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| Course: | L025 - Food Quality and Nutrition |
| Degree: | Bachelor |
| Curriculum Unit: | 9087005 - Food Microbiology |
| Scientific field: | Microbiology and Plant Protection |
| ECTS^(*): | 5 |
| Curriculum year: | 1st |
| Curriculum semester: | 2nd |
| Frequency Regime: | Mandatory |
| Teacher(s): | António de Fátima de Melo Antunes Pinto |
| Contact hours ^(**): | T - 30; P - 30 |
| Total work time (hours): | 132 |

(*) - ECTS - European Credit Transfer and Accumulation System

(**) – T- Theoretical; TP- Theoretical/Practical; LP- Lab Practice; S- Seminars; I- Internships; TU - Tutorials; O- Other (Evaluations)

Objectives / Competences

It is intended that the materials versed in this Course, offer the students, information and adequate training enabling him to understand:

- a) The use of microorganisms, as feed themselves;
- b) The use of microorganisms as agents of food production, such as hygienic quality indicators, such as spoilage and agents responsible for foodborne diseases;
- c) Microbiological control in foods from raw material to finished product;
- d) The use of classical and modern methods of detection and quantification of microbial populations;
- e) The establishment and maintenance of hygienic conditions in facilities, equipment and personnel;
- f) The use of criteria for public health and consumer protection in the production and marketing of food.

Syllabus

Study of microbial growth in closed systems and open systems (bioreactors). Mathematics of microbial growth, deduction and definition of the parameters associated with growth. Role and importance of the main groups of microorganisms in foods: the main habitats of microorganisms and the main routes of food contamination. Probiotic microorganisms. Foods such as substrate and environment for microbial activity: extrinsic and intrinsic factors affecting the food microbial activity. Study and characterization of microbial fermentations with major interest in food production. Major changes and microbial food respective agents responsible. Hygienic quality of foods: microbiological criteria and standards required in food. Microbial analysis of foods. Hazard analysis and critical control points: reference to HACCP.

Teaching methodologies and evaluation criteria

Lectures Information is expository, using the audio-visual materials, promoting the active participation of students. Potentiation of independent student work by stimulating the taste for literature as a way to deepen and consolidate scientific knowledge.

Laboratory classes: The teacher explains the foundation of the methodology and operation of laboratory equipment used, demonstrating previously procedures. Later, students perform techniques and methods proposed.

Assessment: Conducting an objective test with multiple response questions for assessment of the theoretical component. The assessment of the practical component will be made for the preparation and presentation in groups of 3 reports on practical subjects performed more relevant in practical classes. The final classification is obtained by averaging the ratings of the components, and expressed on a scale of 0 to 20.

Short bibliography

DURIEUX, A. & SIMON, J.P. (2002). Applied Microbiology. Vol. 2, Kluwer Academic Publishers

FERREIRA, WFC, SOUSA JCF & LIMA N. (2010). Microbiologia. Lidel. Ed Técnicas. Lisboa.

INTERNATIONAL COMMISSION ON MICROBIAL SPECIFICATION FOR FOODS (ICMSF) (2011). Microorganisms in Foods 8: Use of Data for Assessing Process Control and Product Acceptance. 1 Ed. Springer.

INTERNATIONAL COMMISSION ON MICROBIAL SPECIFICATION FOR FOODS (ICMSF) (2005). Microorganisms in Foods 6: Microbial Ecology of Food Commodities. 2ª Ed. Springer.

JAY JM, LOESSNER MJ & GOLGEN DA (2005). Modern Food Microbiology. 7Ed, Springer.

JAY JM (1994). Microbiologia Moderna de los Alimentos. 3Ed Editorial Acribia.

SPERBER WH & DOYLE MP (Edts) (2009). Compendium of the Microbiological Spoilage of Foods and Beverages. Food Microbiology and Food Safety Series. Springer. London.

TSAKALIDOU E & PAPADINITRION K (Edts) (2011). Stress Responses of Lactic Acid Bacteria. Food Microbiology and Food Safety Series. Springer