd to be discussed with the professor.

The project proposal should be the foundation of a paper, and should (i) lay out the scientific question you want to address, (ii) explain why it is important, (iii) summarize the literature on the topic, and (iv) provide an overview of the theory, data and empirical methods you would employ to answer the question. You need to motivate the research idea (in the context of the existing literature), present suggestive statistics from available data, lay out the research design, and present preliminary results when possible. Length: 10-15 pages.

Public economics of the environment

Course title - Intitulé du cours	Public economics of the environment
Level / Semester - Niveau /semestre	M2 / S2
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	CHABE FERRET SYLVAIN - SALANIE FRANCOIS - STEFAN AMBEC
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	English
TA and/or TP Language - Langue des TD et/ou TP	

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

Stefan Ambec: MS113. Appointment by mail: Stefan.ambec@tse-fr.eu

Sylvain Chabé-Ferret MS214. Email: sylvain.chabe-ferret@tse-fr.eu

François Salanié: MS217. Appointment by mail: francois.salanie@tse-fr.eu

Course's Objectives - Objectifs du cours :

Over the last two centuries, the development of the world economies, and the associated demographic changes, have led to profound impacts to the environment: resources are affected, in quantity and in quality, to such an extent that the whole functioning of our climate and of our ecosystems is changing, with important consequences for our health and our way-of-life. Environmental Economics is the branch of Public Economics that studies such phenomena.

The aim of this class is to introduce PhD students to the research frontier in environmental economics. At the end of the class, a student should be able to diagnose the market failures that cause environmental issues; to compare the effects of regulations (tax, quotas, standards, ...) that aim at correcting damaging behaviors; and to empirically evaluate the effects of such policies.

Prerequisites - Pré requis :

Good knowledge of intermediate microeconomics, standard econometric methods, and basic mathematics for economists. Plus rigor and enthusiasm.

Practical information about the sessions - Modalités pratiques de gestion du cours :

Be on time, participate, be enthusiastic!

Grading system - Modalités d'évaluation :

Participation and Attendance (20%), a two-page referee report on a paper chosen in the reference list provided in class (30%), and a final exam (50%). The exam includes knowledge and understanding questions, and a problem.

Bibliography/references - Bibliographie/références :

Lecture notes and papers will be posted later on, and will be made available on Moodle. Here are some simple textbooks you may want to use: Kolstad C.D.: Environmental Economics Oxford University Press 2000

Session planning - Planification des séances :

The schedule will be posted later on. A sketch is as follows Regulatory Instruments: tax, quotas, markets, standards. Asymmetric information. General Equilibrium and the Pigou Doctrine (tax, tax, tax). Risk, Irreversibility, Option Values. Simple dynamics, with Fisheries as an application case (2 sessions).

Topics in Environmental Economics

Course title - Intitulé du cours	Topics in Environmental Economics
Level / Semester - Niveau /semestre	M2 / S1
School - Composante	Ecole d'Economie de Toulouse
Teacher - Enseignant responsable	ANDERSSON NAUGES REQUILLART MECHEMACHE TREICH
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Other teacher(s) - Autre(s) enseignant(s)	
Lecture Hours - Volume Horaire CM	30
TA Hours - Volume horaire TD	0
TP Hours - Volume horaire TP	0
Course Language - Langue du cours	English
TA and/or TP Language - Langue des TD et/ou TP	

Teaching staff contacts - Coordonnées de l'équipe pédagogique :

Henrik Andersson Email: henrik.andersson@tse-fr.eu
Office: MS210 Office hours: Mondays, 8:30-10:00, by prior appointment by email only

Zohra Bouamra-Mechemache Email: zohra.bouamra@tse-fr.eu
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Céline Nauges Email: celine.nauges@inra.fr
Office: MS114 Meeting after prior appointment by email.

Vincent Requillart Email: vincent.requillart@tse-fr.eu
Office: MS105 Office hours: Thursday, 9:00-10:30 by prior appointment by email

Nicolas Treich Email: nicolas.treich@inra.fr
Office: MS212 Meeting after prior appointment by email.

Course's Objectives - Objectifs du cours :

The objective of this course is to introduce students to three specific topics in environmental economics. The course is divided into two tracks according to the M2 track the students follow: Environmental Policy and Energy Economics (EPEE): Transport Economics, Water Economics, and Food Economics Economics & Ecology (E&E): Cost-Benefit Analysis, Water Economics, and Economics of Animal Welfare

Short descriptions of each topic:

Transport Economics: The purpose of this part of the course is to introduce students to transport economics and the problems faced when designing a transportation infrastructure. Examples of problems of significance are pollution and externalities, problems closely related to environmental economics.

Cost-Benefit Analysis: The purpose of this course is to introduce students to the evaluation of environmental public policies, e.g. investments in greener technology, or new or revised legislation, through the use of cost-benefit analysis (CBA). CBA is a powerful tool to guide policy makers when choosing between different policies, both within and between sectors, but it is not without its problems. This topic will describe the underlying welfare economics of CBA and how to implement it. Both methodological and implementation issues will be discussed.

Water Economics: The purpose of this part of the course is to study different research questions that will help improve our understanding of the challenges faced by policy makers in the water sector. These include the modelling and estimation of water demand and the design of water tariffs for households. The lectures will also explain how to assess the value of water and wastewater services when water coverage is not universal and the impact of access to water and wastewater services on households' health and welfare. Finally, we will cover the important issue of irrigation water management in a context of water scarcity and discuss impacts of agricultural pollution on water quality. The lectures will build on several important academic papers.

Food Economics: The objective of this part is to introduce students how food economics address economic questions related to environmental issues. Based on academic papers, students will learn about sustainable policies in the food sector including environment, health and nutrition policies. Topics include economics of labeling and the impact of food policies on climate change. Each lecture will provide a description of the issue at stake, key findings and a deeper analysis based on a specific model.

Economics of Animal welfare: The purpose of this course is to approach the question of animal welfare through the lens of economics. This is a very new course, and it is likely that this is the first course ever on that topic worldwide. The course will present applications of standard economics to the issue of animals but will also address new topics such as the relaxation of anthropocentrism in welfare economics or the behavioral economics of meat eating. In doing so, the course will address topics at the interface of economics and public policy, animal sciences, philosophy, psychology, and political economy.

COURSE OUTLINE

Topic I.a. Transport Economics (H. Andersson), 10 hours,

For students in the EPEE track I.a.1 An introduction to transport economics I.a.2. Demand and costs of transport I.a.3. Externalities and pricing I.a.4. Policy and regulation

Topic I.b. Cost-Benefit Analysis Economics (H. Andersson), 10 hours,

For students in the E&E track I.b.1. An introduction to Cost-Benefit Analysis (CBA) I.b.2. Estimation of costs and benefits I.b.3. Implementing CBA I.b.4. A critical discussion of CBA

Topic II. Water Economics (C. Nauges), 10 hours,

For all students II.1. Cost of water and wastewater utilities; modelling of water demand; water tariff design II.2. Valuing access to water services and its impact on households' health and welfare II.3. Irrigation water management; water markets; water pollution from agriculture

Topic III.a. Food Economics (Z. Bouamra-Mechemache and V. Requillart), 10 hours,

For students in the EPEE track III.a.1. Modeling food policies and their impact on health and environment III.a.2. Organic and Environmental labels III.a.3. Food safety and strategies of firms

Topic III.b. Economics of Animal Welfare (N. Treich), 10 hours,

For students in the E&E track III.b.1. Introduction to the economics of animal welfare III.b.2. Multidisciplinary views of animals – Anthropology, Animal sciences, and law III.b.3. The ethics of animal welfare III.b.4. Willingness to pay for animal welfare III.b.5. Meat – Market, externalities, psychology, politics, etc.

Prerequisites - Pré requis :

For topics I.a, II, and III.a, a good knowledge of intermediate microeconomics and econometrics. For topic I.b and III.b no special prerequisites except for knowledge about economics obtained either prior or to, or during the first semester of TSE M2 E&E.

Grading system - Modalités d'évaluation :

Grades will be based on take-home exams for each topic and a written report in which students identify and constructively discuss an environmental/ecological problem related to one of the topics of the course (the preferred topic to be chosen by the student him-/herself). The written report will be presented and discussed in a seminar at the end of the course.

Bibliography/references - Bibliographie/références :

The required reading is mainly based on peer-reviewed published articles. Lecture notes, required readings, except textbooks, and any exercises will be made available through the Moodle course page.