

Eggs and Egg Products

Code: 102646
ECTS Credits: 3

2024/2025

Degree	Type	Year
2501925 Food Science and Technology	OT	4
2502445 Veterinary Medicine	OT	5

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Teachers

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Teaching groups languages

You can view this information at the [end](#) of this document.

Prerequisites

There are no prerequisites, but it is advisable for the student to refresh the knowledge acquired in previous courses: Microbiology and parasitology; Food analysis and quality control; Food microbiology; Food products; Food chemistry Processing Methods I and II.

Objectives and Contextualisation

The course Eggs and Egg Products is an optional course and belongs to the subject Food Technology. This course, which is intended as an orientation towards specialisation in future professional activities, complements the training of the courses Food Processing Methods I and II, and Pilot Plant Practices.

The general objective of the course Eggs and Egg Products is to provide students with a solid base of fundamental theoretical and practical knowledge about the production, quality, processing and use of eggs and egg products, in order to understand and actively participate in the poultry industry and in the use of eggs and egg products in the food industry.

The specific objectives are:

- To identify the composition, variability and the most important factors affecting the raw material.
- To recognise technical problems of a productive nature or raw materials.

- To identify the physical and biochemical processes that occur after laying and during storage, in order to maintain their quality.
- To know the indicators of freshness and the most suitable means to maintain its quality.
- To determine the preservation and transformation processes and the physico-chemical, microbiological and sensory modifications that occur.
- To establish the quality control applicable to the egg and egg products industry and to substantiate the conditions of production, processing, distribution and use.
- To diversify products and to understand the integral use of all egg components.

Competences

Food Science and Technology

- Analyse, summarise, resolve problems and make professional decisions.
- Apply knowledge of the basic sciences to food science and technology.
- Apply the principles of processing techniques and evaluate their effects on the quality and safety of the product.
- Apply the scientific method to resolving problems.
- Develop individual learning strategies and planning and organisation skills.
- Identify pathogenic, spoilage, and industrially-useful microorganisms, along with the conditions that are favourable or unfavourable to their growth in foods and in industrial and biotechnological processes.
- Search for, manage and interpret information from different sources.
- Show understanding of the mechanisms by which raw materials deteriorate and the reactions and changes that take place during storage and processing, and apply the methods for controlling this.
- Use IT resources for communication, the search for information within the field of study, data processing and calculations.

Veterinary Medicine

- Analyse, synthesise and resolve problems and make decisions.
- Apply food technology to the preparation of food for human consumption.
- Comunicar la informació obtinguda durant l'exercici professional de manera fluida, oralment i per escrit, amb altres col·legues, autoritats i la societat en general.
- Demonstrate knowledge of the rights and duties of the veterinarian, with a special focus on ethical principles
- Demonstrate knowledge, understanding and differentiation of the main biological agents of veterinary interest.

Learning Outcomes

1. Analyse the importance of microorganisms in foods and understand the biotic and abiotic factors that affect their development in these substrates.
2. Analyse the importance of microorganisms in the field of food and understand the biotic and abiotic factors that affect development in these substrates.
3. Analyse, summarise, resolve problems and make professional decisions.
4. Analyse, synthesise and resolve problems and make decisions.
5. Apply specific technological processes to the preparation of milk and dairy products, meat and derived products, and fishing, egg and plant products, and understand the modifications derived from the application of these processes to the finished product.
6. Apply the scientific method to resolving problems.
7. Apply the technological processes that are specific to milk and dairy products, meat and meat derivatives, fish products, egg products and vegetable products, and understand the modifications to the final product that these processes make.
8. Communicate information obtained during professional exercise in a fluid manner, orally and in writing, with other colleagues, authorities and society in general.
9. Describe the processes of spoilage and deterioration of foods.
10. Develop individual learning strategies and planning and organisation skills.

11. Identify the control parameters of deterioration and spoilage processes.
12. Recognise the changes, alterations and adulterations suffered by milk, meat, fishing products, eggs, plants and derived products, as well as products made in collective catering establishments.
13. Recognise the changes, spoilage and adulterations that can affect milk, meat, fish products, eggs, vegetables and products deriving from these, and also products made in group catering businesses.
14. Recognise the circumstances that cause milk, meat, fishing products, eggs, plants and derived products, as well as products made in collective catering establishments to be unfit for human consumption and justify why.
15. Recognise the dangers to milk, meat, fishing products, eggs, plants and derived products, as well as products made in collective catering establishments, and evaluate the risk involved for different consumers.
16. Recognise the influence of the intrinsic, extrinsic and implicit characteristics of milk, meat, fishing products, eggs, plants and derived products, as well as products made in collective catering establishments, in the presence or persistence of a danger.
17. Recognise the role of microorganisms as causal agents of food-transmitted diseases.
18. Recognise the role of microorganisms as causal agents of foodborne disease and appreciate their role in industrial processes.
19. Relate the characteristics of foods to their physical properties.
20. Search for, manage and interpret information from different sources.
21. Select food conservation methods that slow down deterioration.
22. Select processes of conservation, transformation, transport and storage that are suited to foods of animal and plant origin.
23. Select suitable conservation, transformation, transport and storage processes for foods of animal and plant origin.
24. Use IT resources for communication, the search for information within the field of study, data processing and calculations.

Content

- Topic 1: Introduction. Production, uses and consumption.
- Topic 2: Structure and composition. Functional properties of the components.
- Topic 3: Physicochemical quality of the whole egg. Non-destructive methods. Microbiological quality.
- Topic 4: Egg production. Influence on quality. Modification of nutritional value: functional eggs.
- Topic 5: Whole eggs: handling, packaging and preservation. Changes during conservation. Regulations
- Topic 6: Egg products. Description.
- Topic 7: Liquid egg: collection, transport to the plant and storage. Processing. Obtaining liquid egg product.
- Topic 8: Freezing.
- Topic 9: Concentration. Dehydration.
- Topic 10: Cooked eggs.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Lab practices	4	0.16	7, 8, 9, 11, 13, 12, 19, 22, 23, 21, 16
Seminars	4	0.16	1, 2, 7, 5, 8, 9, 11, 18, 17, 13, 15, 22, 23, 21, 24, 16, 14
Theory	15	0.6	1, 2, 7, 5, 9, 11, 18, 17, 13, 12, 15, 19, 22, 23, 21, 16, 14

Visit	2	0.08	2, 7, 5, 11, 18, 17, 15, 22, 23, 21
Type: Supervised			
Tutorials	2	0.08	3, 4, 6, 20
Type: Autonomous			
Case preparation	8	0.32	3, 4, 6, 20, 8, 10, 24
Study	34	1.36	20, 10, 24

The development of the course is based on the following face-to-face and non-face-to-face activities:

1. Theoretical classes: consisting of master classes with ICT support.
2. Practical classes: laboratory sessions in which students will work with techniques and procedures of analysis related to quality.
3. Visit to farm, packing and grading center.
4. Seminar for presenting self-learning activities: 1 session. During the seminars the students will have to present and discuss the most important aspects of the work done.
5. Seminar on egg and egg products quality legislation.
6. Tutorials: the student will have to attend at least two tutorials during the course in order to follow up the self-study work.
7. Autonomous work.
8. Individual or group self-learning activities: the student will have to carry out a team activity, which will be proposed throughout the course coinciding with the different theoretical blocks. They are works, which involve the search for information by the student on one or more issues, and will have to be delivered in writing and presented to the rest of the students.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Exam	50%	2	0.08	1, 2, 7, 5, 9, 11, 18, 17, 13, 12, 15, 19, 22, 23, 21, 16, 14
Lab practices	20%	4	0.16	7, 5, 8, 9, 11, 13, 12, 19, 22, 23, 16
Seminar	30%	0	0	1, 2, 3, 4, 6, 5, 20, 8, 10, 11, 18, 17, 13, 12, 15, 22, 23, 24, 16, 14

The competences of this course will be evaluated by means of:

1. Control of Topics 1 to 10 and the activities related to individual self-learning and/or in the practices carried out in this period with a weight of 50% of the final grade.
2. Self-learning activities: both the written work and the presentation of the work will be evaluated and will have a weight of 30% of the final grade.
3. Attendance to the visit and presentation and evaluation of the questionnaire of the laboratory practice sessions: will be valued with 20% of the final grade.

4. A student will be considered not evaluable if he/she has participated in evaluation activities that represent $\leq 15\%$ of the final grade.

To pass the subject is requested:

1. A minimum of 4 points (of 10) in the control; in case of not reaching this grade, it will be necessary to take the make-up exam.
2. A minimum of 6 points (of 10) in the self-study activities.
3. To have attended the practical sessions

Students who choose the single evaluation option must do the lab practices (PLAB) and the case resolution seminars (SEM) in classroom sessions and it is a requirement to pass them, and the evaluation and contribution on the final mark of these will be the same as those of the continuous evaluation (PLAB 20%, SEM 30%).

The single evaluation consists of a single synthesis test (with medium-length questions to be developed) on the contents of the whole theory programme (Topics 1-10, and lab practices).

The mark obtained in the synthesis test is 50% of the final mark of the subject, the mark obtained in the practical exercises 20%, and the seminars the remaining 30%.

The single evaluation test will be held on the same date set in the calendar for the last continuous evaluation test and the same recuperation and review of grades system will be applied, as well as the same non-assessable criteria as for the continuous evaluation.

Students who choose the single evaluation must submit all the evidences together on the same day as the day set for the synthesis test.

In order to pass the course, a minimum final grade of 4 points out of 10 must be obtained in synthesis teste and a minimum grade of 6 points out of 10 in each of the parts of PLAB and SEM.

Bibliography

BIBLIOGRAFIA (books in the library)

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Castelló Llobet, J. A. (2010) Producción de huevos Arenys de Mar, Real Escuela de Avicultura. Mead G. C. (ed.) (2009) Análisis microbiológico de carne roja, aves y huevos. Ed. Acribia Zaragoza. Mountney G.J. (1983) Poultry products technology. Ed. Avi Pub. Co., Inc., Westport, USA.

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Olson V.M. i W.J. Stadelman (1988) Egg and poultry meat processing. Ed. Technisciences, París.

Parkhurst C.R. i G.J. Mountney (1988) Poultry meat and egg production. Ed. Van Nostrand Reinhold Co., New York.

Sauveur B. (1988) Reproduction des volailles et production d'oeufs. Ed. Institut National de la Recherche Agronomique, Paris.

Sim J.S. i S. Nakai (1994) Egg uses and processing technologies. New developments. CAB Int. Oxon. Solomon S.E. (1990) Egg and eggshell quality. Ed. Wolfe Pub. Ltd., Kent, UK.

Stadelman W.J. i O.J. Cotterill (1990) Egg science and technology. 4th ed. Ed. Avi Pub. Co. Inc., Westport, USA.

Stadelman W.J., V.M. Olson, G.A. Shemwell i S. Pasch (1989) Egg and poultry-meat processing. Ed. VCH Publishers, New York, USA.

Thapon J-L iBourgeois C-M (1995) L'Oeuf et les ovoproduits Tech & Doc, Paris

Wells R.G. i C.G. Belyavin (Eds.) (1987) Egg quality- Current problems and recent advances. Ed. Butterworth & Co., Ltd., Kent, UK.

Yamamoto T. (1997) Hen eggs : their basic and applied science Boca Raton CRC.

BIBLIOGRAPHY (books on-line)

[Egg Innovations and Strategies for Improvements](#)

[Egg marketing: a guide for the production and sale of eggs FAO 2003](#)

[Risk assessments of salmonella in eggs and broiler chickens FAO 2002](#)

WEBS

<http://www.incredibleegg.org/>

<http://www.institutohuevo.com>

<http://www.wpsa-aeca.es/>

<https://www.internationalegg.com>

<http://www.sanovogroup.com/>

http://www.fsis.usda.gov/regulations/Meat_Poultry_Egg_Inspection_Directory/index.as

Software

No special software is needed.

Language list

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	1	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	1	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	2	Catalan/Spanish	second semester	morning-mixed
(TE) Theory	1	Catalan/Spanish	second semester	afternoon