



**DOCTORAL SCHOOL IN  
NANOTECHNOLOGY**

**GENERAL DESCRIPTION**

SUBJECT AREAS COVERED BY THE SCHOOL:

- main area: FIS/03
- other areas: BIO/06, CHIM/03, CHIM/04, CHIM/08, FIS/01, ING-IND/22, ING-INF/01, MED/08, MED/18, MED/28, MED/30, ING-IND/24, FIS/07, CHIM/01, MED/35, BIO/10, BIO/11, BIO/14; FIS/03; AGR/12

RESEARCH FIELDS:

1. the development of new experimental techniques to investigate, process, manipulate and visualize nanostructured materials on a nanometric scale
2. the development of spectroscopic techniques to detect single molecules on nanostructured substrata
3. the study of the relations between microstructure and the properties of materials and engineering of nanostructured materials
4. the synthesis of nanostructures
5. nanotechnological applications to medical, pharmacological and biomedical areas
6. the multiscale molecular modelling of materials and relevant phenomena through computational simulation techniques
7. human health with particular attention to the study and treatment of tumours and degenerative diseases
8. applications of nanotechniques to energy-focused research

ORGANIZING DEPARTMENT: Dip. di Fisica

PARTICIPATING DEPARTMENTS (UNIVERSITY OF TRIESTE):

- Dipartimento dei Materiali e delle risorse naturali
- Dipartimento di Scienze della vita
- Dipartimento di Elettronica, elettrotecnica e informatica
- Dipartimento di Clinico di biomedicina
- Dipartimento di Scienze chimiche
- Dipartimento di Scienze farmaceutiche
- Dipartimento di Ingegneria Meccanica
- Dipartimento Universitario Clinico di Anestesia, Chirurgia, Anatomia Patologica, Dermatologia, Epatologia e Scienze Molecolari

OTHER PARTICIPATING INSTITUTIONS (Italian):

- Lab. Nazionale TASC-IOM CNR
- Sincrotrone Trieste S.C.p.A.
- ICGEB International Centre for Genetic Engineering and Biotechnology
- IRCCS Burlo Garofolo
- CRO Aviano

DURATION: 3 years

MAXIMUM NUMBER OF MONTHS TO BE SPENT ABROAD: ..... 12

OFFICIAL LANGUAGE OF THE SCHOOL: English

**ADMISSION INFORMATION**

NUMBER OF PLACES AVAILABLE: ..... 6

- SCHOLARSHIPS: ..... 4

- FUNDING BODY/IES:

- Università degli Studi di Trieste + Dip. di Fisica funded by CNR-Istituto Officina dei Materiali (Project



Sezione Ricerca e Dottorati

Ripartizione Dottorati

- title “*Experimental study on the physics of nanostructured organic photovoltaic*”) ..... 1  
 N.B: This scholarship does include extra funding for periods of study abroad within the duration of the doctorate.
- Università degli Studi di Trieste + Dip. di Fisica funded by CNR-Istituto Officina dei Materiali (Project title “*Design and development of nanoelectromechanical and plasmonical devices and their use in Raman spectroscopy*”) ..... 1  
 N.B: This scholarship does include extra funding for periods of study abroad within the duration of the doctorate.
  - Università degli Studi di Trieste + Dip. di Fisica funded by CNR-Istituto Officina dei Materiali (Project title “*Low dimensionality magnetic materials: electronic structure and correlation effects*”) ..... 1  
 N.B: This scholarship does include extra funding for periods of study abroad within the duration of the doctorate.
  - Università degli Studi di Trieste + Dip. di Fisica funded by CNR Istituto Officina dei Materiali (Project title “*Development of electrochemical sensors through Nano technological processes for biological and medical diagnostics.*”) ..... 1  
 N.B: This scholarship does include extra funding for periods of study abroad within the duration of the doctorate.

Candidates who accept an earmarked scholarship are committed to the pre-assigned topic  
**Candidates have to list (in order of preference) which scholarships they apply for in the comments box at the bottom of the “qualifications evaluation form”. If extra earmarked scholarships become available after candidates have completed their application, they can modify their preference list within the deadline for receiving certificates.**

ACADEMIC QUALIFICATION REQUIRED: see Announcement (art. 1.1 - Requirements)  
 DEADLINE FOR COMPLETION OF DEGREE: ..... 31.01.2011.  
 ASSESSMENT CRITERIA: Qualifications  
 FINAL SCORE:..... 100/100  
 MINIMUM FINAL SCORE REQUIRED: ..... 70/100  
 QUALIFICATIONS REQUIRED/RELATIVE WEIGHT:  
Art. 11 Announcement: all candidates are required to present the following documents, regardless of whether or not a score is assigned to them (see below):

- a. a detailed curriculum vitae et studiorum (including qualifications, degree transcript, certificate of English). The Board will also evaluate the attachment to the cv, eg publications, abstracts, school attendance: 10/70
- b. a copy of the Master's degree thesis and a summary of the results obtained during the Master's course (or equivalent). The Board will especially take into consideration the degree score: 50/70  
 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. Two letters of presentation from scholars/researchers acquainted with the candidate 20/70
2. A concise research programme in one of the research fields listed in the general description of the School: 20/70

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

MINIMUM SCORE REQUIRED FOR QUALIFICATIONS/PUBLICATIONS: 70/100  
 ABSOLUTE DEADLINE FOR RECEIVING CERTIFICATES: 01.03.2011  
 ADDRESSES TO WHICH CERTIFICATES SHOULD BE SENT: Dipartimento di Fisica - sede amministrativa Scuola Dottorato in Nanotecnologie - via A. Valerio, 2 - I piano - Servizio Ricerca e Formazione st. 108 – 34100 TRIESTE

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# UNIVERSITÀ DEGLI STUDI DI TRIESTE

**Sezione Ricerca e Dottorati**

**Ripartizione Dottorati**

## CONTACT INFORMATION

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WEB SITE: <http://www.nanotech.units.it/default.aspx>

OVERVIEW: The main objective is to teach researchers to plan, build, use and test nanotechnological tools and devices that meet the growing needs of the society in diverse fields of application:

1. the development of new experimental techniques to investigate, process, manipulate and visualize nanostructured materials on a nanometric scale,
2. the development of spectroscopic techniques to detect isolated molecules on nanostructured substrates,
3. the study of the relations between microstructure and the properties of materials and the engineering of nanostructured materials,
4. the synthesis of nanostructures,
5. the applications of nanotechniques to energy-focused research,
6. the multiscale molecular modelling of materials and relevant phenomena through computational simulation techniques,
7. human health with particular attention to the study and treatment of tumours and degenerative diseases
8. nanotechnological applications to medical, pharmacological and biomedical areas.

This is made possible by the availability of top rate facilities and equipments in the University laboratories and in the public and private research bodies partnering with the University, i.e. the International Centre for Genetic Engineering and Biotechnologies (ICGEB), Elettra Sincrotrone Trieste, the Oncological Referral Center in Aviano (CRO), and the Advanced Technology and Nanoscience National Laboratory TASC- INFN-CNR just to cite a few.

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