

## GENERAL TECHNOLOGY

**Study programme: MIMV    Curricular Year 5<sup>th</sup>    Semester 9<sup>th</sup>    Compulsory    ECTS: 4,5**

**Lecturers:** Maria João Fraqueza (CCP), Marília Catarina Ferreira (R), Cristina Mateus Alfaia, Teresa Semedo Lemsaddek

**1. Contact hours:** Lectures – 26; Practical – 26

### 2. Objectives:

The study of food microbiology and factors influencing the development of agents responsible by food spoilage. Knowledge of unit operations and technological food processes with special reference to equipment used in the production of different foods of animal origin.

### 3. Programme:

**Lectures-** Foundations of food technology and applied food microbiology. Food additives and technological aids. Microbiological analysis of food. Water and waste waters. Unit operations and unit processes in food technology industries. Food preservation by heat processing. Lethal and non-lethal heating. Canned food. Equipment used for food heating and cooling. Food refrigeration and freezing. Expert examination of cooled and frozen food. Defrosting processes of food. Hurdle effect applied to packaging and distribution of minimally processed food. Proactive methods for safety assurance.

**Practicals** – Influence of intrinsic and extrinsic factors in the development of microorganisms in food. Sensorial analysis of food. Bromatological analysis of food. Reading and interpretation of results. Unit operations and processes. Production of canned food. Quality control of canned food. Application of pro-active safety systems to food products.

### 4. Bibliography:

Class handouts, lecture notes, scientific and technical papers.

Ash, M. & Ash, I. (2008). *Handbook of Food Additives*. 3rd Ed. Ed. Gower.

Brennan, J.G.; Butters, J.R.; Cowell, N.D. & Lilly, A.E.V. (1998). *Las operaciones de la ingeniería de los alimentos*. 3rd Ed. Editorial Acribia.

Wiley Online Library (2020). *Water Activity in Foods: Fundamentals and Applications*. 2<sup>nd</sup> Ed. Editores Gustavo V. Barbosa-Cánovas, Anthony J. Fontana Jr., Shelly J. Schmidt, Theodore P. Labuza. John Wiley & Sons, Inc.

Madrid Vicente, A. (2014). *La Carne y los Productos Cárnicos - Ciencia y Tecnología*. Ed. AMV

### 5. Assessment:

The students' knowledge is evaluated weekly with little tests about practical matters (30%) and with a written final examination about theoretical subjects (70%) which includes true-false questions, short-answer questions and a long-answer question. The final score will be the sum of both scores.