

MASTER'S DEGREE IN MICROBIOLOGY APPLIED TO PUBLIC HEALTH AND INFECTIOUS DISEASES RESEARCH

GENERAL AND BASIC COMPETENCES:

- To develop the capacity for critical analysis, evaluation and synthesis of new and complex ideas in the fields of Microbiology and Public Health and of Infectious Diseases.
- To observe scientific methods when defining problems, formulating hypotheses, deciding strategies and experimental methods, obtaining, assessing and interpreting results, and drawing conclusions.
- To situate a problem and the results of analysis within existing knowledge.
- To select the most up-to-date bibliography and handle the documentary sources of greatest relevance to the issue at hand.
- To possess the learning skills enabling further study which, of necessity, will largely be self-directed or autonomous.

SPECIFIC COMPETENCES:

- To know the microbiological bases of infectious diseases and, specifically, the most important aspects related to their application to public health and research.
- To know the epidemiological features of infectious diseases and the most important methods of epidemiology, and to know how to apply them in the field of public health and infectious disease research.
- To know the new models and updating systems in the control, prevention and monitoring of infectious disease.
- To learn how to recognise emergent and re-emergent infectious diseases and problems.
- To acquire and understand knowledge about the techniques of molecular and genome biology and imaging needed to tackle a research project on infectious diseases, as well as the principles of systems biology and its current state of development.
- To know and be able to apply the chief concepts of ethics and their implications in the field of biomedical research.
- To be deeply knowledgeable about interactions between microorganisms and humans, as well as their potential repercussions in the field of public health.
- To know innate immune systems and those acquired by vaccination, as well as adjuvant regulation and the improvement of immune specificity with the use of new generations of vaccines.
- To understand the implications of microbiology and the epidemiology of infectious diseases for international cooperation and global health.
- To know systems of alert and rapid response in case of infectious disease emergencies.
- To know the pathogenic, epidemiological, preventive, control and treatment determinants on diseases transmitted by food and water.

- To know the pathogenic, epidemiological, preventive, control and treatment determinants on diseases transmitted via blood, derivatives and ETS.
- To know the pathogenic, epidemiological, preventive, control and treatment determinants on respiratory, zoonotic and vector-borne diseases.
- To know the pathogenic, epidemiological, preventive, control and treatment determinants on vaccinate diseases.
- To know the pathogenic, epidemiological, preventive, control and treatment determinants on illnesses associated with healthcare, and others.
- To be able to recognise the most important problems related to micro-organism resistance to anti-microbials, and to apply suitable methods and adapt attitudes to avoid their appearance and spread.
- To understand and develop proper and innovative working practices in diagnostic and research laboratories, as well as appropriate bio-security measures.
- To acquire the capacity to perform original work critically in the field of research into microbiology and infectious diseases applied to public health, as well as to defend it, in such a way that further I+D+I activities can be carried out autonomously.

For additional information, see the [Memorandum](#).