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Syllabus  
Environmental Quality Engineering  
6 CFU  
Prof. Giulia Costa

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### Course Description

The course will focus on some of the key global environmental challenges that our Planet is currently facing and on the strategies that are being developed to address them both from a policy/legislative perspective and from a technological one.

The main objective of this course is to provide students with a fundamental understanding of complex environmental problems and of the main legislative and technical measures for mitigating human impacts on the environment. To this aim, the students will be provided with scientific and technical background for understanding and discussing complex environmental issues and possible solutions. In addition, the main aims and contents of international protocols, standards and framework directives, as well as of the main procedures and tools developed to manage and assess environmental impacts related to systems, processes or products will be examined.

Based on the knowledge acquired in the course, the students will be able to form their own opinions on global environmental issues and communicate them effectively.

### Teaching Method

The course will be carried out mainly through lectures and power point presentations prepared by the instructor. However, the active participation of the students will be sought for through class discussions. Each student will prepare a presentation to give in front of the class that will be followed by a discussion. One or two field visits to water or waste treatment plants will also be planned. Experts will also be invited to provide lectures on specific topics.

### Schedule of Topics

<b>Topic 1</b>	Introduction: overview of contamination phenomena in different environmental compartments (air, water and soil) making reference to global and local contexts.
<b>Topic 2</b>	Overview of international protocols, EU framework directives, policy and standards regarding environmental quality control.
<b>Topic 3</b>	Urban air quality and climate change mitigation strategies.
<b>Topic 4</b>	The water issue: potabilization and sustainable sanitation, traditional treatment processes in developed countries and approaches/technologies for the developing world.
<b>Topic 5</b>	Contaminated sites remediation and regeneration of Brownfields.
<b>Topic 6</b>	Integrated waste management strategies and technologies.
<b>Topic 7</b>	Environmental quality management tools (environmental management systems, EMAS, Eco-label).
<b>Topic 8</b>	Environmental impact assessment and strategic environmental assessment procedures.
<b>Topic 9</b>	Environmental impact assessment tools (life cycle assessment and environmental footprint).

**Textbook and Materials**

Reading material on each course topic which will include handouts, reports, scientific papers and links to websites, will be made available to the students (both to those attending or not attending the lectures) by the course instructor.

**Assessment**

During the course three written mid-term exams, consisting in multiple choice questions and two or three open questions will be carried out; the first will regard topics 1 and 2, the second topics 3-6 and the third topics 7-9. In alternative, there will be a final written exam regarding the entire course program. The students will also be asked to select a topic of the course and prepare a presentation on it. Finally, there will be an oral exam.

The final grade will be made on the basis of the grades obtained from the written exam (50%), oral exam (25%) and presentation (25%).

**Office hours**

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Office hours: mon-fry 10 A.M.-6 P.M.