

Course:	L025 - Food Quality and Nutrition
Degree:	Bachelor
Curriculum Unit:	9025012 - Technology and Quality of Cereals
Scientific field:	Food Science and Technology
ECTS^(*):	5
Curriculum year:	3rd
Curriculum semester:	1st
Frequency Regime:	Mandatory
Teacher(s):	Paula Maria dos Reis Correia
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

Objectives of the curricular unit and competences:

Evaluation of different cereals nutritionally and technologically.

Describe the objectives of cereal processing methods and their implications in the quality of cereal products. Identify and handling equipment related with the processing and preservation of cereals and their products.

Provide students with knowledge about cereal industrial and nutritional quality, and also about the different industrial processing applied of different types of cereals, allowing the students the possibility of application these knowledge in their future professional activities. Furthermore, the student must recognize the importance of the application of the general conservation and processing methods on the cereal and cereal products quality.

Syllabus

Theoretical Component

1. Importance of cereals in food
2. Technological and nutritional quality of different cereals
3. Cereals quality criteria for industry
4. General operations of preparing the grains
5. Cereal processing and quality of the products obtained
 - 5.1. Milling
 - 5.2. Starch technology
 - 5.3. Malting
 - 5.4. Bakery
 - 5.5. Pasta production

- 5.6. Extrusion-cooking
- 5.7. Rice technology (peel and whitening)
- 5.8. Biscuits
- 7. Other technologies associated with cereals (eg technology beer)

Practical component

- 1. Evaluation of the nutritional quality and technological performance of different cereals
- 2. Physical characteristics of cereals
- 3. Morphology of different cereals
- 4. Chemical analysis and nutritional evaluation of cereals
- 5. Technological tests
 - 5.1. Manufacture of bread
 - 5.2. Malting
 - 5.3. Starch extraction and analysis of the resulting products.

Teaching methodologies and evaluation criteria

This curricular unit will be teaching by e-learning methodology and lectures, with theoretical and practical lectures. The theory subjects will be based on the exposition of lectures by the professor. The practical component will be realized on the laboratory with industrial simulation of cereal processing methodologies, studying the effect that these methods produce on cereal food quality level. To complement the training of students will be conducted several visits to cereal industries, including a grinding, a malting plant, a rice processing unit and a manufacturing unit of biscuits.

The evaluation of the curricular unit is based on writing final exam, with the acquire knowlegment on the theory subjects, a group investigation work, and a group report of the work developed during the practical classes. Furthermore, it will be part of the teaching methodologies the execution of study visits, with the correspondent group report of activities, also for evaluation..

Short bibliography

- Fellows, P.J. (2000). Food Processing Technology - Principles and Practice (2nd Edition). Woodhead Publishing
- Frederick J. (1999). Wiley Encyclopedia of Food Science and Technology (2Ed) Volumes 1-4, Francis, John Wiley & Sons
- Gordon, B.& Willm, C (1998). Les industries de première tranformation des cereales. Ed. Technique & Documentation Lavoisier. Paris.
- Hoseney, RC (1998). Principles of cereal science and technology. Ed. AACC. Inc. Minnesota.
- Quaglia, G (1991) Ciencia y tecnología de la panificación. Ed. Acríbia. Zaragoza.
- Owens, G. (2001). Cereal Processing Technology. Woodhead Publishing Ltd., Cambridge. UK.
- Kulp, K. (2000). Handbook of Cereal Science and Technologies. CRC Press. New York.
- Bruce, R. Hamaker (2007). Technology of Functional Cereal Products. CRC Press. New York.
- Morris, P.C., Bryce, J.H. (2000). Cereal biotechnologyCRC Press. New York.