

Teaching plan - PhD program in Chemical, Geological and Environmental Sciences

38°Cycle a.y. 2022/2023

Course	Teacher(s)	SSD	hrs	credits	Educational form*	Type of activity**	Mandatory/Chosen activity
Earth Observation data for environmental monitoring	Micol Rossini	GEO/04	16	2	Lecture	Intercurricular	Chosen activity
Open source software for spatial data analysis	Micol Rossini	GEO/04	16	2	Lecture	Intercurricular	Chosen activity
Online tools for atmospheric research	Samuel Albani	GEO/04	10	1	Lecture & laboratory training	Intercurricular	Chosen activity
Climate Journal Club	Claudia Pasquero, Fabien Desbiolles, Agostino Meroni, Mara Murri	GEO/12, GEO/06	20	2	Lecture & seminar	Intercurricular	Chosen activity
Environmental sustainability	Elena Collina, Valeria Mezzanotte, Antonio Finizio, Francesco Romagnoli	CHIM/12, BIO/07	20	2	Lecture & laboratory training	Intercurricular	Chosen activity
Machine Learning for Multivariate Data Analysis	Davide Ballabio	CHIM/01	16	2	Lecture	Intercurricular	Chosen activity
New lignin-based sustainable materials: science and technological aspects.	Luca Zoia, Ruggero Barni, Antonello Cerullo, Jerome Vachon, Massimo Benocci, SABIC	CHIM/01, FIS/03	8	1	Lecture	Intercurricular (mutuato dal Corso di Dottorato in Fisica e Astronomia)	Chosen activity
Geophysical Fluid Dynamics	Claudia Pasquero	GEO/12	12	1	Laboratory	Intercurricular	Chosen activity

Scanning probe microscopy: principles, applications in nanosciences and image handling	Marcello Campione	FIS/01	14	1,5	Lecture, computer work	Intercurricular	Chosen activity
Raman spectroscopy: a flexible tool for an integrated approach in scientific research	Sergio Andò, Maria Luce Frezzotti, Alberto Resentini, Luca Ferrero, Chiara Urani	GEO/02, GEO/07, CHIM/12, BIO/06	16	2	Lecture	Intercurricular	Chosen activity
Critical raw materials and their environmental impact	Alessandro Cavallo	GEO/09	16	2	Lecture	Intercurricular	Chosen activity
Enhancement of fragile cultural heritage	Ezio Giovanni Bolzacchini, Luca Ferrero, Chiara Rostagno	CHIM/12	20	2	Lecture & laboratory training	Intercurricular	Chosen activity
Scanning and Transmission Electron Microscopy, Principles and Applications	Giancarlo Capitani, Paride Mantecca, Maurizio Acciarri	GEO/06, BIO/06, FIS/01	30	3	Lecture & laboratory training	Intercurricular	Chosen activity
Ice Core Science	Barbara Delmonte, Valter Maggi	GEO/04	16	1,5	Lecture & laboratory training	Intercurricular	Chosen activity
The climatic role of atmospheric aerosol in the Arctic	Luca Ferrero	CHIM/12	12	1,5	Lecture	Intercurricular	Chosen activity
Seminar Course	Seminario A cura dei dottorandi	Vari	12	1	Seminar	Chemistry Curricular	Mandatory activity
Introduction to photochemistry	Luca Bertini, Claudio Greco, Antonio Papagni, Federica Arrigoni	CHIM/02, CHIM/03, CHIM/06	16	2	Lecture	Chemistry Curricular	Chosen activity

NMR spectroscopy applications to ligand-receptor studies	Cristina Airoidi	CHIM/06	20	2,5	Lecture	Chemistry Curricular	Chosen activity
Crystallography and Laboratory of X-ray powder diffraction	Massimo Moret, Chiara Ferrara	CHIM/03, CHIM/02	18	2	Lecture & laboratory training	Chemistry Curricular	Chosen activity
Advanced Theoretical Chemistry	Piercarlo Fantucci	CHIM/03	20	2,5	Lecture	Chemistry Curricular	Chosen activity
NMR spectroscopy of molecular Inorganic and Organometallic Compounds	Roberto Della Pergola	CHIM/03	8	1	Lecture	Chemistry Curricular	Chosen activity
Advanced techniques for sample preparation	Fabio Gosetti, Veronica Termopoli	CHIM/01	16	2	Lecture	Chemistry Curricular	Chosen activity
Seminar Course	Seminario A cura dei dottorandi	Vari	12	1	Seminar	Geology Curricular	Mandatory activity
Field and remote-sensing techniques for the advanced characterization of rock fractures in outcrops	Federico Agliardi, Andrea Bistacchi	GEO/05, GEO/03	20	2	Lecture & Laboratory training	Geology Curricular	Chosen activity
Provenance analysis: how to integrate single grain and bulk techniques	Sergio Andò, Alberto Resentini	GEO/02	16	2	Lecture	Geology Curricular	Chosen activity
Detrital geochronology and thermochronology	Igor M. Villa, Marco G. Malusà	GEO/08, GEO/02, GEO/03	16	2	Lecture	Geology Curricular	Chosen activity

Introduction to geodynamic and landscape evolution numerical modeling	Pietro Sternai	GEO/02, GEO/03, GEO/04, GEO/10	20	2	Lecture, computer work	Geology Curricular	Chosen activity
Geotechnical modelling for slope stability and underground geostructures	Riccardo Castellanza	ICAR/07	20	2	Lecture & Laboratory training	Geology Curricular	Chosen activity
Advanced experimental testing and monitoring on geomaterials (laboratory and in situ)	Riccardo Castellanza	ICAR/07	20	2	Lecture & Laboratory training	Geology Curricular	Chosen activity
Seminar Course	Seminario A cura dei dottorandi	Vari	12	1	Seminar	Environment Curricular	Mandatory activity
Spatial variability of environmental characteristics and mapping methodologies	Chiara Ferré	AGR/14	16	2	Lecture	Environment Curricular	Chosen activity
Native plant assemblages to restore degraded lands	Rodolfo Gentili, Sandra Citterio	BIO/01	8	1	Lecture	Environment Curricular	Chosen activity
Antimicrobial resistance in the environment and risk assessment of veterinary medicinal products (VMPs)	Sara Villa, Andrea Franzetti	BIO/07, BIO/19	16	2	Lecture	Environment Curricular	Chosen activity
Seafloor mapping, biogenic habitats and marine management	Daniela Basso Alessandra Savini	GEO/01, GEO/04	8	1	Lecture	Environment Curricular	Chosen activity
Isotopes as environmental tracers	Barbara Leoni, Marco Rotiroti	BIO/07, GEO/05	18	2	Lecture & Laboratory training	Environment Curricular	Chosen activity
Environmental Risks Assessment of Chemicals	Antonio Finizio	BIO/07	16	2	Lecture	Environment Curricular	Chosen activity

Data analysis applied to the environment: Soundscape as index	Giovanni Zambon	FIS/07	20	2	Lecture & Laboratory training	Environment Curricular	Chosen activity
Advanced Human Ecology	Emilio Padoa-Schioppa	BIO/07	16	2	Lecture	Environment Curricular	Chosen activity
Application of Next Generation Sequencing and bioinformatics tools to ecological studies	Andrea Franzetti, Isabella Gandolfi	BIO/19	16	1,5	Lecture & Laboratory training	Environment Curricular	Chosen activity
Ecosystem services	Emilio Padoa-Schioppa, Ioannis Vogiatzakis	BIO/07	16	2	Lecture	Environment Curricular	Chosen activity

40

590

65,5

Educational form*

lecture

laboratory training

seminar

Type of activity**

curricular

cross-curricular