

Food Safety and Zoonosis

Code: 102631
ECTS Credits: 6

Degree	Type	Year	Semester
2502445 Veterinary Medicine	OB	4	1

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: No
Some groups entirely in Spanish: No

Teachers

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Prerequisites

Specifically, this subject requires prior knowledge obtained through the following subjects:

- Food Science
- Food Technology
- Microbiology
- Parasitology
- Epidemiology
- Animal Health

Objectives and Contextualisation

The aim of this subject is to provide an introduction to the tasks of veterinarians that works in Public Health issues, such as the control of transmissible diseases from animals to humans and the implementation of measures to assure food safety from both the point of view of the public health administration and food companies.

On successfully completing this subject, students will be able to:

- Collect and interpret information concerning the zoonotic and/or food-borne pathogenic agents in order to assess their risk
- Apply the working principles of Food Risk Analysis: assessment, management and communication
- Apply their knowledge to investigate food-borne outbreaks and to apply preventing measures

This subject also provides students with a grounding in the implementation of food safety management systems, and especially in the Hazard Analysis and Critical Control Points (HACCP) principles.

All these aspects will be completed during the Food Hygiene and Inspection subject of the eighth semester, in order to achieve the corresponding competences.

Competences

- Analyse, synthesise and resolve problems and make decisions.
- Demonstrate knowledge of English to communicate both orally and in writing in academic and professional contexts.
- Demonstrate knowledge of the rights and duties of the veterinarian, with a special focus on ethical principles
- Diagnose different individual and collective animal diseases, and know about prevention measures, with emphasis on zoonoses and notifiable disease.
- Draft and present satisfactory professional reports, always maintaining the required confidentiality.
- Have basic knowledge of the profession, and in particular of the organisation and functions of professional practice.
- Perform risk analyses, including those of environmental and biosafety, and evaluate and manage them.
- Seek and manage information related with professional activity

Learning Outcomes

1. Analyse, synthesise and resolve problems and make decisions.
2. Apply food risk monitoring and surveillance systems.
3. Apply research procedures to outbreaks of foodborne diseases.
4. Apply the methodology recommended by the OIE for risk analysis in animals and products of animal origin.
5. Demonstrate knowledge of English to communicate both orally and in writing in academic and professional contexts.
6. Describe the main characteristics of the most frequent zoonoses in our geographic field.
7. Design strategies for prevention and control of the most frequent and important zoonoses based on knowledge of the methods of transmission between animals and people, and the epidemiological situation in a region or country.
8. Draft and present satisfactory professional reports, always maintaining the required confidentiality.
9. Evaluate the influence of the intrinsic, extrinsic and implicit characteristics of foods in the presence or persistence of a danger.
10. Have basic knowledge of the profession, and in particular of the organisation and functions of professional practice.
11. Identify the aspects of food safety that affect public health.
12. Recognise the dangers that could be present in a food and evaluate the risk for different consumers.
13. Recognise the procedures for managing and communicating food risk.
14. Relate the problem of foodborne diseases with the responsible etiological agents.
15. Seek and manage information related with professional activity

Content

Section 1: Non-foodborne zoonotic diseases

- Situation of non-foodborne zoonotic disease in Catalonia, Spain and Europe. Consequences to public health. Prevention and control procedures.
- Description of the non-foodborne zoonotic bacteria.

- Description of the non-foodborne zoonotic viruses.
- Mycoses, non-foodborne parasites and zoonotic agents transmitted by arthropods
- Emergent /re-emergent zoonosis

Section 2: Foodborne and waterborne diseases

- Epidemiology of foodborne diseases. Concepts of foodborne illness and foodborne outbreak: assessing and monitoring procedures.
- Description of main foodborne and waterborne bacteria and viruses. Epidemiology, characteristics and control measures.
- Description of main foodborne and waterborne parasites. Epidemiology, characteristics and control measures.
- Other foodborne and waterborne pathogens: chemical contaminants and natural toxins. Epidemiology, characteristics and control measures.
- Allergies and intolerances of food origin. Epidemiology, characteristics and control measures.

Section 3: Food safety management

- Principles and procedures for the management of food safety and risk analysis: components and importance to public health and food industry. Role of national and international organisms in their implementation.
- Food risk assessment: Identification and characterization of the hazards and determination of the exposure. Procedures and tools to perform the risk assessment.
- Risk assessment in the food industry; factors affecting the growth of microorganisms and their effects on food safety. Safety considerations and tools to determine shelf-life of food-stuffs.
- Food risk management: Role of administrations and food industries. Main standards to guarantee food safety and quality in food establishments.
- Introduction to the principles of the Hazard Analysis and Critical Control Points system
- Other dispositions to guarantee food safety and quality: food defense and food fraud prevention
- Food risk communication: Social perception of risks related to food. The food alert procedures. Information addressed to consumers. Food labelling.

Methodology

To achieve the established objectives this subject applies the following methodology:

- Theoretical classes: presentation-based classes with ICT support will serve to introduce fundamental concepts of the syllabus
- Workshops: working in small groups to solve practical cases or explain specific procedures based on practical examples
- Practical classes (computer room): to teach using computer tools to assess food risk
- Autonomous activities: students must solve two practical cases using the methodology and tools taught during theoretical or practical classes. Students could solve the cases individually or in groups.
- In some cases, students could be required to present the solution of the cases during the seminar sessions.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Computer practices	4	0.16	1, 2, 15, 11, 12, 13, 14, 9
Lectures	44	1.76	1, 3, 2, 4, 6, 7, 11, 12, 13, 14, 10, 9
Seminars	4	0.16	1, 3, 2, 4, 15, 6, 7, 11, 12, 13, 14, 10, 9

Type: Supervised

Tutorials	2	0.08	1, 3, 2, 4, 15, 6, 7, 11, 12, 13, 14, 9
Type: Autonomous			
Self-learning study	68	2.72	1, 3, 2, 4, 15, 6, 7, 11, 12, 13, 14, 10, 9
Teamwork	24	0.96	1, 3, 2, 4, 15, 6, 7, 11, 12, 13, 14, 10, 9

Assessment

The activities assessment will be done as follows:

- Two partial exams:
 - 1st partial exam: corresponding to Section I of the syllabus.
 - 2nd partial exam: corresponding to the Section II and III of the syllabus.
 - Cases:
 - Case about non-foodborne zoonosis, corresponding to Section I of the syllabus (DA).
 - Case about food safety (safety), corresponding to Section II and III of the syllabus.

To obtain final grade of the course:

- The assessment of the activities corresponding to Section I of the syllabus will represent 1/3 of the final grade:
 - 80% of this grade will correspond to the partial exam, and the remaining 20% to the resolution of the corresponding case (DA).
- The assessment of the activities corresponding to Sections II and III will be 2/3 of the final grade:
 - 80% of this grade will correspond to the partial exam, and the remaining 20% to the resolution of the corresponding case.

Assessment of teaching in English (DA): this will comprise only at the level of the mark obtained in the activity carried out in this language (Identified as DA). The qualification will be a maximum bonus of an extra 20% of the mark obtained in the activity.

For this bonus, the following general criteria are established:

- Does not receive bonus: low or very limited communicative ability (oral and / or written) in English. Your vocabulary is poor and you do not understand or understand very hardly what you want to express.
- 10% of the note on contents: reasonable communicative ability in English. It is understood what he wants to explain although he makes many mistakes and his vocabulary is limited.
- 20% of the note on contents: good communicative ability in English.

Requirements to pass the course:

- Students must fulfil every one of the following requirements:
 - To have carried out all the assessable activities, including the attendance to seminars/workshops and practical classes
 - To obtain at least 5.0 points out of 10 in each one of the two partial exams
 - To obtain a final grade of 5.0 points out of 10, once all the assessable activities have been evaluated

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
1st partial	26.4	2	0.08	4, 6, 7, 10

2º partial	46.6	2	0.08	3, 2, 4, 11, 12, 13, 14, 10, 9
Bloc I self-learning	6.6	0	0	1, 3, 2, 4, 15, 5, 11, 12, 13, 8, 14, 10, 9
Blocs II-III self-learning	20	0	0	1, 4, 15, 5, 6, 7, 8, 10

Bibliography

ZOONOSIS BOOKS:

M. Martin, J. Segales, L Darwich, E Mateu, J Casal (2019). Enfermedades emergentes en porcino. Ed. Servet

Acha N.P. (2003). Zoonosis Y Enfermedades Transmisibles Comunes al Hombre y a los Animals. Organización Panamericana de la Salud

FOOD SAFETY BOOKS:

Bello, J., M^a.I. García-Jalón, A. López (2000) Fundamentos de seguridad alimentaria. Ediciones Eunate.

Costa, R., K. Kristbergsson, (2009) Predictive modelling and risk assessment. Springer, nova York.

ICMSF. (2004) Microorganismos de los alimentos. 6, Ecología microbiana de los productos alimentarios . Zaragoza: Acribia

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Jay, J.M. (2000) Microbiología moderna de los alimentos. Acribia, Zaragoza

Koopmans, M., D.O. Cliver, A. Bosch (2008) Food-borne viruses. Progress and challenges. ASM Press, Washington.

Lawley, R., L. Curtis, J. Davis (2008) The food safety hazard guidebook. RSC Publishing, Cambridge

Losada Manosalvas, S. (2001). La gestión de la seguridad alimentaria. Barcelona: Ariel.

Luning, P. A., Devlieghere, F., & Verhé, R. (2006). Safety in the agri-food chain. Wageningen:Wageningen Academic.

McElhaton, A, R.J. Marshall.(2007). Food Safety. A practical and case study approach. Springer, Nova York

Polledo, J.F. (2002) Gestión de la seguridad alimentaria. Mundi-Prensa, Madrid

WHO (2009) Risk characterization of microbiological hazards in food. Microbiological risk assessment series nº 17. WHO, Ginebra.

URLs FOOD SAFETY

OMS sobre seguretat alimentaria: <http://www.who.int/fsf>

Servei de seguretat i inspecció alimentària de laUSDA americana: <http://www.fsis.usda.gov/>

International Food Safety Council: <http://www.foodsafetycouncil.org/>

FDA (Food and Drug Administration) : <http://www.fda.gov/Food/default.htm>

Codex Alimentarius: <http://www.codexalimentarius.net>

Autoridad Europea de Seguridad Alimentaria: <http://www.efsa.eu.int>

Agencia Española de Seguridad Alimentaria y Nutrición: <http://www.aesan.msc.es>

Agència catalana de Seguretat Alimentària: <http://www.gencat.cat/salut/acsa/>

Food Safety Agency: <http://www.food.gov.uk/>

La seguridad alimentaria en Europa: http://ec.europa.eu/food/food/index_es.htm