

# SCIENCES of the ENVIRONMENT TERRITORY and the ECONOMY

AT THE UNIVERSITE DE VERSAILLES SAINT-QUENTIN-EN-YVELINES

## The Masters Degree SETE

### A New Interdisciplinary Programme at the UVSQ

The purpose of the SETE Masters Programme is to prepare the new generations to meet the challenges of understanding, decision and action for sustainable development. Students are invited to address in an integrated way the relationships between the economy, climate, the physical environment and natural resource use, including questions of long time horizons, social justice and democratic political process in the context of deep uncertainty, irreversibilities and systems complexity.

The SETE Programme builds on a set of disciplinary foundations that guarantee the quality of training and entry points to professions, responding to the need for new combinations of skills, in research and in professional practice. It offers to students an initiation to inter-disciplinary research and teaching through a cross fertilisation of environmental sciences (physics, chemistry, earth sciences, biological sciences), mathematics and computing, the sciences of social systems (economics, law, management, geography) and human interactions within ecosystems, and the humanities (ethics, sociology, political studies, demography). The Programme is divided into three thematic fields, SEN, EGET and IDD.

- The first two of these, "Sciences of the Environment" (SEN) and "Economics and Governance of the Environment and Territories" (EGET) offer degree programmes that each have their roots in a core discipline, but where the disciplinary focus is complemented by a set of cross-cutting topics (sciences and society, environment, risk and governance) that are common across all three thematic fields.
- The third field, "Sustainability Science, Tools and Techniques" (IDD), has a directly interdisciplinary character, mobilising an international panel of teaching expertise through partnerships with other major universities to offer students an integrated approach to the analysis of sustainability challenges.

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## Profile of the Université de Versailles Saint-Quentin-en-Yvelines



UNIVERSITE DE VERSAILLES  
SAINT-QUENTIN-EN-YVELINES

The UVSQ is composed of four main faculties in Sciences, Law & Political Science, Humanities & Social Sciences, and Medicine. There are also two University Technology Institutes (IUT), one School of Engineering (ISTY), and a specialised atmospheric and earth sciences research centre (the OSU at the IPSL).

Spread over a network of sites on the west of the Paris metropolitan region, the UVSQ is anchored in a territory of exceptional scientific, socio-economic and environmental quality. It gets its dynamism from the new town of Saint-Quentin-en-Yvelines, the research and innovation districts of the Saclay plateau and the conurbation of Mantes, and benefits also from the rich heritage of Versailles, Rambouillet, the Upper Chevreuse Valley regional natural park and the Seine River.

The UVSQ offers a wide spectrum of programmes, including continuing education and vocational training. The teaching programmes are backed by centres of research excellence in a wide range of disciplines and interdisciplinary specialities including medicine and health, environmental sciences, sustainable development and territorial analyses.

### For students, the UVSQ offers the attractions of:

- A dynamic and multi-disciplinary educational programme;
- A wide choice of applied fields, many of which address directly the industrial, research and territorial governance challenges of the Yvelines region;
- Research-based teaching that builds on internationally recognised scientific excellence;
- An active policy of building international partnerships including European and North-South mobility programmes.

Website : <http://www.uvsq.fr>

UVSQ President: Professor Sylvie Fauchoux

# Presentation of the SETE Programme

## Organisation of the Masters Degree

**The Masters Degree in Sciences of the Environment, Territory and the Economy (SETE)** is obtained on the basis of a two year period of study, corresponding to 120 European credit points (ECTS) split over the two years: 60 in the 1st year (M1) and 60 in the 2nd year (M2). Options within the programme permit the student to progress towards a doctoral programme (PhD) or towards a variety of professional fields.

The SETE Programme is divided into three thematic fields (called 'Mentions' in French), each of which is sub-divided, at the 2nd Year (M2), into Specialities.

- During the 1st Year (M1) the student enrolls within one of the three fields (SEN, IDD, EGET), and chooses his or her programme of studies with a view to the Speciality (M2) being pursued. The M1 programme permits the student to choose a disciplinary 'major' (in Physics, Chemistry, Economics, Geography, Management, or Law) or to confirm an interdisciplinary profile ('major SETE'), at the same time as satisfying prerequisites for the Speciality to follow.
- During the 2nd Year (M2), the student takes a programme of studies within a Speciality. Some of the Specialities are close in character to 'traditional' disciplinary degree programmes. Others focus directly on building dialogue and competence between disciplines.

Analyses addressing sustainable development are at the crossroads of physical and human sciences. They treat, on the one hand, the 'environmental' dimension of the insertion of economic activity within biophysical processes and, on the other hand, the 'symbolic' dimensions of institutions, culture, ethics and politics. This entails:

- The 'hard sciences' challenges of the measurement and representation (including analytical modelling) of complex systems; and
- The 'soft sciences' challenges of analysing societies' goals and values, including individual and collective resource use choices, governance, justice and the legitimacy of decisions.

## EXAMPLES OF SUSTAINABILITY CHALLENGES

### DATA AND MODELLING

- How to assure the establishment and exploitation of environmental data systems, not only for researchers but also by public administration, business and civil society?
- How to link environmental and socio-economic data?
- What procedures and priorities for development of integrated environment-economy modelling tools whose results are useful and accessible to stakeholders (e.g., climate change and economic activity, with ramifications for agriculture, water resources, biodiversity, land use for energy, transport infrastructure)?

### INTERFACES OF SCIENCE AND SOCIETY

- How to assure that the scientific community responds to contemporary societal preoccupations in research?
- How to assure reliable scientific information to different stakeholders (territorial authorities, companies, NGOs, consumers...) in a fair and transparent way?
- How to communicate risks and uncertainties (e.g., possible effects of climate change on rainfall and temperature, and impacts for vegetation, species diversity, agriculture and recreation)?
- How to manage, in a long-term perspective, technology and environmental risks (e.g., polluted sites, water quality, building construction standards)?

## SCIENCES OF THE ENVIRONMENT, TERRITORY AND THE ECONOMY — SETE

Programme Directors: Dr. Isabelle Nicolai and Prof. Laurent Labeyrie

### SEN: Sciences of the Environment (G rard Caudal)

#### AIR QUALITY AND NOISE CONTROL

Coordinator: Guy Cernogora  
Email: guy.cernogora@ens-phys.uvsq.fr

#### CLIMATE-ENVIRONMENT INTERACTIONS AND REMOTE SENSING

Coordinator: Matthieu Roy-Barman  
Email: Matthieu.Roy-Barman@lsce.cnrs-gif.fr

#### PLANETARY SCIENCES

Coordinator: Fran ois Forme  
Email: francois.forme@cetp.ipsl.fr

#### CLIMATE-ENVIRONMENT SOCIETY INTERACTIONS

(planned for 2006)  
Coordinator: Laurent Labeyrie  
Email: Laurent.Labeyrie@lsce.cnrs-gif.fr

### IDD: Sustainability Science, Tools and Techniques (Martin O'Connor)

#### SUSTAINABLE DEVELOPMENT STRATEGIES AND CORPORATE SOCIAL RESPONSIBILITY

(Business-university teaching partnership)  
Coordinator: Isabelle Nicolai  
Email: Isabelle.Nicolai@c3ed.uvsq.fr

#### OPERATIONS RESEARCH PRINCIPLES AND TOOLS: ELECTRONIC NETWORKS, INFORMATION SYSTEMS AND COMMUNICATION

Coordinator: Barth l my Alcantara  
Email: Barthelemy.Alcantara@ens-stq.uvsq.fr

#### ENVIRONMENTAL LAW, SAFETY AND QUALITY IN BUSINESS

Coordinator: Jean-Pierre Desideri  
Email: desideri@unice.fr

#### SHARING ENVIRONMENTAL KNOWLEDGE: PARTNERSHIPS FOR SUSTAINABILITY

with 2 options: 'Territory/Environment' and 'Partnerships with Business'  
Coordinator: Martin O'Connor  
Email: Martin.O-Connor@c3ed.uvsq.fr

### EGET: Economics and Governance of the Environment and Territories (Denis Requier-Desjardins)

#### ECONOMICS AND GOVERNANCE OF RISKS

Coordinator: Samir Allal  
Email: Samir.Allal@c3ed.uvsq.fr

#### TRANSPORT SYSTEMS AND SAFETY

Coordinator: Robert Delorme  
Email: Robert.Delorme@admin.uvsq.fr

#### TOURISM AND THE ENVIRONMENT

Coordinator: Didier Ramousse  
Email: Didier.Ramousse@c3ed.uvsq.fr

#### INTEGRATED SUSTAINABLE DEVELOPMENT

with 2 options: 'Socially Sustainable Development' and 'Ecological Economics, Environment and Sustainable Development Policies'  
Coordinator: Denis Requier-Desjardins  
Email: Denis.Requier-Desjardins@c3ed.uvsq.fr

# THE COURSES ON OFFER

## M1 Courses in the 1st Year of the Masters SETE Programme at the UVSQ

### SCIENCE-SYSTEMS-ENVIRONMENT

Environmental Education  
Applied Sciences of the Environment  
Society and Sciences of the Environment  
Systems and Complexity

### FACETS OF SUSTAINABLE DEVELOPMENT

Natural Resources and Environmental Economics  
Development Economics  
Ecological Economics  
Economic, Social and Environmental Ethics  
Introduction to Ecological Economics  
Sustainable Business (several modules)

### SPATIAL AND REGIONAL ANALYSIS

Environmental Law and Land Use Planning  
Spatial Economics  
Mobility, Flows and Territories (several modules)  
Tourism and Territorial administration

### UNCERTAINTY, RISK AND INTEGRATED ASSESSMENT

Systems analysis and integrated modelling (climate-energy-economy-environment)  
Analysis and Management of Natural Hazards  
Integrated Water Resources Management  
Introduction to the Observation, Analysis and Governance of Risks

### INFORMATION & COMMUNICATIONS TECHNOLOGIES AND THE ENVIRONMENT

Mapping and Spatial Analysis — GIS and Remote Sensing  
Introduction to Methods of Geographical Representation  
Information & Communication Technologies and Environmental Awareness  
Multimedia Deliberation Support Tools

### ECONOMICS

Econometrics  
International Economics and Financial Markets  
Public Economics  
History of Economic Thought  
Evaluation and Decision Support Methods  
The New Microeconomics

### OPERATIONS RESEARCH

GPAO and e-Logistics  
Computer Science (several modules)  
Operations Research and Transport  
Applied Operations Research

### EARTH SCIENCE

Geochemistry  
Methods of Environmental Sensing  
Paleoclimatology  
Physics and Chemistry for the Environment  
The Planet Earth  
Planetology

### PHYSICS AND CHEMISTRY

Numerical Approximation Techniques for Physics  
Fluids and Thermodynamics  
Lasers  
Analysis and Separation Methods  
Plasma Physics  
Statistical and Kinetic Physics  
Radioactivity and Nuclear Chemistry

*This list presents the spectrum of 'SETE M1' courses as of 2004/2005.*

## M2 Courses offered in the 2nd Year of the SETE Master's programme at the UVSQ

### THE CLIMATE SYSTEM

Climate: Evolution and Transitions • Environmental Response to Climate • Climate-Environment Modelling • Economics of Climate Change and Energy Risks

### PLANETOLOGY

The Planets and the Solar System • Radiation Physics and Observation Methods • Planetary Geophysics • In situ exploratory Sensors of Planetary Environments • The Study of Planetary Surfaces and Associated Spatial Techniques • Physics and Chemistry of Planetary Atmospheres • Dynamics of Natural Plasmas • Climate Systems and the Evolution of Planet Surfaces • Planetary Plasmas • The Formation and Evolution of Planetary Systems (several modules)

### ENVIRONMENTAL MEASUREMENT

Electromagnetism and Acoustics • Direct and Inverse Radiative Transfer • Remote Sensing: Vectors and Receptors / Treatment of Images / Data Analysis / Applications • Environmental Tracers • Environmental Analyses • Atmospheric Science and Weather Forecasting • Atmospheric Pollution • Instrumentation

### INDICATORS, INFORMATION SYSTEMS AND COMMUNICATION

Knowledge Quality Assessment: Measurement and Uncertainty • Sustainability Indicators: Institutions and Information Systems / The Indicator Dialogue Box • National Accounting in the service of Sustainable Development • Empirical Data and Conceptual Frameworks for Analyses of Sustainable Development • Multimedia Interfaces and Learning Pathways

### ECONOMICS OF SUSTAINABLE DEVELOPMENT

Basic Concepts • Analysis of Social and Economic Development Policies • Regional Economics • Standard of Living and Household Conditions • Financial Development • Energy Economics • Comparative Analysis of Environmental Policy • Environmental Economics for Science Students • Consumption Patterns, Territory and Sustainability

### LAW, INNOVATION AND INSTITUTIONS (BUSINESS, THE STATE AND CITIZENS)

Governance, Globalisation and the Environment • Sustainable Development and Corporate Social Responsibility • Agenda 21 and Territorial Administration • Dynamics of Technological Innovation • Environmental Law for Business • Legal Aspects of Safety and Business Practice • Civil and Penal Law on Safety and Accidents • Comparative Analysis of Legal Systems for Environment-Safety-Quality in the Anglo-Saxon World • Quality Management in the Business World • Regulations, Standards and Environmental Law

### FIELDS OF SUSTAINABILITY STUDIES

Sustainable Agriculture: Practices / Policies • Analysis, Governance and Integrated Management of: Coastal Zones / Marine Fish Resources / Water Resources / Biodiversity / Forest Resources • The Consumer, Consumption Patterns and the Environment • Product Lifetime and Service Quality • Indicators for Corporate Social Responsibility (CSR) • Socially Responsible Investment • The Environmental Services Sector • Mineral Resources Exploitation • Energy-Climate-Environmental Policies • Production and Management of Wastes / Local pollution (soil, water and air) • Technological Innovation and Knowledge Partnerships • Nuclear Technologies, Radioprotection and Radioactive Wastes Management

### OPERATIONS RESEARCH AND SYSTEMS ANALYSES

Thermodynamics and Ecological Economics • Complex Systems and Organisations • Systems Complexity and Vulnerability (concepts and examples) • Advanced Operations Research (several modules) • e-Logistics

### INTEGRATED ANALYSIS, VALUATION AND DELIBERATION

Integrated Environmental Analysis • Simulation and Scenarios: Introduction to modelling methods • Environmental Valuation and Decision Support • Participatory Methods and Practices: Typology and Case Studies • Theory of Value: Historical Perspective and Contemporary Challenges • Multimedia Interfaces for Participatory Processes and Deliberation • Futures Studies and Monitoring

### RISK OBSERVATION, ANALYSIS AND GOVERNANCE

Economic Analysis and Management of Risks • Economics of Climate Change and Energy Risks • Urban Risk Evaluation and Management • Technological Risks and Public Health • Risk Assessment in Complex Systems • The Human Factor in Socio-technical Systems • Actuarial Analyses and Insurance

### TRANSPORT AND SAFETY

Safety and Reliability of Transportation Systems • Safety Management • Urban Planning and Safety • Legal Analysis of Transport and Safety • Quality-Safety-Environment •

### GEOGRAPHY, TOURISM AND THE ENVIRONMENT

Policies for Sustainable Tourism Development • Tools for Management of Tourism Projects • Institutional and Legal Analysis of Tourism • Tourism Developments: Geopolitical and Socio-economic Aspects / Environmental Impacts / Case Studies • Communication and Tourism

### ORGANISATIONS AND MANAGEMENT

Personnel Management • Certification, Benchmarking, Standards and Environmental Audits • Methods for Team-building, Meeting and Interviews • Negotiation Techniques • Communication and Sustainable Development • Project Management

*This list presents the spectrum of courses planned for the year 2005/2006.*

# Our Partners Worldwide



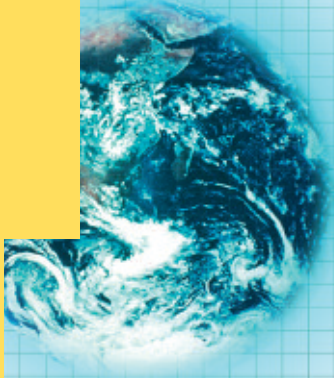
PARIS METROPOLITAN REGION

FRANCE

EUROPE

NORTH SOUTH COOPERATION

INTERNATIONAL EXCELLENCE



The SETE Programme immerses students in an interdisciplinary knowledge environment, without neglecting competence at a disciplinary scale. Our ability to offer such a programme at the UVSQ is directly linked to the fields of research excellence within the university, allied to our partners in public research institutions and business.

Partnership activities take many different forms, from exchange of students for short-term projects and doctoral studies, to collaboration on individual modules of the SETE teaching programmes, to joint activities at the level of Specialities in the M2 programme. Links with the business world are given a new emphasis through the establishment, in 2004, of the European Foundation for Sustainable Territories (FETD) as a centre of excellence allying public sector teaching and research, business interests and territorial administrations. At the international level, the SETE Masters Programme gets its strength through networking, for example:

- European research and exchange programmes on climate change and environment, such as the Carbo-Europe programme, the PROPER network (Proxies in Paleoclimatology: Education and Research) and the EFEIA (European Forum for Integrated Environmental Analysis).
- The EEESDP Network (Education in Ecological Economics and Sustainable Development Policy) linking more than 20 centres of excellence for research and teaching in ecological economics, environmental politics, governance and sustainability.
- North-South cooperation activity supported by the Institut de Recherche pour le Développement (IRD, one of the patrons of the C3ED research laboratory) promoting exchanges and research partnerships in Africa, Latin America and the South Pacific.

## The European Foundation for Sustainable Territories

The **FETD** (Fondation Européenne pour des Territoires Durables) is a centre of excellence for research and partnerships for sustainability in a territorial perspective. Three priorities are established for its operations:

- Ramifications of climate change at a territorial scale, and associated challenges for regional development, infrastructure and technology choices;
- Participatory governance through state-business-civil society partnerships, notably for territorial development at a regional level;
- Environmental planning, resource management and organisational change.

Established through the alliance of higher education, specialised research institutes, private companies, business federations, publicly owned companies and territorial administrations (village, town & county, and regional authorities), the FETD works for mutual benefits in research. It is linked across France, Europe and worldwide in a network of centres of excellence on sustainability, territorial governance, research and technology themes.

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## Research-based Teaching



The Masters SETE is strongly linked to internationally recognised research centres at the Université de Versailles Saint-Quentin-en-Yvelines ([see http://www.uvsq.fr/lab/index.html](http://www.uvsq.fr/lab/index.html)). These include the IPSL on climate, earth and environmental sciences, and the C3ED in economics and interdisciplinary studies on sustainable development. Teaching contributions from business partners, consultants and civil society coming from France and abroad reinforce our in-house research expertise.

### IPSL INSTITUT PIERRE SIMON LAPLACE

The IPSL ([website http://www.ipsl.jussieu.fr](http://www.ipsl.jussieu.fr)) is the principal French research centre in the field of environmental sciences, notably in the analysis of ocean-atmosphere-climate and interactions with terrestrial environments. With an extensive international network, it is a major centre for doctoral studies. Three of the six centres making up the IPSL are based at the UVSQ:

- The CETP (Centre d'étude des Environnements Terrestre et Planétaires) on interactions between the atmosphere and ocean and continental surfaces; medium scale phenomena in the weather system; upper atmosphere and Solar System plasma studies.
- The LSCE (Laboratoire des Sciences du Climat et de l'Environnement) on climate science, biogeochemical cycles, geochronology and geoindicators.
- The SA (Service Aéronomie) on planetary atmospheres, atmospheric chemistry and applied meteorology.

### C3ED CENTRE D'ECONOMIE ET D'ETHIQUE POUR L'ENVIRONNEMENT ET LE DEVELOPPEMENT

The C3ED, one of the leading social sciences centres in Europe on sustainable development, has established a major interdisciplinary programme spanning ethics, economics, geography, ecosystems sciences and communications technologies, that seeks to address in an integrated way the 'four dimensions' of sustainability — economic, social, institutional and environmental. Jointly financed by the UVSQ and the French IRD (Institut de Recherche pour le Développement), the C3ED has a special preoccupation with North-South relations and cooperation for research and teaching.  
([website http://www.c3ed.uvsq.fr](http://www.c3ed.uvsq.fr))



### OTHER UVSQ RESEARCH CENTRES LINKED TO THE SETE MASTERS PROGRAMME

**PRISM** - Computer science research including parallel networks, multimedia and distributed information.

**DANTE** - Research on business law and new technologies, centred on innovation practices including competition law, market dynamics, intellectual property, ICT and biotechnologies.

**LDVP** - Research on public law with applications to urban policy and administration.

**LAREQUOI** - Research in management concerned with business strategy and quality, innovation and communication, training and technologies.