

International Advanced Master in Environmental Management (EnvIM)

Institution: Ecole des Mines de Paris & Insa de Lyon & Tsinghua University (China)

Website : www.am2e.ensmp.fr

Degree name : Double diploma : Mastère spécialisé Conférence des Grandes Ecoles & Master of Engineering Tsinghua University (China)

Length of the program : 14 months: 4 academic months in France – 4 academic months in China and a 6-month internship in industry or institution.

Admission requirements: Master's degree in science or engineering

English Proficiency : Advanced level TOEFL PBT (575/677) – iBT (90/120) or TOIC (785/990) – Program taught in English – French and Chinese initiation taught during the program

The International Environmental Management Master Programme (EnvIM) is a 14-months, full-time, advanced Master programme for recently graduated scholars and aims to match the participants' academic specialist education with the future interdisciplinary professional practice in a variety of companies, consultancies and institutes. Candidates should have excellent academic achievements, a thorough mastery of the English language and a strong motivation to start or continue a professional career in environmental management and sustainable development at the International level. Candidates should have a positive attitude to working independently as well as co-operating in an interdisciplinary and international environment, to share knowledge and exchange views with people with a different experience and disciplinary and cultural background.

This program is organized around the “problem solving” approach and combines theoretical lectures, case studies, interactive exercises, project and visits allowing students to investigate complex environmental issues.

Brief presentation of the program content: 600 teaching hours, 8 principal modules

❖ Unit[1] : “ Natural media, natural systems, natural resources” – 3 weeks, 3 credits

The objective of this module is to perform a synthesis of the necessary fundamental notions about how the natural media and living systems are structured and behave.

❖ Unit[2]: “Institution–Public policies–International conventions and stakeholders” – 5 weeks, 4 credits

The objective of this module is to present the up-to-date context of environment and sustainable development policies at the Chinese level, European level and international level with a description of main conventions (FCCC, Kyoto protocol, biodiversity, WTO, Ramsar convention, Basel convention), a presentation of standard economic tools, such as taxes and emission permits; environmental regulations. A presentation of the various active lobbies from NGOs, corporate branches, and citizens will also be presented.

❖ Unit [3]: “Pollution Prevention and Control” – 6 weeks, 6 credits

This unit intends to focus on efficient and sustainable environmental control, optimisation and remediation in industrial systems. Here we can define the following course modules relevant to this approach:

- **Environmental Impact Assessment (EIA) + pollution prevention and control (PPC)**: the description of environmental impacts will be performed in relation to the main effluents and toxic substances currently released in the environment: methods and tools for evaluating the potential environmental impacts of various activities (case study) and presentation of the PPC European approach. Mitigating potential environmental damages of human activities. Associating process control to end of pipe treatment of hazardous waste and air pollution
- **Industrial risk management**
- **Cleaner production** : zero emission principles, waste minimization, new processes technologies. Case studies of the implementation of cleaner production strategies in very small companies in Ho Chi Minh City will be presented.
- **Soil and groundwater pollution management** : this module will address the question of contaminated land, Brownfields and derelict land management, with a vision of sustainable land planning and land use. In China,

a large amount of urban or peri-urban land is polluted by the remains of past industrial activities. The assessment, cleaning and reallocation processes of this land will be presented here.

❖ Unit [4]: “Environment at territorial level” – 7 weeks, 7 credits

- **Water management**
- **Waste management** : main waste treatment strategies
- **Sustainable cities** : urbanization, construction and transportation stakes, megalopolises, sustainable urban design. the urban system metabolism and its relationship to environmental impacts and sustainability. Organization of transport, material supply and sanitation in urban systems.
- **Urban planning** : assessment of environmental impact for different planning scenarios, modeling, scenario analysis, GIS

❖ Unit [5] : “Environmental issues of Energy strategies” – 3 weeks, 3 units

- **Energy and global change** : scientific background, framework on climate change convention, Kyoto protocol, clean development mechanisms, case studies
- **Rational use of energy and renewable energy**: protocols and technologies to minimize energy use and make it sustainable in a developing economy

❖ Unit [6] : “Life cycle thinking” – 3 weeks, 3 units

- **Design for environment (DFE)**: this module will present the set of methods that account for increasing the services and welfare associated to products and activities, whilst minimizing their environmental content, according to the so-called “factor four principle”: definition of products and integrated product design, The marketing process of green product will also be analyzed
- **Industrial ecology (circular economy)**: the second stage in integrated environment to human activities is to “close the material cycles”. This can be achieved by a set of innovative methods that consider production systems (or economic systems at large) as living systems. Having described their “metabolism” it is possible to envisage win-win association to other metabolisms, yielding to an efficient allocation of resources, wastes and by-products. Industrial symbiosis methodology will be presented. Exercises on virtual or real physical data collection will be performed. Case study on industrial eco-parks

❖ Unit [7] : “Sustainable strategies for industry” – 3 weeks, 3 units

These courses are dedicated to management methods integrating environmental, social and strategic constraint at the corporate, society or state levels. The relevant modules are:

- **Environmental management systems**: scores of companies and some cities are building strategies to obtain labels of international values as regards environmental management (ISO14000 series). The standard process of environmental certification, and of corporate voluntary commitment will be described and analyzed on selected case-studies
- **Environmental reporting, environmental rating**: as a result of national regulations and pressures of stakeholders (shareholders, society, investors), companies pay a growing attention to environmental reporting and scoring. The principles and role of corporate social responsibility scoring companies will be described.
- **Social, societal, ethical questions**: managing sustainable development implies associating all stakeholders. This raise a series of social and societal questions, as it is necessary to obtain an effective participation and implication of the society as a whole and of each citizen.

❖ Unit [8] : “Linguistic and cultural preparations” – 80h, 5 credits

During the 8 months, the students will receive a preparation to Chinese/French language and to the cultural aspects of both countries.