



General information	
Academic subject	ENVIRONMENTAL CHEMISTRY
Degree course	ENVIRONMENTAL SCIENCES
Academic Year	2021-2022
European Credit Transfer and Accumulation System (ECTS)	7
Language	italian
Academic calendar (starting and ending date)	September-december
Attendance	RECOMMENDED

Professor/ Lecturer	
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Virtual headquarters	TEAMS: (CODICE: xhhr0xt) https://teams.microsoft.com/l/team/19%3aBOAIFHdbkSYbhtcm3q8Lt1oU8D92dnwJFlo94tuNiwo1%40thread.tacv2/conversations?groupId=2c982635-d6ce-4dc5-8948-bc3117853863&tenantId=c6328dc3-afdf-40ce-846d-326ead86d49
Tutoring (time and day)	MONDAY: FROM 3 TO 5 PM TEAMS platform: CODE: xhhr0x

Syllabus	
Learning Objectives	To provide students with the tools for knowledge of the fundamentals of Environmental Chemistry, with a focus on the pollution of ecosystems, transferring to them a critical awareness of environmental protection.
Course prerequisites	Basic knowledge of general and inorganic chemistry
Contents	PART I General aspects of Environmental Chemistry: definitions Biogeochemical cycles and the involvement of environmental sectors - Carbon cycle - Nitrogen cycle - Phosphorus cycle - Sulfur cycle - Water cycle PART II - The environmental sectors - Atmosphere, Soil, Waters and Sediments - The management of environmental resources: Energy, Waste - Atmospheric chemistry - Physical characteristics and energy and mass transfer - Chemical composition of the air. Chemical and photochemical reactions in the atmosphere - The pollutants - Local and global phenomena - Monitoring techniques - Models of dispersion



	<ul style="list-style-type: none"> - Soil chemistry - Physical and chemical properties of the soil - Organic and inorganic components of the soil and environmental role in relation to xenobiotics inorganic and organic. - Organic and inorganic xenobiotics in the soil. - Soil degradation: erosion, salinization, sodicization and desertification phenomena. - Waste and pollutants in the soil. - Chemistry of aquatic environments - Fundamentals of water chemistry - The interactions between the phases - Water pollution - Treatment of purification or purification of water - Fundamentals of energetics - Fundamentals of Waste Management <p>PART III</p> <ul style="list-style-type: none"> - Legislative and resource management aspects: - Environmental Impact Assessment: methodological approaches - Strategic Environmental Assessment - Integrated environmental authorization <p>PART IV</p> <p>Applications:</p> <ul style="list-style-type: none"> - Dusts in the atmosphere - Indoor pollution - Olfactometry - REACH
Books and bibliography	'Chimica dell'ambiente' - Stanley E. Manahan – edit by Piccin e 'Particelle in Atmosfera' – edit by Villaggio Globale
Additional materials	<i>interesting websites</i>

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
60	45	15	90
ECTS			
7	5	1 + 1	
Teaching strategy		<i>theoretical lectures during which all the topics listed in the programme are addressed and workshop activities to understand and deepen the topics addressed.</i>	
Expected learning outcomes			
Knowledge and understanding on:		<ul style="list-style-type: none"> ○ To provide the student with the tools for the knowledge of the fundamentals of Environmental Chemistry ○ With a focus on pollution of ecosystems (air, water, soil) ○ Transferring critical awareness of environmental protection to students 	
Applying knowledge and understanding on:		<ul style="list-style-type: none"> ○ the student will be able to understand the different methodological approaches of monitoring to be applied in a critical environmental situation. 	
Soft skills		<ul style="list-style-type: none"> • <i>Making informed judgments and choices</i> 	

	<ul style="list-style-type: none"> ○ the student will be able to collect and interpret environmental monitoring data and approach a recognition of sources of pollution ● <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ the student will be able to communicate with appropriate language on topics related to the course. ● <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ the student will be able to continue his or her educational pathway related to environmental issues in an autonomous way.
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Assessment and feedback	
Methods of assessment	<i>An oral test with questions on the syllabus plus a presentation of a paper on a topic chosen by the student.</i>
Evaluation criteria	<ul style="list-style-type: none"> ● <i>Knowledge and understanding</i> <ul style="list-style-type: none"> ○ To verify that the student has understood the fundamentals of Environmental Chemistry and to verify that he/she has acquired an awareness of the importance of environmental protection. ● <i>Applying knowledge and understanding</i> <ul style="list-style-type: none"> ○ Verify that the student has acquired the main knowledge of how to manage environmental monitoring. ● <i>Autonomy of judgment</i> <ul style="list-style-type: none"> ○ verify that the student has reached a good level of autonomy in the evaluation of a pollutant source, starting from the collected data ● <i>Communicating knowledge and understanding</i> <ul style="list-style-type: none"> ○ Ensure that the student is able to use appropriate language on topics related to environmental chemistry. ● <i>Communication skills</i> <ul style="list-style-type: none"> ○ Verify that the student is able to use an appropriate language on topics related to environmental chemistry. ● <i>Capacities to continue learning</i> <ul style="list-style-type: none"> ○ Verify that the student has achieved a mastery of the subject, such as to ensure that he can continue the educational path on environmental issues independently
Criteria for assessment and attribution of the final mark	<i>The degree of knowledge of the subject matter and linguistic proficiency is assessed and a good level of autonomy is achieved in making an assessment of the case study under consideration.</i>
Additional information	

Bari, 25.09. 2021

Firma
(Prof. Gianluigi de Gennaro)

