

WP2100 Sustainable Development

Professor: Pascal da Costa

Language of instruction: French – **Number of hours:** 32 – **ECTS:** 3

Prerequisites: No

Period: S6 Elective 01 February to March IN16DE1, SEP6DE1
S8 Elective 08 February to March IN28IE1, SEP8IE1

Course Objectives

- ✧ Become aware of the coupling between resources, energy, the environment, the climate, the economy, geopolitics, demographics, at the different scales of the problem (local to global)
- ✧ Know the key figures of sustainable development (current situation and scientific predictions) and understand how these figures are constructed (assumptions and models).

On completion of the course, students should be able to

Knowledge of the major global issues of the XXI century and their solutions.

The evaluation covers a consistent individual project in writing a newspaper article or science paper on a contemporary issue of sustainable development, in French (English accepted) of 8 500 characters maximum (spaces included).

You will also find on the platform the articles written by your elders in previous years, which were published in reviews or journals!

Once your work made, you'll have to evaluate other works: the evaluation phase by peers is mandatory. it also results in a rating.

Course Contents

- ✧ Origins of economic growth and its effect on the increasing "unavailability" of natural resources (end of oil)
- ✧ Economic models of optimal management of natural, renewable and non-renewable resources
- ✧ Demography: evolution of the world population
- ✧ Climate: green house effect and climate change
- ✧ Resource management (reserves, geographical distribution, price) : resources for energy (oil, gas, coal, uranium), raw materials (minerals), Waste management and recycling
- ✧ Technical state-of-the-art and new technologies for energy and water management
- ✧ Vegetal resources and use of soil in Agriculture

Course Organization

Video : 8 hr, Quizz : 2 heures, Articles : 8 hours, Tutorials: 4hr, Exam (project): 12 hr, Peer Assessment: 2h.

Teaching Material and Textbooks

- ✧ Course reader + Videos + lecture slides + course website: quizzes and forum
- ✧ E. Iacona, J. Taine, B. Tamain, "Les enjeux de l'énergie," Dunod 2008
- ✧ V. Masson-Delmotte and A. Pailler, "Climat : le vrai et le faux," Le Pommier, 2011
- ✧ M. Dufumier, "Malbouffe au nord," NIL, 2012
- ✧ P. da Costa, Rio : une gouvernance mondiale de l'environnement face à la crise écologique ?, reporterre, 1 juin 2012.

Resources

This multidisciplinary course is taught by specialists of the various dimensions of sustainable development:

- ✧ Pasca Da Costa (Ecole Centrale Paris): Economics and development
- ✧ Estelle Iacona (Ecole Centrale Paris): Energy and fossil resources
- ✧ Claire Bordes (Ecole Centrale Paris) : Water geopolitics
- ✧ Marc Dufumier (INRA, Agro): Vegetal resources
- ✧ Gilles Pison (INED, EHESS): Demographics
- ✧ Valérie Masson-Delmotte (CEA): Climate
- ✧ Jean-Pierre Chevalier (CNAM) - Mineral resources

Evaluation

Team work: 12 hr (essay). Peer Assessment: 2hr.