Master Course on Human Biology and Environment

Faculty of Sciences
University of Lisbon

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Coordinator:

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Post-Graduat Studies: - for applications:

Deadlines: 5th June – 12 July 2019
E-mail: candidatura-pg@ciencias.ulisboa.pt

The study programme

- Has **120** credits and lasts **four** semesters.

- The MSc degree is awarded to those who pass **all of the course modules** and are approved in the public defense of the **dissertation** or **internship report**, and have obtained the required number of credits.

Selection criteria:

Academic Degree Classification 1 (10); 2 (11-12) ;3 (13); 4 (14-16); 5 (17-20)	1-5	40%
Academic, Scientific and Technical Curriculum 1 (voluntary work); 2 (extracurricular subjects); 3 (short courses); 4 (scholarships); 5 (scientific publication)	1-5	30%
Professional Experience (Course Area) 1 (3 months); 2 (6); 3 (12); 4 (24); 5 (professional >12)	1-5	20%
Interview	1-5	10%

Main objectives:

- knowledge about the environment and environmental changes and their direct consequences on human health and lifestyle;
- infer about the interaction Environment – Human Health, with the aim of achieving several goals, namely:

- understand the impact caused by diverse chemical compounds not only in humans by also in animals and environment;
- study the spreading of vectors responsible for the dissemination of pathogenic agents and their consequences in human populations;
- deduce metabolic, immunological and stress adaptation when a certain constraint occur.

Study Plan (120 ECTS)

1st Year

1st Semester

Pathogenic Agents and Vectors (6)
Human Biology (6)
Practical Bioinformatics (6)

2nd Semester

Toxicology and Health (6)
Forensic Biology (6)
Research Practics in HBE (3)
Quality Control (3)

2nd Year

1st Semester

Project in HBE (6)
Dissertation / Internship Report (54)

2nd Semester

Dissertation / Internship Report (conclusion)

Unit A (Health)
Nutrition and Health (6)
Seminars in HBE (3)
Stress Biology (3)

or

Unit B (Environment)
Genetics and Genomics of Environmental Change (6)
Seminars in HBE(3)
Environmental Health Indicators (3)

Unit C (Health)
Human Ecology (6)
Fundamentals of Epidemiology (3)
Basics of the Biology of Stem Cells(3)

or

Unit D (Environment)
Biodiversity and Adaptation (6)
Integrated Pest Management (6)

1st Semester

Maria Teresa Rebelo

- Pathogenic Agents and Vectors

Vítor Rosado Marques

- Human Biology

Maria Luz Mathias

- Seminars in HBE

Francisco Pina-Martins

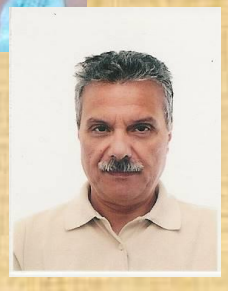
- Practical Bioinformatics

Ana Mª Crespo

- Nutrition & Health

Carlos Gravato

- Stress Biology



Orlando Luís

Octávio Paulo

- Genetics and Genomics of Environmental Changes

Paula Simões

- Environmental Health Indicators

https://fenix.ciencias.ulisboa.pt/degrees/biologia-humana-e-ambiente-564500436615202/paginas-de-disciplinas

2nd Semester

Maria Luz Mathias

- Quality Control

- Research Practics in HBE

Vítor Rosado Marques

- Human Ecology

Maria Teresa Rebelo

- Integrated Pest Management

Salomé Cabral

- Fundamentals of Epidemiology

Fernanda Diamantino

Deodália Dias

Maria Teresa Rebelo

- Forensic Biology

- Project in HBE

Gabriela Rodrigues

- Basics of the Biology of Stem Cells

The National Health Institute Dr Ricardo Jorge

- Toxicology & Health

Carlos Gravato

- Biodiversity and Adaptation

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Institutional collaborations:

This partnership focuses on three distinct areas:

a) Intradepartment: sharing CUs of other Master courses (e.g. Genetics and Genomics of Environment Changes from Evolutionary and Developmental Biology Master course and Integrated Pest Management from Ecology and Environmental Management Master course).

b) Interdepartment- Fundamentals of Epidemiology is taught by teachers from Statistics and Operational Department.

c) Other Institutions- Toxicology & Health (The National Health Institute Dr Ricardo Jorge); Seminars – next slide.

Institutional collaboration:

Seminars in HBE include a set of lectures given by professors and researchers from research laboratories and/or private and public administration services.

Of the dozens of conferences we highlight those given by researchers from the following institutions:

- Private and business sector: British Hospital; Assistance Medical Center for Reproduction - CEMEARE; Gulbenkian Institute of Science.

- Public sector: IBET/ITQB-Nova University; CEDOC/Nova Medical School; The National Health Institute Dr. Ricardo Jorge; Maternity Hospital Dr Alfredo da Costa; INIAV; Police Department of Criminal Research; Faculties from Lisbon University (Pharmacy, Medicine, IST)

Institutional collaboration:

Dissertation (experimental part and writing the final report) in universities and research laboratories – national and international:

- in the EU: Leiden University, Wageningen University, Medical Center – Amsterdam, University of Oslo, Helsinki University.
- in the USA: Harvard University.
- in Asia: Cancer Science Institute, Singapore University.

Most of these students enroll through the **Erasmus program** but some of them go at their own expenses.
The choice of these institutions is initiated by the student with master coordinator guidance. After approval of the project/lab work, the master coordinator contacts the leader of the foreign laboratory and formalizes the conditions under which the internship should take place.

SWOT Analysis:

Strengths

Related to HBE own goals (to interrelate human health with the environment in its various aspects), makes this master very interesting to students who want to study the current reality in which the society looks for answers:

-the 1sr year presents key issues, namely the impact of environmental changes in humans, and more broadly on health. The subjects of Nutrition and Health, Pathogenic Agents and Vectors, Toxicology & Health, Quality Control, Human Ecology and Stress Biology are perfect example of that interaction;

-other disciplines such as Forensic Biology, Human Biology are no less important in that context, as assist with the knowledge on the biology of the human body and elucidate basic aspects for research in criminal areas, opening the range of possible valences for the employers of this master course;

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SWOT Analysis:

Strengths (cont):

- complementary disciplines as Genetics and Genomic of Environmental Changes, Practical Bioinformatics, Fundaments of Epidemiology, and Environmental Health Indicators give important tools to students be able to deal with evolution, clinical manifestations, causes and epidemiological aspects of major diseases that affect humans, especially those most prevalent in western societies and particularly in Portugal.

Finally, the most diverse backgrounds of guests (in different disciplines and in particular in Seminars on HBE, come to present lectures), open to students a wide range of subjects in research and gives them, potentially, a possible choice of the area in which during the following year, they will perform the master thesis.

SWOT Analysis:

Weaknesses

Related to two aspects:

- the lack of funds available for conducting experimental tasks in different disciplines. There are experimental programs which require the purchase of chemicals and other laboratory materials that currently, particularly in this area, are extremely expensive.

These often lead teachers to use materials and equipments purchased with funds from research projects which in turn also have scarce financial resources. Accordingly, a greater investment in terms of financial resources would benefit the most negative point of the master on HBE.

Also, the enlargement of the University of Lisbon also provide more intra-faculties collaboration with very positive consequences in terms of existing but still tenuous partnerships, enabling the increasing participation of the various units involved and enhancing further synergies and possible economies of scale between different institutions.

SWOT Analysis:

Weaknesses (cont):

- the great diversity of backgrounds of the students of this Master can somewhat complicate effective understanding of taught subjects.

This aspect has been well shapely by the commitment of teachers involved in this postgraduate course, as well as the students of the Course Commission that are ensuring the edges are honed and the master course will be more craving for those looking for specific training required by the labor market.

Quality Control:

The Master Coordination Commission meets periodically (at the end of each semester), with the Pedagogical Commission (includes students and teachers):

- to review the final reports made by the teacher of each CU;
- to reflect and act on internal enquiries (made by students) of each CU.

The adjustments are made in order to increase motivation and interest of students and, consequently, to improve the course success.

Development of dissertation projects is always carried under an effective co-supervision regime that includes, at least, one internal supervisor and one from the accepting institution.

In accordance with Universidade de Lisboa decision, HBE uses in all its CU the FenixEdu academic and administrative management tool. In what regards academic management, contents are now distributed over the two platforms used by FCUL (FenixEdu and Moodle).

Adequacy to current problems/ Society response:

- The structure and mode of operation of this course fits perfectly in the new University of Lisbon (fusion between the University of Lisbon and the Technical University of Lisbon) strategy that, in their recent statutes, refers at particular time ***"promote scientific research, particularly in border areas and convergence through cross-fertilization of disciplines (....)"***.

- This gives more strength to what was already being widely practiced in the last years, which boils down to encourage students to attend courses in areas of knowledge outside the canonically established and taught at the Faculty of Sciences.

Adequacy to current problems/ Society response:

- The strong training acquired in disciplines that relate, in the form of cause / effect, the environment and human health in diseases caused by pathogens and / or pollutants gives these students a high probability of being accepted in **applications to PhD programs** recently approved by FCT as "Environmental Health" led by the Faculty of Medicine of UL and FCUL and also the "Biodiversity and Global Change," led by the Aveiro University and FCUL.

- With respect to the national labor market, the master course on Human Biology and Environment have training that allows students to integrate teams working on diagnosis of pathogens, quality control, toxicology, and at any laboratory using molecular analysis as common practice.

Employability:

- Due to lack of human and financial resources FCUL has not a system to monitor in real time the professional situation of its alumni. However, the query of global IT platforms and free access as LINKEDIN by the initiative of the Master Course Coordination Commission, has made possible to follow the professional pathway of many of our alumni.

- The absence of accurate statistics hampers the knowledge of employability of the Masters in BHA but, by oral information, we believe that over 80% of these alumni are in advanced training programs (PhD) or in the national and internacional market labor, as shown in the examples - next slide.

Employability

Career opportunities:

- research work in public health;
- senior positions in food and pharmaceutical industries;
- positions in laboratories belonging to hospitals and other health institutions (e.g. The National Institute of Public Health Dr. Ricardo Jorge and the Portuguese Institute of Oncology);
- medico-legal technicians (e.g. National Institute of Forensic Science and Laboratory of Criminal Police);
- quality control area at local municipalities and industrial companies;

Employability

National and International Companies in Portugal (technical and team leaders):

- Clinical Laboratory Dr. JChaves
- Lusíadas Hospital
- Champalimaud Foundation
- LPQ Biotechnology
- Amadora Sintra Hospital
- Lisbon City Council
- Cascais City Council
- Medically Assisted Reproduction Clinic (IVA)
- Gulbenkian Institute of Sciences
- Reproduction Medical Center - British Hospital, Lisbon
- Sidul Quality Assurance (SONAE)
- Maria Ferreira & Fernandes Ferreira Lawyer Society

Employability

National and International Companies in Portugal (technical and team leaders) – cont

- National Institute of Legal Medicine, Lisbon
- Portucel, Setubal
- IKK, Portugal, Quality, Environment & Safety
- Atlantic Pharma, Lisbon
- Stanton Chase International, Executive Search Consultants

International Companies (technical and team leaders):

- Richmond, North Yorkshire Pharmaceuticals, UK
- Accenture Technology Solutions, UK
- Janssen, Pharmaceutical Companies of Johnson and Johnson, Spain
- Laboratory Aide Biomnis, Ireland
- United Arab Emirates Research, Singapore

Employability:

International institutions:

- German Cancer Research Center, Germany
- University Medical Center, Groningen, The Netherlands
- UT MD Anderson Cancer Centre, Houston, USA
- University of Cambridge, UK
- Leiden University Medical Center, The Netherlands
- Johns Hopkins School of Medicine, USA
- King's College London, UK
- Institut Pasteur Paris Area, France
- Max Planck Institute, Germany
- Biosurfit, UK

Employability:

Scholarship (PhD, Post-Docs and others):

- The National Health Institute Dr. Ricardo Jorge
- Human Genetics and Infectious Diseases at IHMT-UNL
- IPOLFG (CEDOC), Nova University
- Algarve University
- Coimbra University
- National Institute of Legal Medicine
- Tropical Scientifc Research Institute
- Molecular Medicine Institute
- Faculty of Sciences, Lisbon University
- Faculty of Pharmacy, Lisbon University
- Faculty of Medicine, Lisbon University