

COURSE: Methods for microbiological control in foods

ACADEMIC YEAR: **2016-2017**

TYPE OF EDUCATIONAL ACTIVITY: Basic

TEACHER: Angela Capece

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Language: Italian

ECTS: 6 (5 lessons; 1 laboratory practice)	n. of hours: (lessons e tutorials/practice) 40 lessons 16 laboratory practice	Campus: Potenza School: SAFE Program: MSc Food Science and Technology	Semester: II
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EDUCATIONAL GOALS

During the course, it will be treated the methods most commonly used for the detection of microorganisms in food, such as traditional methods for microbiological analyses, biochemical, immunological, molecular and innovative methods. Laboratory practice will deal on the application of molecular biology techniques for the identification and characterization of microorganisms in food.

EXPECTED LEARNING OUTCOMES

At the end of this course, the students have to be able to perform a microbiological analysis of foods, starting from the correct sampling of the matrix and following all the procedures able to safeguard the microbiological quality of foods. The student needs to be able to evaluate the available techniques in order to choose the most suitable, in function of type of food and the expected microbial count, and to be able to use the obtained results to determine the microbiological quality of a food.

PRE-REQUIREMENTS

General and Food microbiology

SYLLABUS

Lessons

Importance of food microbiological control. Sampling plans. Parameters for evaluating the reliability of a microbiological analysis method. Traditional methods for determination of microbial counts. Biochemical methods: principles and examples of conventional and innovative tests. Immunological methods: basic principle and main characteristics of most diffused immunoassay methods. Biomolecular methods: description of PCR-based techniques; principal culture-dependent and culture-independent techniques, used for the identification and characterization of food-related microorganisms; Real-time PCR: basic principle of the technique and advantages over traditional PCR; Examples of application of molecular technique for the microbiological analysis of foods. Innovative techniques: biosensors, microarrays, flow cytometry

Practices

Laboratory practices for knowledge of conventional molecular techniques useful for identification and characterization of food microorganisms.

TEACHING METHODS

Theoretical lessons (40 hours), Laboratory practices (16 hours). During practices, students will simulate all phases of a microbiological analysis of food and at the end of the course they will gain the ability to interpret correctly the

results.

EVALUATION METHODS

Oral examination, based on the assessment of theoretical knowledges and laboratory practices.

TEXTBOOKS AND ON-LINE EDUCATIONAL MATERIAL

- Galli Volonterio (2005) Microbiologia degli alimenti. Casa Editrice Ambrosiana. Milano.
- A. Vaughan, P. Buzzini, F. Clementi (2008) Laboratorio didattico di microbiologia. Casa Editrice Ambrosiana. Milano.
- J.M. Jay, M.J. Loessner (2009) Microbiologia degli alimenti. Springer
- Notes and teaching materials distributed during lessons, related to the course content not available in the textbooks.

INTERACTION WITH STUDENTS

At the beginning of the course, objectives, program and methods of evaluation will be described; furthermore, it will be collected the list and data of students attending the course. During the lessons, teaching materials (shared folders) will be provided. Office hours: generally from Monday to Thursday from 9.00 to 10.00 at the teacher's study (SAFE, I floor, Viale dell'Ateno Lucano 10, Potenza). Furthermore, the teacher is available at all times for contact with students by e-mail.

EXAMINATION SESSIONS (FORECAST)¹

Usually the third Monday of every month (except August)

EVALUATION COMMITTEE

Prof. Angela Capece (President), Prof. Patrizia Romano (member), Prof. Annamaria Ricciardi (replacement member)

SEMINARS BY EXTERNAL EXPERTS YES NO

FURTHER INFORMATION

¹ Subject to possible changes: check the web site of the Teacher or the Department/School for updates.