LAST REVISED 09/09/2010

# DOCTORAL COURSE IN ENVIRONMENTAL BIOLOGY

## GENERAL DESCRIPTION

SUBJECT AREAS COVERED BY THE COURSE:
- main area: BIO/07
- other areas: BIO/01; BIO/02; BIO/03; BIO/04; BIO/05; BIO/06; BIO/07; BIO/09; BIO/10; BIO/11; BIO/18; BIO/19; CHIM/01; CHIM/12

RESEARCH FIELDS:
1. Environmental Biomonitoring
2. Nature Conservation
3. Ecophysiology and ecotoxicology
4. Ecosystem functioning
5. Environmental Genomics

ORGANIZING DEPARTMENT: Dip. di Scienze della Vita

DURATION: 3 years
MAXIMUM NUMBER OF MONTHS TO BE SPENT ABROAD: 6
OFFICIAL LANGUAGE OF THE SCHOOL: Italian

## ADMISSION INFORMATION

NUMBER OF PLACES AVAILABLE: ..... **6**
- SCHOLARSHIPS: ..... 3
  - FUNDING BODY/IES:
  - Università degli Studi di Trieste + Dip. Scienze della Vita funded by ex Ghirardelli (earmarked for the Project "*Meccanismi di risposta dei simbionti lichenici allo stress foto-ossidativo"* (SSD BIO/1)) .....1
  - Università degli Studi di Trieste + Dip. Scienze della Vita funded by ex Ghirardelli + integrazioni (earmarked for the Project *"Fotoadattamento di macroalghe in condizioni controllate: risposte fisiologiche e biochimiche"* (SSD BIO/01)) .....1
  - -Università degli Studi di Trieste + Dip. Scienze della Vita funded by PRIN 2008- Project OBAMA (earmarked for the Project *"Effetti della predazione selettiva sulla mortalità dei procarioti in mare"*) .....1

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

NON-FUNDED PLACES
- holders of a research grant (see Art. 1.1 – Requirements) ..... **1**
- grant-holders funded by the Italian Ministry of Foreign Affairs sitting the entrance examination in the country of origin ..... **1**
- non-EU citizens residing abroad ..... **1**

ACADEMIC QUALIFICATIONS REQUIRED: See Announcement (Art. 1.1 - Requirements)
DEADLINE FOR COMPLETION OF DEGREE: ..... 04.11.2010
ASSESSMENT CRITERIA: Qualifications + Written examination + Interview

FINAL SCORE (the final score is based on the sum total of marks obtained in the written examination and interview plus the points given for qualifications and publications): ..... 120
MINIMUM FINAL SCORE REQUIRED: ..... 72/120
MAXIMUM NUMBER OF POINTS AWARDED FOR QUALIFICATIONS + PUBLICATIONS: ..... 10/10
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 below):
a. a detailed curriculum vitae et studiorum,
b. a copy of the Master's degree thesis.
   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. Scientific articles with I.F.: max 1.8
2. Scientific articles without I.F.: max 1.2
3. Riassunti di comunicazioni: max 0,6
4. Poster abstracts: max 0.3
5. Pubblicazioni divulgative: max 0.1
6. Degree score: max 2.4
7. Post-lauream research activities: max 3.6

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

MINIMUM SCORE REQUIRED FOR THE QUALIFICATIONS: ..... no

WRITTEN EXAMINATION SCORE (EXPRESSED AS A PERCENTAGE): ..... 60
MINIMUM SCORE REQUIRED FOR THE WRITTEN EXAMINATION :..... 42/60
ORAL INTERVIEW SCORE (EXPRESSED AS A PERCENTAGE):..... 50
MINIMUM SCORE REQUIRED FOR THE ORAL INTERVIEW: ..... 30/50
DEADLINE FOR RECEIVING CERTIFICATES: 05/11/2010
ADDRESS TO WHICH CERTIFICATES SHOULD BE SENT: to be handed in during the written examination.

EXAMINATION SCHEDULE:

- WRITTEN EXAMINATION: 08/11/2011 at 9.30 a.m. at Università degli Studi di Trieste, – Building M – Room A – Via L. Giorgeri, 10 – TRIESTE
  POSSIBLE ALTERNATIVE LANGUAGE TO ITALIAN FOR THE WRITTEN EXAMINATION: English
- INTERVIEW: 09/11/2010 at 9.30 a.m. at Università degli Studi di Trieste, – Building M – Room A – Via L. Giorgeri, 10 – TRIESTE

ALTERNATIVE LANGUAGE TO ITALIAN FOR THE INTERVIEW: English, French, German

**CONTACT INFORMATION**

CHAIR: Prof. Pierluigi NIMIS - Dipartimento di Scienze della Vita - Università degli Studi di Trieste - tel. 040558.3884 fax 040/568855 e-mail nimis@units.it

WEB SITE: http://www2.units.it/~biomonitor/

OVERVIEW: This Ph.D. course, resulting from the transformation of the former PhD course in the "Methodology of bio-monitoring of environmental alteration", which has kept the Council of teachers, aims at training highly qualified personnel capable of managing critically the implementation of national or EU guidelines, regarding the environmental analysis, deepen the methodological aspects of such issues, and plan and carry out research independently of environmental monitoring by means of organisms , in the framework of a multidisciplinary view of issues. It is structured to progressively focus the scientific preparation of doctoral candidates from general and theoretical to the experimental ones. An attendance of theoretical courses, journal clubs and seminars, is foreseen for a total of 16 credits of educational activity in the first year, 8 credits 4 credits in the second and third, to put the graduate students in the position to understand the issues environmental biology in all its many aspects by integrating data from different sources. Simultaneously, there are plans to conduct a research activity, according to an individual plan discussed and agreed with the Council of teachers. During the first year the PhD student defines the topic of research, in the second year he/she steps into the experimental aspect and in the third year he/she will complete its original research, completing the thesis. These training activities have as their ultimate goal the establishment of a figure with high professional skills suitable to be taken by institutions devoted to environmental control and protection (eg, Regional Environmental Agencies), and / or to be inserted into programs research of various Italian and foreign research institutes in various capacities that deal with both land and marine environment. For example, candidates may undertake research on these topics, both terrestrial and marine environments:

1) the effects of major stressors, abiotic and biotic, on humans, animals, plants and their interactions at the cellular level of organisms and ecosystems;
2) morphological changes, physiological, genetic or induced by environmental stressors in terms of organism, population and community,
3) changes at the community level and structure of the landscape due to fragmentation of ecosystems, resource constraints and environmental changes;
4) biogeochemical cycles and their perturbations,
5) concentrations of pollutants in the atmosphere, hydrosphere, pedosphere and their variability in time and space;
6) bioaccumulation and biomagnification of pollutants in different components of ecosystems;
7) network structure and their trophic efficiency,
8) effects of past and future climate change on organisms, communities and ecosystems;
9) data processing and information through innovative techniques (meta data analysis, data mining, fuzzy set analysis, neural networks, cellular automata, remote sensing). Pre-requisite of research projects submitted by graduate students, however, the presence of an innovative technology component in one of many possible areas of Environmental Biology.

**IN PRESS**

N.B: the following additions/changes have been requested by the organisers of the Doctorate and will be made official with a supplement to the:

- WRITTEN EXAMINATION: **postponed to 08.11.10** at 09.30, at the Università degli Studi di Trieste - Building M – Room A – Via L. Giorgieri, 10 – TRIESTE
- INTERVIEW: **postponed to 09.11.2010** at 09.30, at the Università degli Studi di Trieste - Building M – Room A – Via L. Giorgieri, 10 – TRIESTE