

Colloids in the food industry (IIIrd Year of study, VIrd Semester)

Credit value (ECTS) 3

Course category

Domain (Optional)

Course holder:

Lecturer PhD. Elena UNGUREANU

Discipline objectives (course and practical works)

- To make students acquire the basic knowledge of colloidal chemistry by focusing composition, preparation and purification methods and properties of the main types of food substrates of plant and animal origin (colloids and food interaction);
- Defining and characterizing the interphase phenomena with applications in the food industry;
- Knowledge of the main colloidal components transformations of food substrates during processing technology transport and storage;
- Practical skills training for chemical analysis laboratory of colloidal food substrates;

Contents (syllabus)

Course (chapters/subchapters)
Introduction into colloids. Disperse systems. Physico-chemical methods of purification and separation of colloids. Colloidal particle
Non-specific and specific properties of colloidal systems
Food-complex colloidal systems
Heterogeneous food dispersions (Pseudocolloids)
Colloidal processes with applications in the food industry
Sources of hydrocolloids in the food industry: Proteins, Carbohydrates, Lipids, Gums

Practicum
Processing the working security and fire security regulations in the chemistry lab. Introductory notions in food colloid chemistry. Obtaining colloidal systems
Non-specific and specific properties of colloidal systems – applications: Adsorption. Elution. Sedimentation. Permeable and semi - permeable membranes
Proteic colloidal systems: Preparation of protein solutions. Identification of the proteins in food stuffs. Determination of protein by biuret method
Carbohydrate colloidal systems: Dosage carbohydrates in honey. The dosage of lactose by colorimetric methods. Determination of the direct reducing sugar content of halva.
Lipid colloidal systems: Physico-chemical analysis of milk, cream, ice cream, butter and cheese
Final test of knowledge evaluation

References

1. Price Nicholas C., Dwek R.A., Wormald M., Ratcliffe R.G. - *Principles and Problems in Physical Chemistry for Biochemists*, Ed. University of Oxford, 2017.

2. Smith Brian E. - *Basic Physical Chemistry*, Ed. Imperial College Press, 2013.
3. Teixeira-Dias, Jose J.C. - *Molecular Physical Chemistry*, Ed. Springer International Publishing AG, 2017.
4. **Ungureanu E.**, Trofin A. - *Bazele experimentale ale chimiei fizice și coloidale*, Ed. Pim, 2013.
5. **Ungureanu E.**, Trofin A. - *Chimia fizică și coloidală prin probleme*, Ed. Pim, Iași, 2014.
6. **Ungureanu E.**, Trofin A. - *Fundamentele chimiei fizice și coloidale*, Ed. Pim, Iași, 2015.
7. **Ungureanu E.** - *Coloizi în industria alimentară*, Ed. Pim, Iași, 2017.

Evaluation

Evaluation form	Evaluation Methods	Percentage of the final grade
Colloquium	Written 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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