Fermentative technologies (Ist Year of study, Ist SEMESTER)

Credit value (ECTS) 6

Course category
Domain (optional)

Course holder:
Assoc. Prof. Dr. Florin-Daniel LIPŞA

Discipline objectives (course and practical works)

The aims of the course and practicum are accumulation of knowledge about the role of viruses and bacteria in plant pathology. Isolation, cultivation and study of the main characteristics of these groups of microorganisms, as well as the integrated disease management. The topics refer to the role of the microorganisms in agricultural ecosystems, the concepts of habitat and niche, populations and communities of microorganisms, ecological succession, the diversity of virus and bacterial communities.

The course of Fermentative technologies, aims to provide students with up-to-date information about the theoretical and practical methods used in obtaining alcoholic and non-alcoholic beverages, as well as with the microbiological control of spoilage microorganisms.

The practical training aim to accustom the students with the working technique in the microbiology laboratories regarding: laboratory equipment, sterilization methods, culture media, inoculation methods, staining techniques, microscopic studies, standardized methods for isolation and identification of fermentative microorganisms.

Contents (syllabus)

Course (chapters/subchapters)
General information. Classification of biotechnologies for beverages. Microbiological control, the basic component of HACCP.
Fermentation processes in the wine industry. Alcoholic fermentation. Malolactic fermentation. Other secondary fermentations.
Microbiological control of wine stability. Spoilages of wines, caused by undesirable microbiological evolutions. Prevention and control.
Microbiological control of the stability of non-alcoholic and non-alcoholic beverages. Spoilages caused by microorganisms. Prevention and control.
Fermentation processes in the alcohol industry. Spoilages caused by microorganisms. Prevention and control.
Fermentation processes in the beer industry. Spoilages caused by microorganisms. Prevention and control.
Fermentation processes in the vinegar industry. Spoilages caused by microorganisms. Prevention and control.
Practicum
Practical aspects regarding fermentation in the wine industry. Yeasts selection, controlled fermentation, practical biotechnological aspects.
Microbiological stability of wines.

Microbiological stability on non-alcoholic beverages.
Practical aspects regarding fermentation in the alcohol industry.
Practical aspects regarding fermentation in the beer industry.

References

1. .Anghel I., Toma M., Voica C., Cojocaru I. - *Biologia şi tehnologia drojdiilor*, Vol. I - 1989, Vol. II - 1991, Vol. III - 1993. Ed. Tehnică, Bucureşti.
2. Banu, C. şi col., 1987 - *Biotehnologii în industria alimentară*. Ed. Tehnică, Bucureşti,
3. Cotea, V., 1985 - *Tratat de Oenologie*, vol. I. Ed. CERES, Bucureşti.
4. Cotea, V., Sauciuc, J., 1988 - *Tratat de Oenologie*, vol. II. Ed. CERES, Bucureşti.
5. Lipşa F.D., Ulea E. – *Practicum de microbiologie alimentara*, Editura Ion Ionescu de la Brad, 2018.
6. Ulea E., Lipşa F.D. - *Microbiologie*, Ed. Ion Ionescu de la Brad, Iaşi, 2011.

Lipşa F.D., Ulea Eugen - *Microbiologia produselor alimentare*, Editura Ion Ionescu de la Brad, 2017.

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Exam	Oral examination	60%
Appreciation of the activity during the semester	Oral assessment during the semester, verification tests and final laboratory colloquium.	40%

Contact

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