

## 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)	none
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@inrae.fr

Office number: T 307

Office hours: Monday, Tuesday afternoons

interaction by emails or after the classes.

### **Course's Objectives - Objectifs du cours :**

.1) A macro economic view of environment and natural resources management

Most lectures in environmental economics are microeconomics oriented. The present lecture is a rare one that focuses exclusively on macro dimensions.

2) Introduction to dynamic models of natural resources use

The lecture is organised around one main question: "Is economic growth detrimental to the environment? "

Addressing the issue requires exploring dynamic models, that is make explicit the time dimension of environmental problems like climate change or biodiversity erosion.

The lecture provides the basic mathematical tools needed to work out dynamic models (optimal control theory). The objective is to familiarise the students with the thinking dynamics way", extending their skills in timeless economic arbitrage context -s to inter-temporal arbitrage problems, balancing the present against the future.

3) Presentation of the main tools and models relevant for many environmental economics issues: sustainable development, depletion of natural resources, climate change, waste and pollution control policies.

The lecture is organised around the presentation of classical models issued from the economic literature, synthesising the main achievements in macrodynamic modelling of natural resources and environment management issues from the seventies to the present state-of-the art.

### **Prerequisites - Pré requis :**

The course being rather technical, it is demanding for the students. All the needed mathematical background is given during the lecture.

A background in dynamic programming and optimal control is appreciated but is by no means necessary.

The same applies to a background in macroeconomic growth theory, but the lecture gives many recipes of the main aspects of the theory.

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

Laptops and tablets are welcomed

The students are expected to actively engage in the course by asking questions and challenging the teacher about the issues addresses during the lecture.

### **Grading system - Modalités d'évaluation :**

The grade policy for the course is the following. The final grade averages:

Participation grade (10%)

Written exam (40 %)

Project (50 %)

The 'written exam' is a 1H30 exam session where the students answer a general topic in relation with the lecture.

The 'project' is a team work (3/4 people) about a topic freely chosen by the students in relation to the core of the lecture. The students are asked to prepare a presentation with slides and a project summary in 5-6 pages, the 'project' grade being the average of the presentation and the evaluation of the summary text.

### **Bibliography/references - Bibliographie/références :**

A rather comprehensive reading list is provided on the moodle platform.

The course material is composed o:

-Lecture notes divided in chapters with their dedicated references and

-A set of slides following closely the lecture.

The two materials are complement to each other. The slides focus on the core of the course. The lecture notes present an extended material with appendices and extra material not treated in the class but useful for a comprehensive view of the lecture by the students.

### **Session planning - Planification des séances :**

The sessions are organised in 3 parts given below:

Growth and natural resources

Overview and general context: a brief historical summary in resources economics.

The Malthusian trap ?

A basic framework

The pure cake-eating problem

Sustainability

Growth and the environment

1. Overview ?

2 A basic framework

3 Environmental Kuznets curves

4 Polluting nonrenewable resources

Natural resources and endogenous technical change

Overview

A starter model

Directed technical change

The slides and the lecture notes follow closely this organisation.

**Distance learning – Enseignement à distance :**

All the material is ready for distance learning if needed.