Doctorate Course

SCIENCES AND TECHNOLOGIES OF CHEMISTRY AND MATERIALS

Educational offer 2024-2025

OPENING LECTURE 2025

SPEAKER	UNIVERSITY/RESEARCH CENTER/COMPANY	TITLE/TOPIC	DATE	PROPOSER
Maurizio Prato	Centro de Investigación Cooperativa en Biomateriales (CIC) biomaGUNE, San Sebastián (E)	Turning the Impossible into Possible: the Power of Chemistry	14/2/25	L. Banfi

TYPE "A" COURSES – November 2024 – October 2025

TEACHER	UNIVERSITY/RESEARCH CENTER/COMPANY	TITLE/TOPIC	DATE	PROPOSER
Marco Ciufolini	University of British Columbia, Vancouver (CA)	The Total Synthesis of Natural Products as an Engine of Progress	27-28/11/24	R. Riva
Marco Ranocchiari	Paul Scherrer Institute, Villigen (CH)	Synthesis, structure, and frameworks of metal-organic frameworks	31/01/25	R. Riva
Andrea Dodero	Adolphe Merkle Institute, Fribourg (CH)	Block Copolymers: From Self-Assembly to Functional Materials	24-28/3/25	D. Comoretto
Paolo Giusto	Max Planck Institute of Colloids and Interfaces, Potsdam (D)	Covalent Thin Films for Energy Storage and Conversion	22-23/4 /25 or 28-30/4/25	D. Comoretto
Stefano Bertinetti	Università di Torino	Elemental and isotopic analysis for beginners: fundamentals and applications	May-25	F. Ardini
Paola Luciani	Università di Berna	Challenges and opportunities in formulating drug delivery systems	Jun-25 or Oct-25	T. Pellegrino
Nunzio Tuccitto	Università di Catania	Molecular Communications	23-27/6/25	D. Peddis
Ester Canepa	Centre for BioNano Interactions, University College Dublin (IR)	Bridging biological and synthetic approaches in advancing RNA delivery design	7-8/7/25	A. Relini
Anja-Verena Mudring	Aarhus University (DK), University of Stockholm (S)	Liquid crystals, from synthesis to applications	To be defined	P. Manfrinetti
Vicky Caponigro	Università di Salerno	Chemometrics, Hyperspectral Imaging and Mass Spectral Imaging: Advanced Tools for Analytical and Clinical Applications	To be defined	B. Benedetti
Manuel Anselmo	BlueEnergy	Chemistry of Hydrogen Technologies	To be defined	L. Banfi

Note: the list includes only the courses already approved by the Doctoral Board and it is periodically updated.

TYPE "B" COURSES – 2025

COURSE	CFU	TEACHERS	ENGLISH
Crystalline solids: electronic correlations, instabilities and order	2	S. Artyukhin (IIT)	YES
Design and synthesis of protein-kinase inhibitors as anticancer agents	2	S. Schenone (UniGe), M. Tonelli (UniGe)	YES
DNA nanotechnology	2	D. Garoli (IIT)	YES
Drug discovery: an introduction to the process leading to new small-molecule drugs	2	A. Armirotti (IIT), T. Bandiera (IIT), F. Bertozzi (IIT), M. De Vivo (IIT), S. Girotto (IIT), B. Grimaldi (IIT), D. Russo (IIT), R. Scarpelli (IIT), M. Veronesi (IIT)	YES
Elementary electronic structure of solids	3	L. Manna (IIT)	YES
INN and IUPAC nomenclature of organic drugs	2	G. Grossi (UniGe)	On request
Introduction to nanophotonics and nanofabrication	3	M. C. Giordano (UniGe)	YES
Molecular markers of food quality and genuineness	2	R. Boggia (UniGe), F. Turrini (UniGe)	On request
Multivariate analysis of chemical data	3	M. Casale (UniGe), C. Malegori (UniGe), P. Oliveri (UniGe)	On request
Patent and bibliographic databases searching in medicinal chemistry	2	C. Brullo (UniGe), A. Spallarossa (UniGe)	YES
Perspectives on bioinorganic chemistry	2	S. De Negri (UniGe)	YES
Polymeric nanocomposites	2	O. Monticelli (UniGe)	YES
Process intensification	3	A. Servida (UniGe)	YES
Science at Large Scale Facilities: Neutron and Synchrotron Light sources	2	A. Martinelli (CNR-SPIN)	YES
Single crystal diffraction at work	2	P. Solokha (UniGe)	YES
The Rietveld method: fundamentals and applications	2	C. Artini (UniGe)	On request
Water soluble nanoparticles	2	T. Pellegrino (IIT)	YES

TYPE "B" COURSES – 2026 (to be confirmed)

COURSE	CFU	TEACHERS	ENGLISH
Aspects of soft matter	2	A. Relini (UniGe)	On request
Atomic force microscopy, theory and practice	2	M. Salerno (UniGe)	YES
Catalysts and adsorbents	2.5	E. Finocchio (UniGe), G. Garbarino (UniGe)	YES
Design of magnetic nano-architecture	2	D. Peddis (UniGe)	On request
Experimental design	2	F. Ardini (UniGe), B. Benedetti (UniGe)	YES
Fundamentals of scanning electron microscopy	2	P. Riani (UniGe)	YES
Fundamentals of spectral imaging	2	C. Malegori (UniGe), P. Oliveri (UniGe)	YES
Innovative pharmaceutical dosage forms: preparation and control methods	2	S. Baldassari (UniGe), G. Caviglioli (UniGe), G. Zuccari (UniGe), E. Russo (UniGe)	YES
Instrumental techniques for trace elements determination in pharmaceuticals, inorganic nanomaterials, food products, environmental samples, and *in vivo* biokinetics evaluation	2	G. Drava (UniGe), V. Voliani (UniGe)	On request
Introduction to functional ceramic materials. Structure, properties, preparation and applications	2	V. Buscaglia (CNR)	YES
Introduction to polymer physical chemistry and characterisation techniques	2	N. Tirelli (IIT)	YES
Mathematical methods for chemistry	2	M. Ottonelli (UniGe)	Slides in English
Optical properties of materials	2	F. Bisio (UniGe), M. Canepa (UniGe), M. Magnozzi (UniGe)	YES
Organic materials for photonics	2	D. Comoretto (UniGe)	YES
Organic photochemistry	2	A. Basso (UniGe)	YES
Principal plants used in phytocosmetics and their constituents	2	A. Bisio (UniGe)	YES
Surface science	3	L. Vattuone (UniGe)	YES
The ideal synthesis nowadays: lessons from the synthetic chemist Nature	2	C. Lambruschini (UniGe), L. Moni (UniGe)	YES
Theory of crystalline solids	3	S. Artyukhin (IIT)	YES

TYPE "C" COURSES *– (2025 and 2026). These courses are taken during the first year

COURSE	CFU	TEACHERS	ENGLISH
Materials characterization 1	1	M. Lorenzoni (IIT), L. Pasquale (IIT), S. Dante (IIT), L. Ceseracciu (IIT)	YES
Materials characterization 2	1	M. Prato (IIT), L. Pasquale (IIT), S. Dante (IIT), Dr. Luca Goldoni (IIT)	YES
Nanomaterials and nano heterostructures: colloidal synthesis and chemical transformations	1	L. De Trizio (IIT)	YES
Advanced electron microscopy for materials science	1	R. Brescia (IIT), G. Divitini (IIT), I. Ivanov (IIT)	YES

Note: * formerly Type-F