UNIVERSITÀ
DEGLI STUDI DI TRIESTE

Area dei Servizi Istituzionali
Settore Servizi agli studenti e alla didattica
Ufficio Dottorati di ricerca

ATTACHMENT 7 LAST REVISED 16/05/2019

PhD IN NANOTECHNOLOGY OVERVIEW

IN BRIEF		
Lines of research	1	Development of new techniques for the study, manipulation and visualization of nanomaterials and nanostructured materials at the nanoscale
	2	Development of sensors for the detection of bio-molecules or compounds present on a very low concentration
	3	Study of the relationships between structures and properties of materials
	4	Synthesis and engineering of nanomaterials and nanostructured materials
	5	Applications of nanotechnology, nanomaterials and nanostructured materials for research in the energy sector
	6	Multiscale molecular modeling of nanomaterials and nanostructured materials and phenomena of interest with computational simulation techniques and theoretical studies of nanomaterials with ab initio methods
	7	Application of nanotechnology in the biological, medical and pharmaceutical sectors
Administrative location	University of Trieste	
Organizing Department	Department of Physics	
Participating Departments	Department of Engineering and Architecture	
	Department of Chemical and Pharmaceutical Sciences	
	Department of Life Sciences	
	Department of Medicine, Surgery and Health Sciences	
Duration	3 years	
Attendance abroad that entitles to a scholarship increase - min. max. of months for each PhD student (over 3 years)	0 - 18	
Official language	English The official language for all activities of the PhD Course is English, also with the aim to favor the presence of students from abroad. Students have to present their annual research activity, in front of a commission, the research reports, the presentations at the annual congress of the school in English language. The courses organized by the school are carried out in English. The PhD thesis has to be write in English language.	
Subject Areas *(in alphabetical code order)*	02	PHYSICS
	03	CHEMISTRY
	05	BIOLOGY
	06	MEDICINE
	09	INDUSTRIAL AND INFORMATION ENGINEERING
Macro Research Fields *(in alphabetical code order)*	02/B	PHYSICS OF MATTER
	03/B	INORGANIC CHEMISTRY AND APPLIED TECHNOLOGIES
	03/C	ORGANIC, INDUSTRIAL AND APPLIED CHEMSTRY

	03/D	MEDICINAL AND FOOD CHEMISTRY AND APPLIED TECHNOLOGIES
	05/E	EXPERIMENTAL AND CLINICAL BIOCHEMISTRY AND MOLECULAR BIOLOGY
	05/G	EXPERIMENTAL AND CLINICAL PHARMACOLOGY
	06/F	INTEGRATED CLINICAL SURGERY
	06/M	PUBLIC HEALTH
	09/D	CHEMICAL AND MATERIALS ENGINEERING
Scientific Disciplinary Sectors *(in alphabetical code order)*	BIO/10	BIOCHEMISTRY
	BIO/14	PHARMACOLOGY
	CHIM/03	GENERAL AND INORGANIC CHEMISTRY
	CHIM/06	ORGANIC CHEMISTRY
	CHIM/07	PRINCIPLES OF CHEMISTRY FOR APPLIED TECHNOLOGIES
	CHIM/08	PHARMACEUTICAL CHEMISTRY
	FIS/01	EXPERIMENTAL PHYSICS
	FIS/03	PHYSICS OF MATTER
	ING-IND/24	FUNDAMENTALS OF CHEMICAL ENGINEERING
	MED/28	ORAL DESEASES AND DENTISTRY
	MED/44	OCCUPATIONAL MEDICINE
Domain European Research Council	PE	PHYSICAL SCIENCES AND ENGINEERING
	LS	LIFE SCIENCES
ERC Panels	PE3	CONDENSED MATTER PHYSICS: STRUCTURE, ELECTRONIC PROPERTIES, FLUIDS, NANOSCIENCES
	PE4	PHYSICAL AND ANALYTICAL CHEMICAL SCIENCES: ANALYTICAL CHEMISTRY, CHEMICAL THEORY, PHYSICAL CHEMISTRY/CHEMICAL PHYSICS
	PE5	SYNTHETIC CHEMISTRY AND MATERIALS: MATERIALS SYNTHESIS, STRUCTURE-PROPERTIES RELATIONS, FUNCTIONAL AND ADVANCED MATERIALS, MOLECULAR ARCHITECTURE, ORGANIC CHEMISTRY
	PE8	PRODUCTS AND PROCESSES ENGINEERING: PRODUCT DESIGN, PROCESS DESIGN AND CONTROL, CONSTRUCTION METHODS, CIVIL ENGINEERING, ENERGY SYSTEMS, MATERIAL ENGINEERING
	LS1	MOLECULAR AND STRUCTURAL BIOLOGY AND BIOCHEMISTRY: MOLECULAR BIOLOGY, BIOCHEMISTRY, BIOPHYSICS, STRUCTURAL BIOLOGY, BIOCHEMISTRY OF SIGNAL TRANSDUCTION
	LS7	DIAGNOSTIC TOOLS, THERAPIES AND PUBLIC HEALTH: AETIOLOGY, DIAGNOSIS AND TREATMENT OF DISEASE, PUBLIC HEALTH, EPIDEMIOLOGY, PHARMACOLOGY, CLINICAL MEDICINE, REGENERATIVE MEDICINE, MEDICAL ETHICS
	LS9	APPLIED LIFE SCIENCES AND BIOTECHNOLOGY: AGRICULTURAL, ANIMAL, FISHERY, FORESTRY AND FOOD SCIENCES; BIOTECHNOLOGY, CHEMICAL BIOLOGY, GENETIC ENGINEERING, SYNTHETIC BIOLOGY, INDUSTRIAL BIOSCIENCES; ENVIRONMENTAL BIOTECHNOLOGY AND REMEDIATION

WHO'S WHO	
Chair	Prof. Lucia PASQUATO - Department of Chemical and Pharmaceutical Sciences - University of Trieste – phone +39 040.5582406; email lpasquato@units.it **from 01.11.2019:** Prof. Alberto MORGANTE – Department of Physics – University of Trieste – phone +39 040558.3373 - 0403756475 - 0403758286; email morgante@iom.cnr.it
Vice	Prof. Alberto MORGANTE – Department of Physics – University of Trieste – phone +39 040558.3373 - 0403756475 - 0403758286; email morgante@iom.cnr.it **from 01.11.2019:** Prof. Paola POSOCCO – Department of Engineering and Architecture – University

	of Trieste – phone +39 040558.3448; email paola.posocco@dia.units.it
PhD Academic Board	List of members
Web site	http://web.units.it/dottorato/nanotecnologie/en
Email	dottorato.nanotecnologie@units.it
Course description and objectives	The main objective of the school is to prepare researchers capable of designing, building and characterizing nanomaterials and nanostructured materials (NMS), tools and devices that meet the growing applicative needs, to make the industrial production more effective, affordable and sustainable and to meet the growing needs of our society, promoting its progress. The school is meant for graduates in physics, chemistry, engineering, biology, biotechnology, medicine, dentistry, pharmacy and pharmaceutical technology who aim at acquiring a high level of interdisciplinary preparation through specific courses and seminars covering also fields different from their own specific areas and carry out research projects in the framework of the collaborations with (inter)national research institutions and industries established by teachers and tutors of the school. The main objectives of the research activities can be summarized as follows: 1) Synthesis and engineering of nanomaterials and NSM 2) Development of new techniques for the study, manipulation and visualization of nanomaterials and NSM at the nanoscale 3) Study of the relation between structure and properties of materials 4) Multiscale molecular modeling of nanomaterials and NSM and phenomena of interest with computational simulation techniques and theoretical studies of NSM with ab initio methods 5) Development of sensors for the detection of bio-molecules or compounds at a very low concentrations 6) Application of nanotechnology, nanomaterials and NSM for research in the energy sector 7) Application of nanotechnology in the biological, pharmaceutical, and medical sectors
Job placement opportunities	Possible employment opportunities for a PhD in Nanotechnology are increasing in the last years, in particular in Italy, since the market demand for PhD with this type of multidisciplinary training is going to increase in parallel with the implementation of nanotechnologies in industry in Italy and in other countries. The areas of employment are as many as those involving nanotechnologies such as for example: food, energy, electronic, manufacturing, health, biology, biotechnology, physics, chemistry, cultural heritage. The PhD Program in Nanotechnology of the University of Trieste, characterized by a strong multidisciplinarity, trains scientists suitable to become researchers/responsible of research and development/responsible of labs or projects in public institutions or private companies whenever are requested positions of researchers able to autonomously manage research projects involving the interaction of specialists from various disciplines. PhD scientists in Nanotechnology are prepared to hold positions of scientific-managing responsibility in other activities and industrial sectors of advanced technology in the areas above mentioned. The strong collaboration with local Research Institutions offers to the PhD students in Nanotechnology several positions.
Main cooperating international Universities and Research Institutions	1 University of Cadice, Spain 2 Istituto Italiano di Tecnologie (IIT) - Italy 3 University of Basque Country/CIC Biomagune/CIC Nanogune, Spain 4 Columbia University, USA 5 PCAM – Phisics and chemistry of advanced materials