

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

36°Cycle a.y. 2020/2021

Course	Teacher(s)	SSD	hrs	credits	Educational form*	Type of activity**	Mandatory/Chosen activity
Scanning and Transmission Electron Microscopy, Principles and Applications	Giancarlo Capitani, Paride Mantecca, Maurizio Acciarri	BIO/06	30	3	Lecture & laboratory training	Intercurricular	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	Vari	20	2		Intercurricular	Chosen activity
Environmental sustainability	Elena Collina Valeria Mezzanotte Emilio Padoa-Schioppa Francesco Romagnoli (U. Riga)	CHIM/12 BIO/07	10	1	Lecture & laboratory training	Intercurricular	Chosen activity
Machine Learning for Multivariate Data Analysis	Davide Ballabio	CHIM/01	16	2	Lecture	Intercurricular	Chosen activity
Bioinorganic Chemistry of the Biogeochemical Cycles	Maurizio Bruschi	CHIM/03	16	2	Lecture	Intercurricular	Chosen activity

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New lignin-based sustainable materials: science and technological aspects.	Luca Zoia (DISAT), Ruggero Barni (DFO) and Carmen Canevali (SdM), University of Milano-Bicocca, Milan, Italy Antonello Cerullo, Jerome Vachon, Massimo Benocci, SABIC, Milan, Italy	CHIM/01 FIS/03	8	1	Lecture	Intercurricular (mutuato dal Corso di Dottorato in Fisica e Astronomia)	Chosen activity
Seminar Course	Seminario A cura dei dottorandi	Vari	12	1	Seminar	Chemistry Curricular	Mandatory
Introduction to photochemistry	Luca Bertini, Claudio Greco, Antonio Papagni	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 & laboratory training	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
Separability in quantum chemistry and effective potential theories	Piercarlo Fantucci, Maurizio Bruschi	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

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Seminar Course	Seminario A cura dei dottorandi	Vari	12	1	Seminar	Geology Curricular	Mandatory
UAV/ROV and Immersive Virtual Reality for research in volcanically, tectonically and climatically sensitive areas.	Fabio Luca Bonali Alessandro Tibaldi Alessandra Savini	GEO/03; GEO/04;	16	2	Lecture & Laboratory training	Geology Curricular	Chosen
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 (8h), field (6 h), laboratory training (6h)	Geology Curricular	Chosen
Provenance analysis: how to integrate single grain and bulk techniques	Sergio Andò, Alberto Resentini	GEO/02	16	2	lecture (16h)	Geology Curricular	Chosen
Detrital geochronology and thermochronology	Igor M. Villa, Marco G. Malusà	GEO/08, GEO/02, GEO/03	16	2	lecture (16h)	Geology Curricular	Chosen
Introduction to geodynamic and landscape evolution numerical modeling	Pietro Sternai	GEO/02, GEO/03, GEO/04, GEO/10	20	2	lecture (10h), computer work (10h)	Geology Curricular	Chosen
Geotechnical modelling) for slope stability and underground geostructures	Riccardo Castellanza	ICAR07	20	2	lecture (15h), laboratory training (5h)	Geology Curricular	Chosen

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Advanced experimental testing and monitoring on geomaterials (laboratory and in situ)	Riccardo Castellanza	ICAR07	20	2	lecture (10h), laboratory training (10h)	Geology Curricular	Chosen
Fluids In the Earth	Robert J Bodnar, Maria Luce Frezzotti, Leonid Danyuchevsky	GEO07/ GEO08	40	4	lectures	Geology Curricular	Chosen
Critical raw materials and their environmental impact	Alessandro Cavallo	GEO 09	16	2	lectures	Cross Curricular	Chosen
Seminar Course	Seminario A cura dei dottorandi	Vari	12	1	Seminar	Environment Curricular	Mandatory
Spatial variability of environmental characteristics and mapping methodologies - Variabilità spaziale delle caratteristiche ambientali e metodi cartografici	Roberto Comolli, Chiara Ferré	AGR 14	22	2	Lecture & Laboratory training	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 & tutela dello spazio marino	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	16	2	Lecture & Laboratory	Environment Curricular	Chosen activity

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COMPUTER-AIDED STATISTICAL COURSE FOR MARINE ECOLOGISTS	Paolo Galli	BIO/07	24	3	Lecture & Laboratory training	Environment Curricular	Chosen activity
Environmental Risks Assessment of Chemicals	Antonio Finizio	BIO/07	16	2	lecture	Environment Curricular	chosen activity
Course in Data analysis applied to the environment:	Giovanni Zambon, Roberto Benocci		20	2	lecture	Environment Curricular	chosen activity
Tot:		34	574	64			

Educational form*

 lecture
 laboratory training
 seminar

Type of activity**

 curricular
 cross-curricular