

REQUIREMENTS

2017/2018. tanév I. félév

A tantárgy neve, kódja: Unit operations in food processing I., MTBE113

A tantárgyfelelős neve, beosztása: Prof. Dr. Kovács Béla – egyetemi tanár

Szak neve: Élelmiszermérnök BSc

Tantárgy típusa: kötelező

A tantárgy oktatási időterve, vizsga típusa: 3. félév (2+2), kollokvium

A tantárgy kredit értéke: 6

A tárgy oktatásának a célja:

Within the framework of Unit operations in food processing the flow of fluids, separation, homogenization processes are educated. In the lectures mathematical description, equipment and conditions of the flow of fluids, separation processes, homogenization processes are discussed.

A tantárgy tartalma (14 hét bontásban):

1. Basics of unit operations in food processing
2. General description of the flow of fluids
3. Reynolds number, equivalent pipe diameter, principle of continuity
4. Bernoulli equation
5. Fluid transport (pumps, fans, compressors)
6. General description of the mechanical separations, gravity sedimentation
7. Characterization of centrifugal sedimentation, regularities of centrifugal sedimentation, determination of sedimentation rate
8. Types of centrifuges, aspects of their selection and areas of application, cyclones, hydrocyclones
9. Filtration, filtering equipments
10. Pressing, pressing machines
11. Homogenization, mixing, mixers
12. Emulsification, emulsifying equipments
13. Crushing, crushers
14. Pounding, pounding machines

Évközi ellenőrzés módja (a foglalkozásokon való részvétel előírásai és félévközi ellenőrzésének módja, a vizsgára bocsátás és aláírás feltételei):

During the semester, the students may write theoretical 3 tests, based on which they may get an offered mark for the exam. In addition, students have to write 2 tests to the topics of the practice (seminar), and they will get the mark for the practice (seminar) based on these tests.

Számonkérés módja (félévi vizsgajegy kialakításának módja – beszámoló, gyakorlati jegy, kollokvium, szigorlat): kollokvium

Oktatási segédanyagok:

ppt presentation, books

Ajánlott szakirodalom:

Food Process Engineering and Technology. 2nd Edition. Authors: Zeki Berk. Hardcover
ISBN: 9780124159235. eBook ISBN: 9780124159860

Unit Operations in Food Processing, Second Edition 2nd Edition by R.L.Earle eBook ISBN: 9781483293103

Introduction to Food Engineering, Fifth Edition (Food Science and Technology) 5th Edition by R Paul Singh (Author), Dennis R. Heldman (Author) ISBN-13: 978-0123985309

Fundamentals of Food Process Engineering (Food Science Text Series) 4th ed. 2018 Edition by Romeo T. Toledo (Author), Rakesh K. Singh (Author), Fanbin Kong (Author), ISBN 978-3-319-90091-1

REQUIREMENTS

2017/2018 academic year II. semester

Name and code of the subject: Nutritional sciences (MTMEE003)

Name and title of the person responsible for the subject: Dr. Vágó Imre, associate professor

Additional instructors involved in teaching the subject: -

Name and level of the program: Food Safety and Quality Engineering MSc

Subject type: obligatory

Teaching timetable of the subject, type of examination: 1+0 E

Credit value of the subject: 2

Purpose of teaching the subject: to provide the students advanced knowledges which are necessary to choose the most suitable food raw materials and kitchen techniques when preparing special foods

Content of the subject (14 weeks):

1st week: Content of subject “Nutritional Sciences”, organs and their functions of the 1st gastrointestinal tract

2nd week: Nutritional assessment and dietary planning. Dietary Reference Intakes (DRIs), Estimated Average Requirements (EARs), Recommended Dietary Allowances (RDAs), Adequate Intake (AI), Tolerable Upper Intake Levels (ULs), Safe Maximal Intakes, Energy Intake

3rd week: Nutritional assessment and dietary planning. Dietary Reference Intakes (DRIs), Estimated Average Requirements (EARs), Recommended Dietary Allowances (RDAs), Adequate Intake (AI), Tolerable Upper Intake Levels (ULs), Safe Maximal Intakes, Energy Intake

3rd week: Chemical, biological and physiological aspects of nutrition. Acid-base equilibrium, passive and active transports, HCl synthesis in the stomach wall cells

4th week: Bio-catalysers. Role and structure of enzymes. Factors influencing enzyme activity: activators, inhibitors and destructors, temperature, pH-values, enzyme and substrate concentrations

5th week: Carbohydrates: structure and role of mono-, di- and oligosaccharides; functions of polysaccharides of plants and animals/human beings

6th week: Structure of protein building amino acids. Definition of non-essential, essential and conditionally essential amino acids. Amid and peptide bonds. Protein structures and shapes, way of protein synthesis and hydrolysis. Complete and incomplete proteins, protein complementation, protein quality

7th week: Lipoids and lipids. Neutral lipids and phospholipids. Biosynthesis and metabolism of fatty acids and lipids. Essential and conditionally essential fatty acids, omega-3 fatty acids

8th week: Energy metabolism. Synthesis of ATP molecules: Reactions and energetic results of citric acid cycle (Szent-Györgyi - Krebs cycle) and the sequential oxidative phosphorylation processes

9th week: Energy balances and body weight regulation. Basal metabolic rate (BMR), basal energy expenditure (BEE), resting metabolic rate (RMR), resting energy expenditure (REE), standard metabolic rate (SMR)

10th week: Fat soluble vitamins (The “DEKA” vitamins) – their structure, chemical composition, physiological role, symptoms of hypo- and avitaminosis, reason and symptoms of hypervitaminosis. Night blindness, rickets. Natural sources of A-, D-, E- and K-vitamins

11th week: Water soluble vitamins – their structure, chemical composition, physiological role, symptoms of hypo- and avitaminosis. RDA values

12th week: The major mineral nutrient elements of foods – C, O, H, N, P, K, Ca, Mg, S, Na. Sources and role of the macroelements.

13th week: The minor mineral nutrient elements of foods – Fe, Mn, Zn, Se, Ni, Cr, I, F.
Sources and role of the microelements.

14th week: Main function of water in the human body. Aging and water content of human body. Water hardness: definition, sources, determination methods, optimum physiological level, water softening methods

Type of mid-term examination: Each student independently prepare a ppt presentation from a pre-arranged part of the subject

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): oral colloquium

Teaching aids: ppt

Recommended literature:

Michelle McGuire – Kathy A. Beerman (2013): Nutritional sciences – From fundamentals to food. Wadsworth Cengage Learning. 3rd Edition

REQUIREMENTS
2017/18 academic year 2. semester

Name and code of the subject: Plant Physiology, MTB7014A

Name and title of the person responsible for the subject: Dr. Veres Szilvia, associate professor

Additional instructors involved in teaching the subject: -

Name and level of the program: Food Engineer, BSc

Subject type: compulsory

Teaching timetable of the subject, type of examination: 2+1 K

Credit value of the subject: 3

Purpose of teaching the subject: The study of plants as producers really important because of their position at the energy and elemental intake portion of the energy pyramid and the food net. The lecture with practise is designed to provide comprehensive exposure to the subject of plant physiology. The students learn about function of plants throughout their development from seeds through reproduction. Lectures and laboratory practises are cover from the biochemical level to the organism level. The laboratory exercises complement the lectures.

Content of the subject (14 weeks):

week	Lecture	Laboratory
1	Basics in plant physiology, structure and function	Investigation of basic characteristics of enzyme
2	Leaves, light absorption in photosynthesis	Photosynthetic pigments
3	Carbon acquisition and fixation	CO ₂ fixation
4	Respiration (photo-, and dark)	Intensity of respiration
5	Plant water relations: stomata, transpiration and plants in water-limited environments	Plant water relations
6	Functions of nutrients in plant I.	Mineral nutrition and plant growth
7	Functions of nutrients in plant II.	Mineral nutrition and plant growth
8.	Symbiotic relationships for nutrient capture, Nitrogen assimilation	Mineral nutrition and plant growth
9.	Plant hormones – regulation of development and Plant hormones – environmental acclimation I.	Plant hormones
10.	Plant hormones – regulation of development and Plant hormones – environmental acclimation II.	Plant hormones
11.	Flowering	Plant hormones
12.	Fruit and seeds	Plant storage products
13.	Seed germination/dormancy	Germination and shooting
14.	Senescence	In vivo physiological measurements

Type of mid-term examination: -

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): practical guide and lab notes, oral/writing exam

Teaching aids:
ppt presentation

Recommended literature:

Taiz, L., Zeiger, E. (2007) Plant Physiology. 4th ed. Sinauer Associates, Inc. ISBN 0-87893-823-0 or online version

Buchanan, B. B., Gruissem, W., Jones, R. L. (2015) Biochemistry and Molecular Biology of Plants. John Wiley & Sons, Inc. ISBN: 978-0-470-71421-8

Lambers, H., Chapin, F. S. and Pons, T. L. (2011) Plant Physiological Ecology. Springer, New York. ISBN 0-387-98326-0

REQUIREMENTS

2017/2018 academic year II. semester

Name and code of the subject: Food colloids, MTBE103

Name and title of the person responsible for the subject: Prof. Dr. Béla Róbert Kovács, professor

Additional instructors involved in teaching the subject: Dr. Szilvia Várallyay

Name and level of the program: Food Engineering BSc, 2.

Subject type: Main subjects

Teaching timetable of the subject, type of examination: 2+0, Colloquium

Credit value of the subject: 2

Purpose of teaching the subject:

Historical overview. Classifications of colloidal systems. General characterization of colloidal systems. General descriptions of the most important laws. Food colloid systems.

Content of the subject (14 weeks):

- Lecture 1: The science of colloid, historical overview, the concept of the colloidal state, the grouping of material systems.
- Lecture 2: Classifications of colloidal systems, grouping on the basis of the dispersed nature and the interactions between the particles.
- Lecture 3: Factors determining properties of colloidal systems, the shape of a disperse system, the size of the dispersed parts, general characterization of the major systems, incoherent systems.
- Lecture 4: Aero disperse systems, liquid medium disperse systems, gas dispersions, foams.
- Lecture 5: Suspensions, emulsions, solid medium disperse systems, macromolecular colloidal solutions, association colloids.
- Lecture 6: Coherent systems, gels, liquid medium concentrated disperse systems
- Lecture 7: Dry powder agglomerations, solid foams, solid macromolecules, kinetic regularities
- Lecture 8: General descriptions of the most important laws. Brownian motion, diffusion, osmosis, sedimentation, stability of disperse systems.
- Lecture 9: Coagulation, stability and coagulation of suspensions, stability of foams, status changes of gels. Rheological properties, rheological basic concepts, deformations, elastic deformations, flows.
- Lecture 10: The concepts of strength and consistency, behaviour of non-Newtonian liquids, rheology of colloidal systems, viscosity of disperse systems, flow of suspensions.
- Lecture 11: Viscosity of solutions of yarn shaped polymer molecules, viscosity of emulsions, and structural viscosity of disperse systems, main food colloidal systems, and food suspensions.
- Lecture 12: Food emulsions, food gels.
- Lecture 13: Protein gels, polysaccharide gels, food foams.
- Lecture 14: Food complex colloidal systems, food dual systems, other colloidal stabilizers.

Type of mid-term examination: Assignments to be submitted

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): Colloquium

Teaching aids: Powerpoint

Recommended literature:

- Cosgrove T.: 2005. Colloid Science, Principles, Methods and Applications. Bristol, UK. Blackwell Publishing Ltd.
- Belitz D., Grosch W., Schieberle P.: 2004. Food Chemistry, Springer Verlag.
- Fennema O.: 1996. Food Chemistry, Marcel Dekker.
- Mohsenin N.N.: 1986. Physical properties of plant and animal materials, Gordon and Breach Science publishers, New York.
- Ludger O. Figura, Arthur A. Teixeira: 2007. Food Physics, Springer, Heidelberg.

REQUIREMENTS

2017/2018 academic year II semester

Name and code of the subject: Quality control of plant origin food products, MTBE7036A
Name and title of the person responsible for the subject: Dr. Diána Ungai, assistant lecturer
Additional instructors involved in teaching the subject:
Name and level of the program: Food Engineering BSc
Subject type: optional
Teaching timetable of the subject, type of examination: 1+1 K
Credit value of the subject: 3

Purpose of teaching the subject:

This subject purposes to improve the student's competence for to understand the importance of different quality parameters in agricultural or food use and to prepare them for the interpretation of process and results of quality control. Its first part is about the general issues of quality control; definitions, its aims and principles. The second part summarizes the possibilities of physical, chemical and microbiological analysis used in the quality control of agricultural products, the principles of main methods used in quality analysis. The third part presents the quality requirements of agricultural products, focusing on standards, recommendations and industrial demands, the role and effects of different parameters and the importance of different analytical properties..

Content of the subject (14 weeks):

1. Introduction. Quality assurance methods and tools.
2. About FAO-WHO and Codex Alimentarius.
3. Sampling methods
4. Lot, primary samples, bulk samples, laboratory samples
5. Testing laboratory, accreditation.
6. Organoleptic tests
7. Cereal qualification methods
8. Quality control of grains (physical methods)
9. Quality control of wheat and flour (rheological methods)
10. Wheat and flour tests (protein content, wet gluten content, Hagberg-falling number)
11. Quality control of industrial crops (potato)
12. Quality control of industrial crops (sugar beet)
13. Quality control of industrial crop (oil plants, sunflower)
14. Quality control of industrial crop (oil plants, rapeseed)

Type of mid-term examination:

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): colloquium

Teaching aids: ppt presentations

Recommended literature:

1. Kent K. Stewart-John R. Whitaker (1984): Modern Methods of Food Analysis. Avi Publishing Company, INC Westport, Connecticut. ISBN: 978-94-011-7381-0
 2. Marwaha, K. (2010): Control and Analysis for Food and Agricultural Products. Gene-Tech Books New Delhi India. 664. 272 p. ISBN 978-81-89729-93-6
- Sipos, P. (2013): Quality analysis of Agricultural Products. University of Debrecen. ISBN:978-963-473-660-8

REQUIREMENTS

2017/18. academic year 2nd semester

Name and code of the subject: Packaging technology, MTBE140

Name and title of the person responsible for the subject: Prof. Dr. Béla Kovács, professor

Additional instructors involved in teaching the subject: Éva Bacsikainé Dr. Bódi

Name and level of the program: Food Engineering BSc, 2

Subject type: compulsory

Teaching timetable of the subject, type of examination: 2+0, exam

Credit value of the subject: 2

Purpose of teaching the subject:

The types of packaging materials (textiles, wood, metal, glass, paper and plastic), pairing possibilities knowledge. The quality of the packaging and reliability. Packaging machines and devices. packaging environmental impact of materials, re-processability. Food and packaging interaction (diffusion and migration). The food commodity marking (labeling). Mandatory and voluntary labeling (use of information and advertising).

Content of the subject (14 weeks):

The types of packaging materials (textiles, wood, metal, glass, paper and plastic), pairing possibilities knowledge. The quality of the packaging and reliability. Packaging machines and devices. packaging environmental impact of materials, re-processability. Food and packaging interaction (diffusion and migration). The food commodity marking (labeling). Mandatory and voluntary labeling (use of information and advertising).

Type of mid-term examination:

Assignments to be submitted

Method of assessment (semester examination mark - report, practical grade, colloquium, examination):

70 % attendance and fulfilment of the tasks is compulsory for the signature. Final grad is deduced from results of mid-term accomplishments and the results of the final exam.

Teaching aids:

To be find in e-learning

Recommended literature:

Richard Coles, Derek McDowell, Mark J. Kirwan: 2003. Food packaging technology. CRC Press, London. 346 p. ISBN 9780849397882.

Dong Sun Lee, Kit L. Yam, Luciano Piergiovanni: 2008. Food Packaging Science and Technology. CRC Press, London. 656 p. ISBN 9780824727796.

Gordon L Robertson: 2013. Food Packaging Principles and Practice. CRC Press, London. 686 p. ISBN 9781439862421.

REQUIREMENTS

2017/2018 academic year II semester

Name and code of the subject: Professional language skills II., MTBE126
Name and title of the person responsible for the subject: Kun-Nemes Andrea
Additional instructors involved in teaching the subject:
Name and level of the program: Food Engineering BSc
Subject type: compulsory
Teaching timetable of the subject, type of examination: 0+2 G
Credit value of the subject: 3

Purpose of teaching the subject:

This course focuses on training students to command the basics of where written and oral communication intersect in the business world, i.e. designing, writing and presenting HR-related materials, e.g. advertisements for positions, CVs and cover letters, as well as business reports, case studies, public administration documents and PR-type activities. Using real life business documents as guides, students will complete tasks in all these areas and learn to rigorously use self-critique and professional tools to create professional HR, PR and other business documents.

Content of the subject (14 weeks):

1. Company Image (professional communication applications)
2. PR events I (PR-related communication activities)
3. PR events II (public speaking in PR in specific situations)
4. CVs: Cultural differences, EUROPASS, Anglo-Saxon cultures
5. Motivation letter writing I
6. Motivation letter writing II
7. Business correspondence I
8. Business correspondence II
9. The job interview
10. Business communication methods I
11. Business communication methods II
12. Public administration documents I
13. Public administration documents I
14. Student public speaking practice

Type of mid-term examination:

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): practical grade

Teaching aids:

Recommended literature:

1. RODGERS, Drew. English for International Negotiations. St. Martins, 1997.
2. WIWCZAROSKI, Troy B. Writing and Professional Communication. Debrecen, 2007.
Lecture notes.

KÖVETELMÉNYRENDSZER
2017/2018. tanév II. félév

A tantárgy neve, kódja: Unit operations in food processing II., MTBE114

A tantárgyfelelős neve, beosztása: Prof. Dr. Kovács Béla – egyetemi tanár

Szak neve: Élelmiszermérnök BSc

Tantárgy típusa: kötelező

A tantárgy oktatási időterve, vizsga típusa: 4. félév (2+2), gyakorlati jegy

A tantárgy kredit értéke: 5

A tantárgy oktatásának a célja:

Within the framework of Unit operations in food processing II course the heat transfer operations and the thermal processes in the food processing are educated.

A tantárgy tartalma (14 hét bontásban):

1. Introduction to the thermal operations of food processing, basic thermal definitions
2. Thermal properties of foods
3. Conductive heat transfer
4. Convective heat transfer
5. Heat transfer by radiation
6. Steady-State Heat Transfer
7. Unsteady-State Heat Transfer
8. System for Heating and Cooling Food Products
9. Microwave and ohmic heating
10. Thermal Processes, Methods and Equipment
11. Frying, Baking, Roasting
12. Refrigeration
13. Food Freezing
14. Effect of Temperature on Food Spoilage

Évközi ellenőrzés módja (a foglalkozásokon való részvétel előírásai és félévközi ellenőrzésének módja, a vizsgára bocsátás és aláírás feltételei):

During the semester, the students may write theoretical 3 tests, based on which they may get an offered mark for the exam. In addition, students have to write 2 tests to the topics of the practice (seminar), and they will get the mark for the practice (seminar) based on these tests.

Számonkérés módja (félévi vizsgajegy kialakításának módja – beszámoló, gyakorlati jegy, kollokvium, szigorlat): gyakorlati jegy

Oktatási segédanyagok:

ppt presentation; books

Ajánlott szakirodalom:

Food Process Engineering and Technology. 2nd Edition. Authors: Zeki Berk. Hardcover
ISBN: 9780124159235. eBook ISBN: 9780124159860

Unit Operations in Food Processing, Second Edition 2nd Edition by R.L.Earle eBook ISBN:
9781483293103

Introduction to Food Engineering, Fifth Edition (Food Science and Technology) 5th Edition
by R Paul Singh (Author), Dennis R. Heldman (Author) ISBN-13: 978-0123985309

Fundamentals of Food Process Engineering (Food Science Text Series) 4th ed. 2018 Edition
by Romeo T. Toledo (Author), Rakesh K. Singh (Author), Fanbin Kong (Author), ISBN 978-3-319-90091-1

REQUIREMENTS

2017/18. academic year 2nd semester

Name and code of the subject: Analytical chemistry, MTBE7009A

Name and title of the person responsible for the subject: Prof. Dr. Béla Kovács

Additional instructors involved in teaching the subject: Szilvia Várallyay, Áron Soós
Name and level of the program: Food Engineering BSc, 1

Subject type: compulsory

Teaching timetable of the subject, type of examination: 2+2, exam

Credit value of the subject: 4

Purpose of teaching the subject:

The basic objective of the course is to acquaint students with the most important general analytical knowledge required to determine the quality and composition of the food and food ingredients.

Content of the subject (14 weeks):

1. Introduction to analytical chemistry. History of analytics.
2. Basic concepts. Prefixes. Units and standards. Units of measurement. Metric system.
3. SI units, SI supplementary units and SI derived units.
4. Length, weight, time, electric current, thermodynamic temperature, amount of the substance and luminous intensity.
5. Metrology.
6. The errors of an analysis results.
7. The main steps of a multielemental analysis.
8. Calibration method. Standard addition method. Internal standard method. Spiking method.
9. The Fresenius's classification criteria of cations. The Fresenius's classification criteria of anions.
10. The general methods of quantification.
11. The fundamentals of quality assurance of analyses.
12. Classical analysis, titrimetric. Acid-base titrations. Complexometry.
13. Celatometries titration. Precipitation titration. Redox titration.
14. Classical analysis, gravimetry.

LABORATORY PRACTICES

1. Accident prevention education.
- 2 Formulas of chemical compounds, balancing chemical equations.
3. Balancing chemical equations based on oxidation numbers.
4. Concentration calculation.
5. Intruduction of laboratory equipments.
6. Qualitative analysis.
- 7: Acid-base titration I.
- 8: Acid-base titration II.
- 9: Complexometric titration I.
- 10: Complexometric titration II.
- 11: Permanganometric titration I.
- 12: Permanganometric titration II.
13. Precipitation titration.
14. Opportunity given for doing a missed laboratory practice.

Type of mid-term examination:
Assignments to be submitted

Method of assessment (semester examination mark - report, practical grade, colloquium, examination):
70 % attendance and fulfilment of the tasks is compulsory for the signature. Final grade is deduced from results of mid-term accomplishments and the results of the final exam.

Teaching aids:
To be found in e-learning

Recommended literature:

Giinzler H. and A. Williams: 2001. Handbook of Analytical Techniques. WILEY-VCH, Weinheim, Germany.
Ebbing D.D. and Gammon S.D.: 2009 General chemistry. Houghton Mifflin Company. Boston. USA.
Danzer K.: 2007. Analytical chemistry. Theoretical and metrological fundamentals. Springer-Verlag. Berlin Germany.
Skoog D.A., D.M. West, F.J. Holler: 1992. Fundamentals of Analytical Chemistry. ed. Saunders College Publ. Fort Worth, Texas (USA).

KÖVETELMÉNYRENDSZER

2017/2018. tanév II. félév

A tantárgy neve, kódja: Élvezeti cikkek és édesipari technológia, MTBE7034A

A tantárgyfelelős neve, beosztása: Dr. Babka Beáta, egyetemi adjunktus

A tantárgy oktatásába bevont további oktatók:

Szak neve, szintje: élelmiszmérnök BSc

Tantárgy típusa: kötelező

A tantárgy oktatási időterve, vizsga típusa: 1+2 G

A tantárgy kredit értéke: 3

A tárgy oktatásának célja: Consumer goods, luxury items (coffee, tea, cocoa and confectionery) are important products of food industry having relatively stable position in the consumption basket. This subject is aimed to make a systematic summary about their certification, primary and secondary processing, as well as health effects.

A tantárgy tartalma (14 hét bontásban):

1. Coffee. Origin, morphology, types, quality parameters, ingredients, chemical compounds.
2. Primary processing of coffee, dry and wet process, roasting.
3. After treatment of coffee, coffee extracts, decaffeinated coffee, alternative coffees, café cultures.
4. Cacao tree, cacao bean, ingredients, primary processing, roasting.
5. Storing of cacao liquor, producing chocolate mass.
6. Conching, rheological properties, tempering, polymorphism of cacao-butter.
7. Chocolate producing machines, quality parameters, cocoa powder production.
8. Tea-plant, active ingredients, tea varieties.
9. Quality of tea leaves, green and black tea production and classification.
10. Characteristic of blended tea, tea specialties, packaging, infusion types.
11. Methods of confectionery: solving, concentration, separation.
12. Methods of confectionery: drying, roasting, grinding, forming.
13. Manufacturing of sweets, marshmallow and jelly.
14. Manufacturing of caramel, brittle, marzipan and dragée, fruit processing for confectionery.

Évközi ellenőrzés módja:

Az aláírás megszerzésnek feltétele a gyakorlatokon való részvétel és a gyakorlati beszámoló teljesítése.

Számonkérés módja (félévi vizsgajegy kialakításának módja – beszámoló, gyakorlati jegy, kollokvium, szigorlat): írásbeli vizsga

Oktatási segédanyagok: az előadások diásorai

Ajánlott irodalom:

Emmanuel Afoakwa – Chocolate Science and Technology. 2010. Wiley-Blackwell. 9. 275.

F.Á. Mohos (2010) Confectionery and Chocolate Engineering (Principles and Applications), A John Wiley & Sons, Ltd., Publication. p. 688.

Astrid Nehlig – Coffee, Tea, Chocolate, and the Brain. Edited. 2004 by CRC Press LLC

Yukihiko Hara – Green Tea. Health Benefits and Applications. MARCEL DEKKER, INC. NEW YORK 2001.

Jean Nicolas Wintgers – Coffee: Growing, Processing, Sustainable Production: A Guidebook for Growers, Processors, Traders, and Researchers. Ed. Wiley-VCH, 2009.

REQUIREMENTS

2017/18 academic year II. semester

Name and code of the subject: Environmental management MTB7015A

Name and title of the person responsible for the subject: Dr. habil Attila Nagy, Associate Professor

Additional instructors involved in teaching the subject:

Name and level of the program: Food Engineering BSc

Subject type: compulsory

Teaching timetable of the subject, type of examination: 2 K

Credit value of the subject: 3

Purpose of teaching the subject:

Content of the subject (14 weeks):

1. Definition of environment, environmental protection, environmental management, environmental pollution. Classification of environmental elements. Characteristics and major types of systems. The concept of model and modelling, the characteristics of the model. Principles of environmental protection.
2. Concept and classification of natural resources. Biogeochemical cycles (Carbon-, Nitrogen-, Oxygen- cycle).
3. The impact of societies on the environment (agricultural societies, urbanization, technological advances, their negative environmental effects).
4. International environmental protection is organized. Overview of major environmental conferences. Concept of sustainable development.
5. Global problems (war and peace, overpopulation, food crisis, material and energy crisis, environmental crisis).
6. Global environmental problems in details
7. Pollution of the environment, classification of pollutants, types and causes of pollution
8. Soil protection. The concept of soil, its functions. The concept of soil degradation, its causes, factors preventing soil fertility. Sources of soil contamination. Heavy metal and oil pollution of soils. Remediation technologies, phytoremediation. Self-cleaning of soils.
9. The concept, structure and composition of the atmosphere. Thinning of the ozone layer, greenhouse effect, odorous substances in the atmosphere, air pollution caused by landfills. Atmospheric aerosols. Smog grouping, characteristics. Self-cleaning of the air.
10. Basics of water protection, Classic water rating, Collection and treatment of communal wastewater, placement of by-product
11. The effects of agricultural production. Erosion, deflation, salinization, acidification. Effects of crop production and animal husbandry on soil, water and air
12. Definition of waste, waste management and classification of waste
13. The causes of radioactive contamination. Effects of radioactive contamination on humans, flora and fauna
14. Characteristics and propagation of noise and sound. Noise protection laws, load limits. Noise measurement. Effects of noise on humans. Methods of noise reduction.

Type of mid-term examination:

1. Active participation in the lessons
2. Submitting report at the end of the semester

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): Written exam

Teaching aids:

Recommended literature:

1. J. C. Lovett- D. G. Ockwell.: 2010. A Handbook of Environmental Management.
2. J.M. Blais, M. Rosen, J.P. Smol.: 2015. Environmental Contaminants.
3. A. S. Kalamdhad, J. Singh, K. Dhamodharan.: 2016. Advances in Waste Management.
4. V. I. Grover.: 2006. Water: Global Common and Global Problems.

REQUIREMENTS

2017/2018 academic year II semester

Name and code of the subject: Regulation and administration of agriculture MTBE104

Name and title of the person responsible for the subject: Dr Andorkó Imre PhD
senior lecturer

Additional instructors involved in teaching the subject: -

Name and level of the program: Food Engineering BSc

Subject type: 2+0 (lecture and practice) compulsory

Teaching timetable of the subject, type of examination: exam

Credit value of the subject: 3

Purpose of teaching the subject:

In this course, students will get any basic legal knowledge and an overview of the legal system of the EU and Hungary. The course will give students basic information about the institutions and the history of EU. They will get an overview of the past and present of the legal regulation on food law and on agricultural law. The students will be able to understand and use the special legal term of food law. The students will gain an overview of the legal concepts relevant to the control and administration of the food industry. The students will be able to understand the purposes and background of food law, both domestic and EU.

Content of the subject (14 weeks):

1. Prelude, basic concepts of law, hierarchy of the Hungarian legal system, legislators.
2. Fundamentals of Civil Law and Civil Procedure Law, the legal action, the Hungarian judicial system, orders, the lawsuit process.
3. The European Union I. – a historical and institutional overview
4. The European Union II. - The legal system of the European Union, the primacy of European Union law
5. The general principles and requirements of EU food law - Regulation (EC) No 178/2002 of the European Parliament and of the Council of 28 January 2002 laying down, establishing the European Food Safety Authority and laying down procedures in matters of food safety, The European Food Safety Authority (EFSA), RASFF - Food and Feed Safety Alerts
6. The history of legal regulation on food production
7. The Hungarian national legal regulation on food safety. The Act XLVI. of 2008 on the Food Chain, Codex Alimentarius Hungaricus
8. The European consumer law and its importance
9. Fundamental of substantive law; property, protection of property, asset, immovable estate, original and derivative feature of ways of acquisition, overbuilt, use.
10. Legal capacity
11. Fundamentals of contract law I.
12. Fundamentals of contract law II.
13. The Structure of Hungarian Soil Use, regulation, delimitation of acquisition of soil, special Rules of Acquisition, in the silviculture, water management, regulation of Soil Use, contracts of soil use.
14. Agricultural Register, history, development, operative rules.

Type of mid-term examination:

Attendance at lectures is compulsory.

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): colloquium

Teaching aids:

Help to be familiar with the structure and legal regulation of the agricultural system of the European Union and the Hungarian institutions.

Recommended literature:

1. Joseph A. McMahon: EU Agricultural Law and policy, Edward Elgar Pub, 2016. ISBN-13: 978-1781002544
2. Bernd van der MEULEN: EU Food Law Handbook, Wageningen Academic Publishers Books, 2012. ISBN 978-90-8686-246-7
3. Jens Hartig Danielsen: EU Agricultural Law, Wolters Kluwer, Holland, 2013. ISBN: 9789041132802

REQUIREMENTS
2017/2018 academic year II. semester

Name and code of the subject: Biochemistry (MTBE7007A)

Name and title of the person responsible for the subject: Dr. Vágó Imre, associate professor

Additional instructors involved in teaching the subject: Kincses Sándorné Dr, assistant professor; Erdeiné Dr. Kremper Rita, assistant professor; Dr. Béni Áron assistant professor

Name and level of the program: Food Engineering BSc

Subject type: obligatory

Teaching timetable of the subject, type of examination: 2+1 E

Credit value of the subject: 3

Purpose of teaching the subject: Learning the basics of "Biochemistry" for related subjects

Content of the subject (14 weeks):

1. The foundations of biochemistry. Subjects, methods, role, structure, functions and importance of biochemistry in the living organisms and in the food science.

2. Macromolecules: Part one

Carbohydrates. Functional groups of aldo- and ketosugars. α - and β -anomerism. Mono-, di- and trisaccharides. Polysaccharides, their structure and role in the living organisms.

3. Macromolecules: Part two

Amino acids, peptides, and proteins. Working with Proteins. The Covalent Structure of Proteins. The Three-Dimensional Structure of Proteins: overview of protein primary structure. Secondary, tertiary and quaternary structure of proteins. Stability and denaturation of proteins.

4. Macromolecules: Part three

Lipids. Structure of lipids: alcohol and fatty acid components. Neutral and amphipathic molecules. Storage lipids and functions. Structural lipids in membranes. Working with lipids.

5. Macromolecules: Part four

Nucleotides and nucleic acids. Basic knowledge: RNA and DNA. Nucleic acid structure and their chemistry. Functions of nucleotides. DNA-based information technologies. DNA cloning

6. Enzymes.

Introduction to enzymes. How enzymes work. Enzyme kinetics and mechanisms. Enzymatic reactions in the living organisms and foods. Enzyme activation and inhibition methods. Regulatory enzymes.

7. Biological membranes.

Passive and active transport. The composition and architecture of membranes. solute transport across membranes.

8. Bioenergetics and metabolism.

Principles of bioenergetics. Bioenergetics and thermodynamics. Phosphoryl group, role in the energy transfers and energy storage. Structure of ATP

9. Biological oxidation-reduction reaction.

Glycolysis, gluconeogenesis and the pentose. Pentose phosphate pathway of glucose oxidation. Feeder pathways for glycolysis. Fates of pyruvate under anaerobic conditions: fermentation.

10. Principles of metabolic regulation.

The metabolism of glycogen in animals. regulation of metabolic pathways. Coordinated regulation of glycolysis and gluconeogenesis. Coordinated regulation of glycogen synthesis and breakdown.

11. The citric acid cycle.

Production of Acetyl-CoA (activated acetate), reactions of the citric acid cycle. Energetic results of the Szent-Györgyi – Krebs cycle.

12. Fatty acid catabolism

Digestion mobilization and transport of fats. Oxidation of fatty acids. Ketone bodies. Energetic results of the biochemical decomposition of stearic acid.

13. Amino Acid Oxidation and the Production of Urea.

Metabolic fates of amino groups. Types of nitrogen excretion. The reactions and energetic demand of urea cycle. Pathways of amino acid degradation.

14. Biosynthesis of amino acids and proteins.

Molecules derived from amino acids. Biosynthesis and degradation of nucleotides. Information pathways: genes and chromosomes. DNA metabolism: replication, repair, recombination. RNA metabolism: DNA-dependent synthesis of RNA, processing. Protein metabolism. Genetic code, protein synthesis, protein targeting and degradation.

Type of mid-term examination: Report on laboratory exercises

Method of assessment (semester examination mark - report, practical grade, colloquium, examination): oral colloquium

Teaching aids: ppt

Recommended literature:

Victor Rodwell – David Bender – Kathleen Botham – Peter Kennelly – P. Anthony Weil (2021): Harper's illustrated biochemistry. Lange publ. ISBN 1259837939