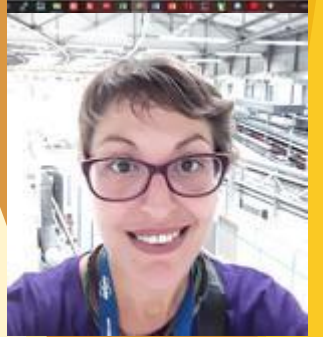
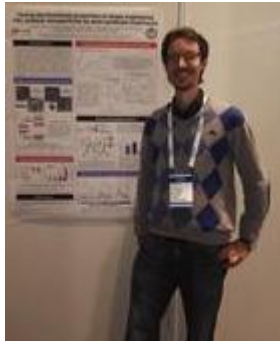


Master degree in Materials Science

a.y. 2021-2022










<https://www.materials-science.unito.it/do/home.pl>








The new program

MATERIALS SCIENCE 120 ECTS

The Master's degree in Material Science addresses the needs of the manufacturing and service sectors. The course aims to provide students with advanced and integrated training across the following areas: chemistry and physics of solids, materials production technology, instrumental characterization and modeling of materials structures and properties. Subjects consider the impact of materials on the environment, industry and economy; internship at public or private structures is highly recommended. The Master established permanent contacts with local institutions, industries and service providers, favoring its graduates to find work positions. All subjects are taught in English.

FISRT YEAR				CFU	hours
I SEMESTER	1	Quantum Effects in Materials: From Theory to Modelling		10	
	2	Synthetic chemistry for smart applications		10	
	3	Solid state chemistry: from the macro to the nano		10	
II SEMESTER	4	Surface phenomena at the micro and nano scale		8	
	5	Structure characterization and modeling		8	
	6	Solid state physics: opto-electrical properties, microfabrication and devices		8	
	7	Metals for sustainable manufacturing		6	

SECOND YEAR				CFU	hours
I SEMESTER	8	Sustainable polymers and composite		8	
	9	Environmental, Medical and Technological Applications of Minerals and Mineral-like Materials		6	
	10	Computational methods for the use of materials		8	
		Optional		8	
II SEM.	11	Internship		15	
	12	Final Dissertation		15	

Frontal lessons
Lab & practice

OPTIONALS – 4 CFU	
1	X-Ray Spectroscopy for the Characterization of Molecules and Materials
2	Magnetic Atoms and Molecules in material science, chemistry and biochemistry
3	In-silico prediction of materials properties
4	Advanced Diffraction Methods for Applications
5	Analytical chemistry for Materials Science and Materials for Analytical chemistry
6	Machine Learning and its Application to Chemistry and Materials Science
7	Materials for energy

The old program (only for 2° year)

MATERIALS SCIENCE 120 ECTS

The **Master's degree** in Materials Science addresses the needs of the manufacturing and service sectors. The course aims to provide students with advanced and integrated training across the following areas: chemistry and physics of solids, material production technology, instrumental characterization and modeling of material structures and properties. Subjects consider the impact of materials on the environment, industry and economy; internship at public or private structures is highly recommended. The Master established permanent contacts with local institutions, industries and service providers, favoring its graduates to find work positions. All subjects are taught in English.

FIRST YEAR			CFU	hours
I SEMESTER	1	Advanced mathematics and numerical analysis	8	
	2	Advanced chemistry	6	
	3	Metallurgy	6	
	4	Polymeric materials with applications	8	
	5	Quantum mechanics	8	
II SEMESTER	6	Physical chemistry	8	
	7	Solid state physics	12	
	8	Solid state chemistry	6	
	9	Analytical chemistry	4	

NO LONGER AVAILABLE

SECOND YEAR

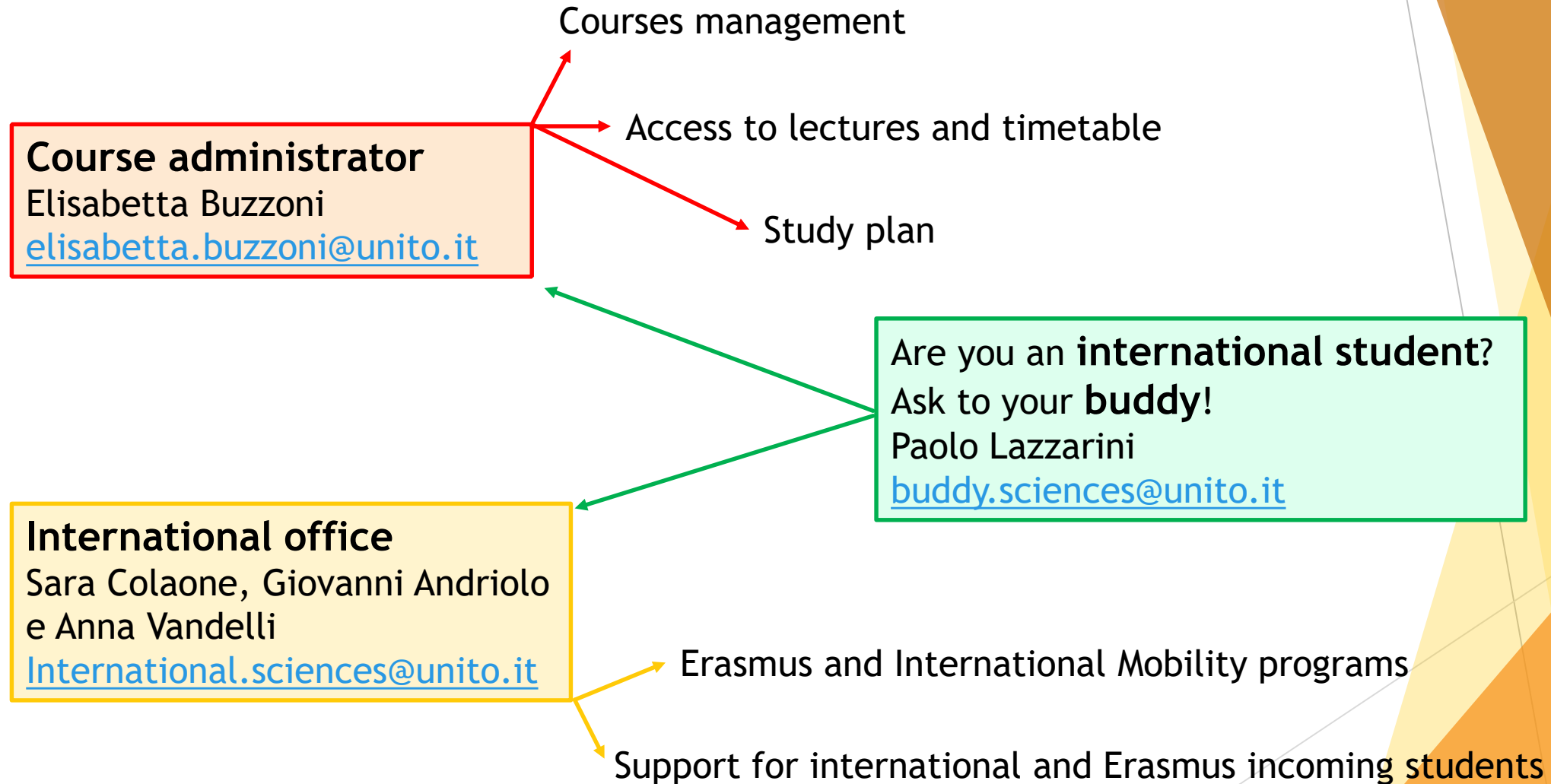
		CFU	hours
I SEM.	1 Organic Materials	6	
	5 Selection and use of materials	6	
II SEM.	6 Optional	8	
	8 Internship	16	
	9 Final dissertation	20	

Frontal lessons
Lab & practice

OPTIONALS – 4 CFU

1	X-Ray Spectroscopy for the Characterization of Molecules and Materials
2	Magnetic Atoms and Molecules in material science, chemistry and biochemistry
3	In-silico prediction of materials properties
4	Advanced Diffraction Methods for Applications
5	Technological and environmental applications of minerals
6	Machine Learning and its Application to Chemistry and Materials Science
7	Materials for energy

Do you need administrative support?



Coordinator of the Course: Prof. Maria Cristina Paganini; mariacristina.paganini@unito.it