

TEACHING DISCIPLINE: QUALITY CONTROL AND ANALYSIS OF BEVERAGES (Specialization Technology and quality control of beverages; 1st Year of study; 1st and 2nd Semester)

Credit value (ECTS): 8

Course category: mandatory

Course holder: Camelia Elena Luchian

Discipline objectives (course and practical works)

- Knowledge of the newest and most modern methods of analysis of beverages, regardless of their type.
- The use of theoretical dates in the realization of practical applications in the field of instrumental analysis of beverages.
- Knowledge of the operating principles of the most used chemical and instrumental analysis of beverages, controlling technological flow, and the determination of counterfeits.

Contents (syllabus)

COURSE (Chapters / Subchapters)
1. Notions of statistics
1.1. Sampling
1.2. Preparation of samples for analysis
1.3. Statistical analysis of results
1.4. Presentation and interpretation of results
2. Spectroscopic and spectrophotometric methods
3. Thin-layer chromatography.
4. Gas chromatography
5. Liquid chromatography
6. Methods for determining metals from liquid samples
7. Methods for determining amino acids and proteins
8. Methods for the determination of biogenic amines
9. NMR methods for determining authenticity of beverages
10. ISO standard CE 17025/2005
11. Codex alimentarius. Law of the vineyard and wine - June 164/24, 2015
12. Applications of the analysis methods in the detection of forgeries
Practical works
1. Labor protection in the quality and analysis beverage laboratory
2. Determination of the total acidity of fruit juices and alcoholic beverages
3. Determination of the volatile acidity of alcoholic beverages
4. Determination of sugar content of juices and musts using refractometry
5. Dosage of reducing sugars
6. Determination of sulphur dioxide
7. Alcoholic strength assay
8. Determining the relative density and pH of the beverages
9. Color analysis of beverages by UV-Vis spectrometry
10. Determination of C vitamin in beverages
11. Determination of iron in beverages using spectrophotometry

12. Determination of lead in beverages using spectrophotometry
13. Determination of the total content of phenolic compounds using UV-Vis spectrophotometry
14. 1st partial test
15. Identification of malic and lactic acids
16. Determination of phenolic compounds with antioxidant properties using UV-Vis spectrophotometry
17. Determination of beverage polyphenols by cyclic voltammetry
18. Determination of the tannin content of beverages
19. Quantitative analysis of aroma compounds by GC-MC technique
20. Analysis of the antioxidant character by the DPPH method
21. Determination of organic acids by HPLC method
22. Determination of sugar by HPLC method
23. Determination of furfural in beverages
24. Identification of conductivity
25. Determination of amino acids content by HPLC
26. Identification of biogenic amines concentration in some beverages by HPLC
27. Organoleptic analysis of non-alcoholic and alcoholic beverages
28. 2 nd partial test

Bibliography

1. Branschard J. M. V., Lilford P., 1987 - *Food Structure and Behaviour*, Ed. Academic Press, Londra
2. Ghimicescu Gh., 1977 - *Chimia și analiza alimentelor, băuturilor și condimentelor*, Ed. Junimea
3. Leonte M., Traian F., 1998 - *Chimia alimentelor, vol. I*, Ed. Pax Aura Mundi, Galați
4. Liteanu C., Gocan S., Bold Anișoara, 1981 - *Separatologie analitică*, Ed. Dacia, Cluj-Napoca
5. Luchian C.E., Cotea V.V., Scutarușu E.C., Colibaba L.C., 2020 – *Metode și tehnici de analiză a calității băuturilor*, Ed. Ion Ionescu de la Brad, Iași
6. Macrae E., 1988 - *HPLC in Food Analysis*, Academic Press, New York
7. Pomeranz, Y., Meloan, C. E., „Food Analysis”, Macmillan, 1987
8. Roux J. L., 1994 - *Conserver les aliments. Comparison des méthode et des technologies*, Ed. Technique et Docum., Lavoisier

Evaluation

Evaluation form	Evaluation Methods	Procent din nota finală
Course	Exam	60
	Course presence	10
Practical works	Tests + cours and practical	30

Contact

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