Universidad Zaragoza

Year : 2019/20

63010 - Research in molds and mycotoxins in food

Syllabus Information

Academic Year: 2019/20
Subject: 63010 - Research in molds and mycotoxins in food
Faculty / School: 105 - Facultad de Veterinaria
Degree: 566 - Master's in Food Quality, Safety and Technology
ECTS: 3.0
Year: 1
Semester: First semester
Subject Type: Optional
Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. It favors the acquisition of knowledge related to molds and mycotoxins in the food chain. A wide range of teaching and learning activities are implemented, such as lectures, practice sessions, and assignments.

The course is structured in several lectures (16 hours), 4 sessions of laboratory practice (10 hours) and 2 sessions of oral presentations (4 hours) after the individual preparation of a Power Point presentation based on a research paper.

Students are expected to participate actively in the class throughout the semester.

4.2.Learning tasks

This course begins with an introductory session, stating the intended learning outcomes, syllabus, learning activities, teaching materials, evaluation systems and criteria, and other aspects of interest. In addition, the research group and its activities is presented.

In lectures, the fundamental contents of foodborne molds and mycotoxins are presented, as well as techniques for fungal quantification and determination of mycotoxins, showing by means of graphic material the equipment necessary for their application. Then there are practice sessions in which students can apply these techniques in the laboratory for mycotoxicological analysis of food samples. To do this, they have detailed experimental protocols, support materials and the direct supervision of the teachers.

Active student participation and criticism to the different approaches will be encouraged during lectures and practice sessions.

All the course's teaching materials (class notes, protocols, laboratory practices, support material, recommended bibliography and websites) will be available in advance on the University's virtual platform (ADD-Moodle), and in the Reprographic Service (copy and printing service) of the Faculty of Veterinary of Zaragoza.

4.3.Syllabus

The course will address the following topics:

Lectures (16 hours)

These sessions will present the theoretical contents related to the foodborne molds and mycotoxins, techniques of fungal quantification, isolation and identification, techniques for mycotoxin analysis and strategies for prevention and control. The topics covered are:

- Introduction to the course and presentation of the research group and its activities. (2 hours)
- Molds: general characteristics. Classification. Most important foodborne fungi. Factors affecting the growth of toxigenic molds in food. (2 hours)
- Main mycotoxins: aflatoxins, ochratoxin A, Fusarium toxins (trichothecenes, zearalenone, fumonisin), patulin, citrinin, ergot alkaloids and others. Conditions for mycotoxins synthesis and more susceptible foods. Toxicological aspects of mycotoxins. Procedures to reduce their presence in the food chain: prevention and control. Legislation. (8 hours)
- Mycotoxins in feed. (2 hours)
- New challenges in the analysis of mycotoxins. (2 hours)

Practice sessions (10 hours)

- The laboratory practices are organized into 2-hour sessions. First, a practice session will take place in the computer room using several webpages (in Spanish and English) on the course contents and writing a web report. In the laboratory sessions (4 x 2 hours) students will carry out analysis of mycotoxins in foods by screening and instrumental techniques (HPLC). These sessions conclude with the analysis and interpretation of the results, which will be discussed in groups.

Elaboration of an individual assignment

- Preparation of a PowerPoint presentation based on an article in English of any aspect related to molds and / or mycotoxins, selected from a recent impact magazine (last 5 years).

Sessions of oral presentations (4 contact hours)

- They will be organized in 2 sessions of 2 hours each. Each student will make an oral presentation of their assignment during 10 minutes, followed by a short discussion.

Written exam on the theoretical part of the course.

- Test exams with 40 multiple choice questions (30% of the final grade) will be distributed at the beginning of the lectures and be returned for corrections at a set date.

4.4.Course planning and calendar

The calendar of lectures and practice sessions is published in the month of September on the website of the Faculty of Veterinary

http://veterinaria.unizar.es/

Lectures will be held in a Room of Central Building assigned by the Center.

Practice sessions will be held in Computer room of Zootecnia Building and laboratories of the Unit of Nutrition and Food Science.

Sessions of oral presentations will be held in a Room of Central Building assigned by the Center.

Tutorials will be conducted at any time agreed with the teachers of the course.

4.5.Bibliography and recommended resources

The literature of the academic year is kept updated and is consulted on the Library website (search for recommended bibliography in biblioteca.unizar.es)