

MASTER DEGREE IN MICROBIOLOGY



FOOD MICROBIOLOGY – Faculty of Veterinary Medicine

Objectives:

This Curricular Unit aims at providing general and specific training in the field of Food Microbiology so that students know the main microbial agents responsible for decomposition and food safety (animal, vegetable, and mineral origins and compounds); the main foodborne microbial agents of the animal, vegetable and mineral food chain or compound food; the main microbial agents of technological interest and use. Students must acquire competencies on microbiology analysis which allow quantifying microbial food colonizers as well as detection and quantification of microbial agents that interfere with the food safety or promote its fermentation or maturation. At the end, students must also have acquired the ability to interpret analytical results based on official microbiological standards (legislation) and to identify and manage the main health risks of the food chain.

Program:

Theoretical lectures:

- Microbial colonization of food, its origin, nature and ecology: functional groups of microbes throughout the shelf-life of foodstuffs.
- Official microbiological standards. Other relevant microbiological determinations.
- Food poisoning: Occurrence, epidemiology, pathophysiology and risk management:
 - o Food poisoning of bacterial origin;
 - o Viruses of the food chain;
 - o Protozoozosis of the food chain;
 - o Bio-indicators.
- Legislation concerning control of biological health risks from dietary.

Laboratory practicals (wet lab):

- Sampling, harvesting and packaging techniques; submitting samples to laboratories;
- Total microbial count in food and food contact surfaces (hygiene indicators);
- Microbiological analysis of water, meat, milk, food ready for consumption and canned food;
- Detection of food poisoning agents or their indicators in food;
- Reading, expressing, evaluating and interpreting analytical results.

Evaluation methodology

Theoretical (written) exam (80%) and interpretative reports of microbiological analysis (20%). The approval rating is achieved with a mark a 9.5 (0-20 scale).

Recommended bibliography:

1. Anon. 2005. Regul. (CE) nº 2073/2005 de 15/11, relativo a Padrões Microbiológicos oficiais.
2. Blackburn, C.W. & McClure, P.J. 2002. Foodborne Pathogens. Hazards, Risk Analysis and Control Processing. Woodhead Publishing Ltd, Abington Hall, Cambridge. UK.
3. Diversos. 2012. Textos de apoio elaborados pelos prelectores dos diferentes temas do curso.
4. FDA. 2010. Bad Bug Book, in [<http://www.fda.gov/Food/FoodSafety/Foodbornellness/FoodbornellnessFoodbornePathogensNaturalToxins/BadBugBook/default.htm>]

5. Lelieveld H. & Mostert, T. 2003. Hygiene in Food Processing: Principles and Practice. Woodhead Publishing Ltd Abington, Cambridge. UK.
6. Mortimore, S. & Wallace, C.I 1995. Microbiología alimentaria – Volumen I Aspectos microbiológicos de la seguridad y calidad alimentaria. Editorial Acribia, S.A., Zaragoza, Sp.