UNIVERSITÀ DI PAVIA

Anno Accademico 2021/2022

FUNDAMENTALS OF SANITARY - ENVIRONMENTAL ENGINEERING

Enrollment year	2019/2020
Academic year	2021/2022
Regulations	DM270
Academic discipline	ICAR/03 (ENVIRONMENTAL AND HEALTH ENGINEERING)
Department	DEPARTMENT OF CIVIL ENGINEERING AND ARCHITECTURE
Course	CIVIL AND ENVIRONMENTAL ENGINEERING
Curriculum	Ingegneria per l'ambiente e il territorio
Year of study	3°
Period	1st semester (27/09/2021 - 21/01/2022)
ECTS	6
Lesson hours	45 lesson hours
Language	Italian
Activity type	WRITTEN AND ORAL TEST
Teacher	CALLEGARI ARIANNA (titolare) - 6 ECTS
Prerequisites	Basic knowledge of chemistry and hydraulics are required.
Learning outcomes	The course trains the engineer who will dedicate his professional activity to the defense of the environment from pollution. The student will first acquire the knowledge of environmental pollution phenomena, and then learn the knowledge of the fundamental processes of water purification and the related design. The course will also give an overview of issues relating to waste treatment / disposal, the analysis of contaminated sites and the control of atmospheric air quality.
Course contents	WATER - Water cycle and pollution phenomena; - Qualitative and quantitative characterization of water; - Introduction to microbiology and biochemistry of water; - General principles of biological processes; - Kinetics of biological reactions;

	- Biological purification processes; - Nutrient removal systems; - Physico-chemical treatment processes. WASTE AND CONTAMINATED SITES - Classification of waste and reference legislation; - Biological treatments; - Thermal treatments; - Controlled landfill; - Risk analysis of contaminated sites; - Remediation technologies. AIR - Atmospheric pollutants; - Air pollution on a local and global scale; - Gaseous effluent treatment systems.
Teaching methods	The course is carried out through lectures supplemented by exercises.
Reccomended or required readings	The teaching material is provided by the teacher during the course. This material is uploaded before the lessons on the KIRO portal of the University of Pavia in order to allow students to follow the lessons. The contents of the handouts are taken from various texts reported by the teacher during the course.
Assessment methods	The final exam consists of a written and an oral test. The aim is to verify the skills acquired during the course. The final evaluation will be based on the degree of depth and understanding of the topics treated.
Further information	
Sustainable development goals - Agenda 2030	$lbl_legenda_sviluppo_sostenibile