

Specific features of the **Advanced Master (MS) in “Health & environment: challenges for industrial and local development”**, of the **Engineering Diploma in Environmental Health** and of the **Master (Year 2) in Public Health and Environmental Risks (SPRE)**

This document presents the three postgraduate courses, delivered in French under the responsibility of EHESP’s School of Engineering and Environmental and Occupational Health Department (DSET), in the field of environment and public health. Its objective is to identify the major differences between the three courses.

Course title	EHESP Engineer, specialized in Environmental Health (IGS)	Advanced Master (MS) in “Health & environment: challenges for industrial and local development” (work-study program)	Master (Year 2) in Public Health and Environmental Risks (SPRE)
Diploma delivered	Diploma of “Ingénieur de spécialité” (Specialized Engineer) accredited by the French “Commission des Titres d’Ingénieur” (CTI)	Advanced Master accredited by the Conférence des Grandes Ecoles (CGE)	Master degree, accredited by the French Ministry of Higher Education and Research – Professional or Research Pathway
Date of creation	Course accredited since 1972	Course accredited by the CGE since January 2010	Course accredited since 2010
Partnership	EHESP course	MINES ParisTech (co-accreditation)	Paris 5, Paris 11 et Nancy 1 (co-accreditation)
Admission requirements	Engineering diploma recognized by the CTI On an exceptional basis, holders of a European masters degree or equivalent for non-European foreign applicants	Master degree or equivalent or Master (Year 1) degree with a minimum of 3 years professional experience	Master (Year 1) degree or professionals with a level recognized as equivalent
Students’ profiles / backgrounds	Scientific postgraduate course (mostly engineers) Engineers with a scientific background: 80 % Scientific masters: 15 % Other diplomas: 5 % 85% of students are graduates (i.e. not professionals)	Various postgraduate courses (Master courses or equivalent) Applicants coming from the following fields: engineering, medicine, pharmacy, urban planning, architecture, economics, quality, scientific master courses, etc. This course is mainly aimed at students with a prior experience.	Students from scientific courses e.g. with a Master Year 1 in public health, or biology, physics, chemistry, environmental sciences... Professionals in continuous education willing to broaden their knowledge in environmental health

<p>Competences</p>	<p>Engineering, scientific, technological, organizational and administrative expertise in order to:</p> <ul style="list-style-type: none"> • identify and assess health risks related to the state of life environments, • contribute to the design and management of technical or action schemes, • suggest solutions for risk control and prevention, • contribute to decision-making in environmental health, • ensure that the various states of the environment comply with professional regulations or standards. 	<p>Ability to take into account the impact on health of economic or industrial decisions or land planning public policies.</p> <p>Implementation/development of methods or tools in order to take into account health and environmental issues both in land planning policies and in sustainable development policies within business activities.</p> <p>Decision-making support for land planning policies and industrial strategies.</p>	<p>Studies on the assessment of environment-related health risks: toxicology, epidemiology, exposure, modeling,...</p> <p>Implementation of such methods in various environments: indoor, outdoor, industrial environments ...</p>
<p>Training field / objectives</p>	<p>Health Engineers are public health professionals.</p> <p>The objective of this course is to train highly-qualified expert engineers, able to assess environment-related risks and to implement technical tools and methods to prevent and manage health risks in various life environments: water, air, waste, housing, food, ...</p> <p>This course is a complement to the skills previously acquired in engineering courses, and provides students with a culture and methods in public health.</p>	<p>Graduates of this MS are managers/designers with a specific awareness of the health impacts of their company or organization's strategic choices.</p> <p>This MS deals with the interferences between industrial, environmental, land planning or sustainable development policies and the state of health of the populations.</p> <p>Its objective is to train senior managers able to understand in a global and interdisciplinary way the health challenges related to industrial, land planning, sustainable development or environmental policies.</p>	<p>Graduates of this Master are public health professionals.</p> <ul style="list-style-type: none"> • Research track Critical analysis of work in toxicology, microbiology and epidemiology and use of these methodological skills in order to conduct research related to environmental nuisance/pollution. Development of methods and tools for the assessment of environmental risks in various contexts. • Professional track Identification of relevant data in order to analyze a situation and develop an integrated health risk assessment approach in an appropriate manner. Interpretation of the results of risk assessment studies and contribution to decision-making processes.

<p>Course organization</p>	<p>Venue: Paris Duration: 12 months (full-time)</p> <ul style="list-style-type: none"> • 7 months – teaching (lectures, conferences, case studies & on-site visits, group work) • 4 months - internship and the writing of a dissertation. <p>Teaching language: French</p>	<p>Venue: Paris Duration: 12 or 22 months</p> <p>1- Duration: 12 months as a “work-study program”</p> <ul style="list-style-type: none"> • 2 weeks per month teaching (lectures, conferences, workshops, case studies, study tours, role plays) between September and May • a 5-month professional mission and the writing of a professional thesis. <p>Either teaching periods alternating with the professional mission each month (2 weeks + 2 weeks). Or teaching between September and May for 2 weeks each month, and then a professional mission until October.</p> <p>2- Duration: 22 months</p> <ul style="list-style-type: none"> • 1 week per month teaching between September and May of Year Y and Y+1 • and the equivalent of a 5-month professional mission during the 22 months and the writing of a professional thesis. <p>Teaching language: French and English</p>	<p>Venue: Rennes, Paris 5, Paris 11, and/or Nancy 1 depending on the track. Duration: 1 academic year</p> <p>Teaching language: French</p>
<p>Course program</p>	<p>The course addresses all the necessary knowledge, tools and methods for the assessment of health risks, the design, implementation and management of health risk prevention and management schemes.</p> <p>The course program is composed of 5 Teaching Units (UE) plus 1 for the internship:</p>	<p>This MS was designed with the idea of removing the barriers between disciplines by addressing environmental health issues through topics that enable students to understand and manage local and industrial challenges in a global way.</p> <p>The course program is composed of 5 Teaching Units (UE) plus 1 for the professional</p>	<p>Semester 1 Core curriculum:</p> <ul style="list-style-type: none"> - Substance behaviors in the various environments. Physico-chemistry and microbiology of the environment; - epidemiology applied to the environment; - occupational and environmental toxicology; - assessment of the exposure to xenobiotics; - the health risk assessment process.

	<p>UE-1 Basics in Environmental Health Risks</p> <ul style="list-style-type: none"> -Microbiology -Toxicology - Environmental metrology -Physical agents -Hydrology <p>UE-2 Health risk quantitative estimation methods</p> <ul style="list-style-type: none"> -Biostatistics and epidemiology -Multivariate models, SATA -Quantitative evaluation of risks - Environmental epidemiology <p>UE-3 Context and methods of intervention</p> <ul style="list-style-type: none"> -Public health and health systems - Public health, environmental health -Methods and tools in risk management -Operational context - ICPE-related health risks <p>UE-4 Hygiene and health</p> <ul style="list-style-type: none"> -Drinking water -Food safety -Sanitation and non-drinking water -Communicable diseases control <p>UE-5 Territories, cities, housing and health</p> <ul style="list-style-type: none"> -Land planning and development -Urban air pollution -Housing and health -Contamination of soils and waters -Waste management -Health risks related to physical phenomena - Occupational risks <p>UE-6 Internship and dissertation</p>	<p>mission:</p> <p>UE-1 Basics in Environmental Health</p> <ul style="list-style-type: none"> Se 11 Public Health Science Se 12 Environmental Science Se 13 Basics at the crossroads of Environment and Health <p>UE-2 Environmental impacts and consequence on the health of populations</p> <ul style="list-style-type: none"> Se 21 Climate change Se 22 Biodiversity Se 23 Urbanization Se 24 Farming practices Se 25 Industrial production Se 26 New technologies <p>UE-3 Taking health into account in industrial strategies</p> <ul style="list-style-type: none"> Se 31 Risk management Se 32 Taking health and the environment into account in industrial strategies Se 33 Environmental health and sustainable development management tools in industrial activities <p>UE-4 Taking health into account in land planning and local development</p> <ul style="list-style-type: none"> Se 41 Land planning and development Se 42 Planning responses Se 43 Tools for the analysis of impacts, decision-making support and public policies <p>UE-5 Evaluation of public policies, societal and ethical regulations</p> <ul style="list-style-type: none"> Se 51 Evaluation of public policies Se 52 Analysis of controversy Se 53 International regulation Se 54 Ethical issues and societal responsibilities <p>UE-6 Professional mission & thesis</p>	<p>Semester 2</p> <p>Research track (5 UEs, i.e. 4 out of the 5 offered and 1 optional):</p> <ul style="list-style-type: none"> - methodological enhancements in environmental epidemiology; - methods in environmental toxicology; - methods in environmental microbiology; - biostatistics and information systems applied to the environment; - occupational risk assessment and management. <p>Professional track (5 UEs out of the 6 offered and 1 optional):</p> <ul style="list-style-type: none"> - introduction to health risk management; - assessment of risks related to chemical substances: legal, organizational and practical aspects; - assessment of risks related to urban environment; - assessment of risks related to indoor environment; - assessment of risks related to industrial environment. <p>Semesters 1 and 2</p> <p>Internship</p>
<p>Career opportunities</p>	<p>Expert in charge of the assessment of health risks related to various life environments, working in public organizations, companies and consultancy firms.</p>	<p>Consultant/expert in charge of:</p> <ul style="list-style-type: none"> • developing and implementing health and environmental impact measurement methods on various kinds of projects, 	<p>Research fellow in charge of risk assessment studies in:</p> <ul style="list-style-type: none"> - industrial groups (especially in the chemistry, energy and environment sectors); - consultancy firms;

	<p>Head of unit in charge of environmental issues in ministries (of health, environmental or agriculture), health agencies or local authorities.</p> <p>Engineer in charge of health and/or security and/or environment in industrial groups, hospitals, ...</p>	<ul style="list-style-type: none"> • identifying the impact of existing practices and contribution to the design and implementation of risk control measures; <p>Expert specialized in estimating the impacts on health of land development projects, production / marketing of new products, eco-design...</p> <p>Head of unit or department: stakeholder and coordinator in sustainable development, environmental protection and public health policies.</p>	<ul style="list-style-type: none"> - national agencies working in the field of environmental health; - administrations in charge of health or the environment at the national or local level; - international organizations; - NGOs.
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