



UNIVERSITÀ
degli STUDI
di CATANIA

DEPARTMENT OF BIOLOGICAL, GEOLOGICAL AND
ENVIRONMENTAL SCIENCES

Master's Degree in Health and Cell-Molecular Biology

Academic Year 2018/2019 - 1° Year - Cell-Molecular Biology

Curriculum

MICROBIOLOGIA DEGLI ALIMENTI

MED/07 - 6 CFU - 2° Semester

Teaching Staff

MARIA LINA MEZZATESTA

Email: mezzate@unict.it

Office: Dip.to Scienze Biomediche e Biotecnologiche - Sezione Microbiologia. Torre Est piano 3°. Via Santa Sofia n.97. Catania

Phone: 095.4781240

Office Hours: Martedì e giovedì dalle 11.00 alle 13.30. Si consiglia di chiedere conferma sulla presenza del docente per e-mail

LEARNING OBJECTIVES

To train graduates giving them knowledge about applied food microbiology. Therefore, in addition to the main microbial groups of interest in food, students will be trained in the principles of conservation, the following will be treated: the sources of the most diffused food contamination and foodborne diseases including emerging as well as traditional and innovative analytical methods used in microbiological analysis.

DETAILED COURSE CONTENT

Infections and food poisoning bacteria:

- Food infections: *Escherichia coli*, *Salmonella enterica*, *Shigella* spp, *Yersinia enterocolitica*, *Vibrio cholerae*, *Campylobacter jejuni*, *Brucella* spp., *Listeria monocytogenes*
- Poisoning bacteria: *Clostridium botulinum*, *Staphylococcus aureus*
- Poisoning *sensu strictu*: *Clostridium perfringens*, *Bacillus cereus*

Fungi and food.

- General characteristics of fungi
- Methods of study and identification
- Fungi contaminating food production and animal rearing
- Fungal species potentially toxinogenic
- Mycotoxins
- Mycotoxicosis

Food preservation

- i. Factors that control microbial growth in food
 - High temperature: pasteurization, sterilization
 - Low temperature: refrigeration and freezing
 - Radiation, water activity, pH value; redox potential
 - Atmosphere conservation of the environment (packaging)
 - Additives and Preservatives

Food contamination

- Microorganism authenticity indicators: protecnological and probiotics
- Microorganism quality indicators
- Microorganism health indicators
- Sources of contamination (air, soil, water, plants, animals, humans)
- Environmental contamination and microbiological control of air and staff

Control of food production

- Systems of quality control in the food industry: the system "Hazard Analysis and Critical Control Point" (HACCP)
- Good Manufacturing Practice (GMP) and Good Hygienic Practice (GHP)

Microbiological control of food

- Sampling criteria
- Drinking water, milk, cheese, wine, beer, cereals, meat, fish, eggs and sauces
- Techniques of isolation
- Techniques of counting
- Culture media
- Identification of pathogens
- Automated and rapid systems
- LAL test

TEXTBOOK INFORMATION

1. Antonietta Galli Volonterio, **Microbiologia degli alimenti**, Casa editrice ambrosiana.
 2. Jay, Loessner, **Microbiologia degli alimenti** Golden. Springer
-