UNIVERSITÀ
DEGLI STUDI DI TRIESTE

Rettorato e Direzione Generale
Sezione Ricerca e Dottorati
Ripartizione Dottorati

LAST REVISED 27/07/2012

DOCTORAL SCHOOL IN CHEMICAL AND PHARMACEUTICAL SCIENCES AND TECHNOLOGIES

NOTE: This attachment provides only partial information. Exhaustive information, including how to register for the selection, is published in the Admission Announcement posted in the web page http://www2.units.it/dottorati/ >> Admission Announcement.

Deadline for online application	**31 August 2012 at 11.30 a.m. CET**

GENERAL DESCRIPTION

SUBJECT AREAS COVERED BY THE SCHOOL:
- main area: CHIM/06
- other areas: CHIM/02, CHIM/03, CHIM/08, CHIM/09, CHIM/12, BIO/15, ING-IND/24

RESEARCH FIELDS:
1. Analytical-and Environmental Sciences
2. Chemical Sciences
3. Food and Natural Products
4. Pharmaceutical Sciences
5. Sciences and Technologies of Chemical Engineering

LOCATION: Trieste

ORGANIZING DEPARTMENT: Dip. di Scienze Chimiche e Farmaceutiche (Dept of Chemical and Pharmaceutical Sciences)

PARTICIPATING DEPARTMENTS (UNIVERSITY OF TRIESTE):
- Dip. di Ingegneria e Architettura
- Dip. di Scienze della Vita

OTHER PARTICIPATING INSTITUTIONS (Italian):
- Sprin s.r.l.
- Società Italiana per l'Oleodotto Transalpino
- Indena S.p.A.
- Fincantieri
- Serichim
- Sincrotrone Trieste S.C.p.A.
- CRO Aviano
- IRCSS Burlo Garofalo

FOREIGN PARTICIPATING INSTITUTIONS:
- University of Namur (Belgium)
- US Army Medical Research Institute of Infectious Diseases (USARMIID, Fort Detrick, Maryland, USA)
- National Oceanic and Atmospheric Administration – National Ocean Service (Charleston, South Carolina, USA)

Legge 241/1990 - Responsabile del procedimento: Elena Ferraro

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- Centre of Excellence in Biocatalysis, Biotransformations and Biocatalytic Manufacturing (Manchester, UK)
- Università di Strasburgo (Francia)
- DSM (Geleen, Olanda)
- MetGen ov (Finnland)
- ICGEB - International Centre for Genetic Engineering and Biotechnology
- Università di Innsbruck (Austria)
- Università di Vigo (Spagna)
- Università di Cambridge (UK)
- Institut Catalan de Investigacion Quimica (ICIQ, Tarragona, Spain)
- University College Cork (Ireland)
- University of Zürick (Svizzera)
- University of Erlangen-Nürnberg (Germany)
- University of Warwick (UK)
- Technical University of Graz (Austria)
- Università di Castilla-La Mancha (Spagna)
- Università di Tarragona (Spagna)

DURATION: 3 years
MAXIMUM NUMBER OF MONTHS TO BE SPENT ABROAD: 18
OFFICIAL LANGUAGE OF THE SCHOOL: Italian

ADMISSION INFORMATION

NUMBER OF PLACES AVAILABLE: **22**

- One place is earmarked for the project "*Nanocapsules for targeted delivery of radioactivity*" – Person in charge: dott.ssa Tatiana Da Ros, DSCF – funded by the European Union as Initial Training Network (ITN).
  The winner will sign a contract available for candidates:
  a) of Italian nationality who have spent at least 3 of last 4 years out of Italy;
  b) of any other nationality, unless they have spent in Italy a period of education of more than 12 months over the last 3 years.

[code P/0] (place code).....1

The winner who will accept the earmarked place is committed to the pre-assigned topic

- SCHOLARSHIPS: 15
  FUNDING BODY/IES (preceded by the scholarship code):
  - [cod G/1] MIUR funded by "Progetto Giovani Ricercatori" (The successful candidate will perform the research project at the Department of Chemical and Pharmaceutical Sciences; the topic will be selected among the Priority Projects proposed by this Department for 2013 and published on the web site of the School (http://www.dsch.units.it/sdstcf/). The topic of this project must fit within the broader priority topic of the special grant "Improvement of pharmaceutical

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industry, also through the fine chemistry of natural products for new diagnostic applications and new active principles" 1
NOTE: this scholarship does not provide extra funding for eventual periods of study abroad within the duration of the doctorate, unless the organizing Department decides to make these funds available.

- [cod G/2-3] MIUR funded by "Progetto Giovani Ricercatori" (The successful candidate will perform the research project at the Department of Chemical and Pharmaceutical Sciences; the topic will be selected among the Priority Projects proposed by this Department for 2013 and published on the web site of the School (http://www.dsch.units.it/sdstcf/). The topic of this project must fit within the broader priority topic of the special grant "Advanced materials (ceramics, in particular) for structural applications." 2
  NOTE: this scholarship does not provide extra funding for eventual periods of study abroad within the duration of the doctorate, unless the organizing Department decides to make these funds available.
- [cod G/4] MIUR funded by "Progetto Giovani Ricercatori" (The successful candidate will perform the research project at the Department of Life Sciences; the topic will be selected among the Priority Projects proposed by this Department for 2013 and published on the web site of the School (http://www.dsch.units.it/sdstcf/). The topic of this project must fit within the broader priority topic of the special grant "Enhancement of agri-food products and food safety through new characterization systems and quality assurance" 1
  NOTE: this scholarship does not provide extra funding for eventual periods of study abroad within the duration of the doctorate, unless the organizing Department decides to make these funds available.
- [cod D/5] Dipartimento di Scienze Chimiche e Farmaceutiche funded by FIRB. (The successful candidate will perform the research project at the Department of Chemical and Pharmaceutical Sciences on the topic *"Supramolecular templated synthesis of homochiral carbon nanotubes for photovoltaic applications")* 1
- [cod D/6] Dipartimento di Scienze Chimiche e Farmaceutiche funded by FIRB (The successful candidate will perform the research project at the Department of Chemical and Pharmaceutical Sciences on the topic "*Nanosystems for artificial photosynthesis and hydrogen production by solar activated water spilling*").....1
  NOTE: the yearly amount of this scholarship is higher than for ordinary scholarships. Therefore no extra funding will be provided in case of periods of research abroad within the duration of the doctorate.
- [cod D/7] Dipartimento di Scienze Chimiche e Farmaceutiche funded by FIRB (The successful candidate will perform the research project at the Department of Chemical and Pharmaceutical Sciences on the topic "*Nanotechnological approaches for tumor theranostics*") 1
  NOTE: the yearly amount of this scholarship is higher than for ordinary scholarships. Therefore no extra funding will be provided in case of periods of research abroad within the duration of the doctorate.

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- [cod M/8-9] Università degli Studi di Trieste (The successful candidate will perform the research project at the Department of Chemical and Pharmaceutical Sciences; the topic will be selected among the Priority Projects proposed by this Department for 2013 and published on the web site of the School (http://www.dsch.units.it/sdstcf/).....2
- [cod MD/10-11] Dipartimento di Scienze Chimiche e Farmaceutiche + Università degli Studi di Trieste (The successful candidate will perform the research project at the Department of Chemical and Pharmaceutical Sciences; the topic will be selected among the Priority Projects proposed by this Department for 2013 and published on the web site of the School (http://www.dsch.units.it/sdstcf/) 2
- [cod D/12] Dipartimento di Ingegneria e Architettura funded by CRO Aviano (The successful candidate will perform the research project at the Department of Engineering and Architecture and at CRO in Aviano on the topic "*Pharmacogenetics and immunogenetics of anti-cancer drugs*").....1
- [cod D/13] Dipartimento di Ingegneria e Architettura funded by CRO Aviano (The successful candidate will perform the research project at the Department of Engineering and Architecture and at CRO in Aviano on the topic "*Study of the microRNA pharmacogenomics for the personalization of anti-cancer treatment*") 1
- [cod M/14-15] Università degli Studi di (The successful candidate will perform the research project at the Department of Engineering and Architecture; the topic will be selected among the Priority Projects proposed by this Department for 2013 and published on the web site of the School (http://www.dsch.units.it/sdstcf/) 2

Candidates who accept an earmarked scholarship are committed to the pre-assigned topic

EXTRA PLACES WITHOUT SCHOLARSHIP:

- [code S/1] research grant holders carrying out their activities in the Departments involved in the Doctoral course (see Art. 1.1 - Requirements).....**2**
- [code S/3/1] research grant-holders funded by the Italian Ministry of Foreign Affairs sitting the entrance examination in the country of origin.....**1**
- [code S/2] non-EU citizens living abroad who do not want to apply for an ordinary place **1**
- [code S/4/1] non-EU citizens living abroad funded by their own country, with ministerial authorization, sitting the entrance examination in the country of origin.....**1**

ACADEMIC QUALIFICATION REQUIRED: see Announcement (art. 1-Requirements)
DEADLINE FOR COMPLETION OF DEGREE: **25.10.2012**
ASSESSMENT CRITERIA: qualifications + oral interview.

- MAXIMUM FINAL SCORE: the final score is based on the sum total of marks obtained in the interview plus the points given for qualifications and publications::.....120/120
  MINIMUM FINAL SCORE REQUIRED:.....84/120
- MAXI NUMBER OF POINTS AWARDED FOR QUALIFICATIONS + PUBLICATIONS: ..60/60 (relative weight on the final score: max 50%)
  QUALIFICATIONS REQUIRED (RELATIVE WEIGHT):
  - Art. 11 Rules for Doctorates: all candidates are required to present the following documents, regardless of whether or not a score is assigned to them (see

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below):
a. a detailed curriculum vitae et studiorum: max 30/60
b. a copy of the Master's degree thesis: max 24/60
For students with a degree awarded by a non-Italian university, an abstract of the thesis in English or Italian is sufficient.

as well as

1. publications: max 6/60
2. letters of presentation (maximum 2): 0/60
Letters of presentation only must be emailed directly by the professors themselves to the Chair Professor stener@units.it - re: Letter for surname – name.

- Qualifications List (unless this form is presented, qualifications and publications CANNOT be assessed by the Examining Board)

MINIMUM SCORE REQUIRED FOR QUALIFICATIONS/PUBLICATIONS: .....no

- ORAL EXAMINATION MARK OUT OF (relative weight: max 50%):.....60

MINIMUM SCORE REQUIRED FOR INTERVIEW:.....42/60
ABSOLUTE DEADLINE FOR RECEIVING CERTIFICATES: **25.10.2012**
ADDRESSES TO WHICH CERTIFICATES SHOULD BE SENT: in paper form only, by mail or in person to the Director of the School, Prof Mauro Stener, Dipartimento di Scienze Chimiche e Farmaceutiche, Via L. Giorgieri 1, Università di Trieste, 34127 Trieste

EXAMINATION SCHEDULE:

- INTERVIEW: **29.10.2012 at 11.00 a.m.** at Dipartimento di Scienze Chimiche e Farmaceutiche (Edificio C11 – C11 building), Via Giorgieri 1, "Sala del Consiglio" (1st floor)

FOREIGN LANGUAGE FOR THE INTERVIEW: English

CEFR LEVEL: --

CONTACT INFORMATION

DIRECTOR OF THE SCHOOL: Prof Mauro Stener - Dipartimento di Scienze Chimiche e Farmaceutiche - Università degli Studi di Trieste – Via L. Giorgeri, 1 - tel. 040/558.3949 fax 040/558.3903 e-mail stener@units.it

VICE-DIRECTOR: Prof. Maurizio Prato - Dipartimento di Scienze Chimiche e Farmaceutiche - Università degli Studi di Trieste - tel. 040/558.7883 fax 040/52572 e-mail prato@univ.trieste.it

WEB SITE: http://www.dscf.units.it/sdstcf/

SCIENTIFIC PROJECT: As detailed above, the School comprises 5 broad Research Areas. For each Area, the School provides the Ph D students with an interdisciplinary training that requires the acquisition of concepts, expertise, research methods and experimental techniques. In more detail:
To the Ph. D. students in the Areas of Food and Natural Products, and Analytical-Environmental Sciences the School will give the opportunity to:

- improve their knowledge on foods, food supplements, herbal drugs and their derivatives, acquire expertise on food quality and safety control and learn chemical and biological techniques for the study of foods and herbal drugs, also according to EU regulations;
- learn research techniques and experimental design methods for the control, improvement and certification of food quality and for improving the efficacy and safety of food supplements, herbal drugs, and phytotherapic agents;
- acquire an in-depth knowledge of environmentally relevant analytical techniques and of advanced methodologies for the correct treatment of the experimental data, develop models for the space and time distribution of chemical species in ecosystems, as well as in urban and industrial settings;
- acquire expertise on environmental pollutants and toxins of natural origin, in particular in marine ecosystems;
- learn analytical techniques based on physical models and on structure-activity relationships for determining the exposure-related toxicity of chemical species.

The Ph. D. students in the Area of Chemical Sciences will:

- develop a cultural background, acquire advanced expertise and research competence in one or more fields among theoretical and computational chemistry, molecular spectroscopy, inorganic and bio-inorganic chemistry, homogeneous and heterogeneous catalysis, bio-crystallography, supramolecular chemistry, organic and bio-organic chemistry, nano-sciences and nano-technologies;
- learn how to perform advanced research in an up-to-date chemistry laboratory, acquiring a sound knowledge in modern research techniques and instrumentations;
- learn how to plan, develop, manage and bring to conclusion a research project on a chemistry topic, both from the point of view of the scientific interest and of the potential applications.

To the students in the Area of Pharmaceutical Sciences the School will provide specific competence for:

- the design of new drugs, their synthesis through both traditional and innovative methodologies, their structural and physical-chemical characterization, and the determination of their technological properties;
- the investigation of the molecular properties that affect the pharmacokinetic and pharmacodynamic behaviour of pharmacologically active compounds;
- the investigation of structure-activity relationships in biologically active molecules;
- the design and development of controlled-release pharmaceutical preparations for oral administration.

The students in the Area of Sciences and Technologies of Chemical Engineering will:

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- improve their knowledge on the processes involving exchange of matter, heat, and momentum from the molecular level to the micro-, meso-, and macroscopic scale;
- develop the techniques of molecular simulation for systems that are of industrial or bio-medical interest;
- acquire a sound knowledge in the design and modelling of complex systems for the controlled release of pharmaceutically active compounds;
- learn the methodologies for the development and simulation of the processes of purification and remediation from pollutants.

EDUCATIONAL AIMS AND RESEARCH TOPICS: The Ph. D. School in Chemical and Pharmaceutical Science and Technology is a centre for advanced academic education in the area of chemistry, open to young graduates from Italy and abroad. Its primary objective is that of training doctors with a sound scientific qualification, capable of performing autonomous research projects.

The School involves a large number of Academics from two Departments, that provide a broad range of competence and expertise in the fields of Chemistry, Pharmaceutical Sciences and Chemical Engineering, and offer to the students highly qualified research projects and teaching courses. The School is managed by a Board of Teachers, composed by 20 full-time Professors and Researchers, all strongly involved in research activities, whose excellent level is testified by the large number of scientific publications (ca. 500 in the period 2006-2011, as shown in the 2011 report 'Anagrafe dei Dottorati') and by the many national and international collaborations. It is worth noting that 4 out of the 20 members of the Board of Teachers of the School are among the 109 italian chemists who belong to the list of 'Top Italian Scientist' (http://www.topitalianscientists.org/top_italian_scientists.aspx) that comprises 2050 italian scientists having an h factor higher than 30. The vice-Director of the School, Prof. Maurizio Prato, ranks in 4th position among the 109 chemists.

The School comprises 5 broad Research Areas: Chemical Sciences, Pharmaceutical Sciences, Sciences and Technologies of Chemical Engineering, Food and Natural Products, Analytical-Environmental Sciences.

For each Area, the School provides the Ph D students with a broadly interdisciplinary training that requires the acquisition of concepts, expertise, research methods and experimental techniques. Finally, the students are part of a scientifically stimulating environment, comprising academics and undergraduate and Ph. D. students and young post-doctoral associates from Italy and other Countries.

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