

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

## **ATTACHMENT 10**

LAST REVISED 09/05/2016

## PhD IN EARTH SCIENCE AND FLUID MECHANICS OVERVIEW

IN BRIEF				
Lines of research	₁ Enviror	nmental fluid mechanics, fluid mechanics in industrial and technological		
		ses, and in biological systems		
	2 Solid a	nd fluid earth geophysics and geology		
		natical methods and modeling in fluid mechanics and in geophysics, ntial equations and inverse problems		
Administrative location	University of Trieste			
Organizing Department	Department of Mathematics and Geosciences			
Partner University Department	Department of Engineering and Architecture			
Duration	3 years			
Attendance abroad that entitles to a scholarship increase - min. max. of months for each PhD student (over 3 years)	0 - 12			
Official language	English			
<i>Subject Areas</i> (in alphabetical code order)	01	MATHEMATICS AND INFORMATICS		
	04	EARTH SCIENCES		
	08a	CIVIL ENGINEERING		
	09	INDUSTRIAL AND INFORMATION ENGINEERING		
<i>Macro Research Fields</i> (in alphabetical code order)	01/A	MATHEMATICS		
	04/A	EARTH SCIENCES		
	08/A	LANDSCAPE AND INFRASTUCTURAL ENGINEERING		
	09/C	ENERGY, THERMOMECHANICAL AND NUCLEAR ENGINEERING		
<i>Scientific Disciplinary Sectors</i> ( <i>in alphabetical code order</i> )	GEO/02	STRATIGRAPHY AND SEDIMENTOLOGY		
	GEO/03	STRUCTURAL GEOLOGY		
	GEO/06	MINERALOGY		
	GEO/07	PETROLOGY AND PETROGRAPHY		
	GEO/10	SOLID EARTH GEOPHYSICS		
	GEO/11	APPLIED GEOPHYSICS		
	GEO/12	OCEANOGRAPHY AND PHYSICS OF THE ATMOSPHERE		
	ICAR/01	HYDRAULICS		
	ICAR/02	HYDRAULIC STRUCTURES, MARITIME ENGINEERING AND HYDROLOGY		
	ING-IND/10	THERMAL ENGINEERING AND INDUSTRIAL ENERGY SYSTEMS		
	MAT/05	MATHEMATICAL ANALYSIS		
	MAT/08	NUMERICAL ANALYSIS		
Domain European Research Council	PE	PHYSICAL SCIENCES AND ENGINEERING		

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ERC Panels	PE10	EARTH SYSTEM SCIENCE: PHYSICAL GEOGRAPHY, GEOLOGY, GEOPHYSICS, ATMOSPHERIC SCIENCES, OCEANOGRAPHY, CLIMATOLOGY, ECOLOGY, GLOBAL ENVIRONMENTAL CHANGE, BIOGEOCHEMICAL CYCLES, NATURAL RESOURCES MANAGEMENT		
	PE1	MATHEMATICS: ALL AREAS OF MATHEMATICS, PURE AND APPLIED, PLUS MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE, MATHEMATICAL PHYSICS AND STATISTICS		
	PE8	PRODUCTS AND PROCESSES ENGINEERING: PRODUCT DESIGN, PROCESS DESIGN AND CONTROL, CONSTRUCTION METHODS, CIVIL ENGINEERING, ENERGY SYSTEMS, MATERIAL ENGINEERING		
WHO'S WHO				
Chair	Prof. Vincenzo Armenio - Department of Engineering and Architecture – University of Trieste – phone N. 040.558.3472; fax 040.572.082; email <u>armenio@dic.units.it</u>			
Vice	Prof. Giovanni Costa – Department of Mathematics and Geosciences – University of Trieste – phone N. 040.558.2619; fax 040.558.2111; email costa@units.it			
Web site	http://www.phdfluidmechanics.units.it			
Email	esfm.adm@units.it			
Course description and objectives	This PhD course aims to the advanced training of students in the field of earth sciences, fluid mechanics and applied mathematics. It promotes theoretical and applicative formation of students through the investigation of scientific themes developed by the research groups belonging to the involved departments and through international collaborations with qualified foreign structures. With regard to fluid mechanics, the processes that involve the study of the motion of fluids and their transport properties, dispersion and mixing in environmental and industrial settings, are in particular addressed, as well as their interaction with the solid elements. In the field of earth sciences, the main objective is the transfer of knowledge on advanced methods of investigation with applications to the study of composition, structure, stratigraphy and evolution of our planet, from the close surface up to the deep structures and characteristics at the global scale. The fundamental laws, upon which these disciplines rely, are generally expressed by differential equations of considerable complexity, the study of which requires the application of advanced mathematical methods and represents a research field of great theoretical and practical importance and relevance. The mathematics is thus a central part of the program.			
Job placement opportunities	This PhD program is designed to prepare students to pursue a variety of careers in research, teaching and industrial use of high technologies in the fields of earth science, fluid mechanics and applied mathematics. In the course of their doctoral studies, students will be in touch with different realities, local and international, and will get a considerable experience in both theoretical and applied problems that originate in the disciplines mentioned above. In addition, they will develop familiarity and competence in using the most advanced tools for the analysis of complex physical systems, which will be of great use for their future activity in public or private research centers, or in companies with high technological content. The EIFM PhD School, of which this course is the development, has collaborated, besides INOGS and ICTP, with various research or services institutions, like ARPA-FVG , ISMAR-CNR , ENEA, as well as with industries present on the territory, like Electrolux. The scholarships funded by these institutions come from their need to acquire highly specialized people in the themes addressed in this doctoral program. Part of the students of this course will therefore obtain, as a natural outlet, post-doctoral fellows or working positions within the institutions themselves.			
Main cooperating international Universities and Research Institutions	<ol> <li>Princeto</li> <li>Univers</li> <li>Technis</li> </ol>	on University, U.S.A. it Libre de Bruxelles, Belgio che Universiteit Eindhoven, Paesi Bassi ity of California Irvine, U.S.A.		

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