CONTENS

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ BCH1/22	**Name:** Biochemistry and molecular biology I.

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 3.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
The condition for passing the subject is active participation in the seminars, which consists of a theoretical and practical part.
During the practical part, the student will develop laboratory experiments focused on various biochemical topics: carbohydrates, lipids, enzymes, cellular respiration and fermentation, and photosynthesis. Practical experiments are completed by students in the laboratory and at home as homework; while these procedures will be simple and do not require sophisticated material and equipment, students can master these experiments later in their practice. The protocols will be documented with their photo documentation. At the end of the semester, the student submits reports to prepare the practical part of the subject for review. In the final part, the student proves his theoretical knowledge by completing a test from the theoretical part. Participation in the oral exam is conditional on achieving at least 50% of the points from the written examination. Final assessment: the share of the oral exam, written examination and protocols on the grade: 30% - 48% - 22%.
Total student workload: 3 credits = 75-90 hours
26 hours of participation in contact lessons; 20 hours of preparation of protocols from laboratory experiments; 29-44 hours of self-study and preparation for the test and oral exam;
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
Knowledge:
- The student can characterize the chemical composition of living organisms (saccharides, fatty acids, triacylglycerols, complex lipids, individual types of carbohydrates and lipids, and their most essential representatives) and energy processes in living organisms.

- The student can characterize cell membranes' biological significance and structure by explaining the liquid mosaic model.
- The student can characterize the terms: enzyme, apoenzymes, coenzymes, cofactors, and vitamins.
- The student can characterize metabolic reactions in living systems, mitochondria and their biochemical processes, carbohydrate metabolism, and photosynthesis.

Abilities:
- The student can describe basic biochemical processes in living systems that relate to carbohydrates, lipids and enzymes.
- The student can apply his theoretical knowledge from lectures in practical experiments that he prepares at home, aiming to demonstrate biochemical processes in cells and organisms.
- The student can use his practical skills in school practice and his profession in the teaching process, in which the created protocols with photo documentation and a sufficient theoretical explanation of the experiment are helpful.

Competencies:
- The student has a positive attitude toward the subject due to understanding individual chemical processes from a biological point of view, bringing these processes closer to the human body and nature.
- The student has an overview of biochemical processes in the human organism, while he will use this knowledge to create his eating habits and the teaching process in creating a healthy lifestyle for children.
- The student has a positive attitude toward creating a healthy lifestyle.
- The student is responsible for the correct presentation of information regarding biochemical topics, including a healthy lifestyle, healthy diet, sports, vitamins, etc.
- The student is active in the pedagogical areas of education within his competencies; he is responsible for forming prejudices toward the subject of biochemistry by using his knowledge to demonstrate the importance of knowing these biochemical processes in nature in the case of plants, animals and humans as well as their importance in the food chain in the ecosystem.

Brief syllabus:

1. History of biochemistry, subject and content of biochemistry. Chemical composition of living organisms, the energetics of living organisms.
2. Carbohydrates: their structure. Biologically significant monosaccharides and their derivatives, formation of glycosidic bonds, significant di-, oligosaccharides and polysaccharides.
3. Lipids: fatty acids, triacylglycerols, their biological significance, prostaglandins, terpenes, carotenoids, sterols, fat-soluble vitamins, waxes.
4. Complex lipids, properties of biologically essential lipids, membranes, phosphoglycerols, liquid mosaic model, transport through membranes, and ion channels.
5. Enzymes: their characteristics, types, classification. Apoenzymes and coenzymes, cofactors, vitamins, speed of enzymatic reactions. Inhibition of enzyme reactions.
6. Metabolic reactions, metabolic turnover, anabolic, catabolic and amphibolic pathways, energy metabolism of the cell, oxidative phosphorylation, and respiratory chain.
7. Carbohydrate metabolism: anaerobic and aerobic glycolysis, citric acid cycle.
8. Pentose cycle, glyoxylate cycle, gluconeogenesis.
9. Photosynthesis, photosynthetic phosphorylation and carbon fixation. Photosystem I and II. Cyclic and non-cyclic photosynthetic phosphorylation, photosynthetic reactions independent of light.
10. Utilization of fatty acids, β-oxidation.
11. Biosynthesis of fatty acids, cholesterol – biosynthesis and types.
12. C3 and C4 plant types, CO_2 fixation in plants.
13. Repetition and summary of the curriculum.

Literature:

ÁDÁM, V.: Orvosi biokémia – 3. vyd. – Budapest: Medicina Könyvkiadó Rt., 2004 – 648 s. – ISBN 963 242 902 8.
BERG, J. M., TYMOCZKO, J. L., STRYER, L.: Biochemistry – 5. vyd. – New York, USA: W. H. Freeman, 2002. – 1100 s. – ISBN 978-0716746843.
ČURDA, M., MAŠTEROVÁ, V.: Biochémia – 3. vyd. – Prešov: Rokus, 2020. – 308 s. – ISBN 978-80-89510-81-8.
DE LENNART, E.: Táplálkozzunk okosan: Testünk biokémiai laboratóriuma – 1. vyd. – Budapest: Medicina Könyvkiadó Zrt., 2014. – 457 s. – ISBN 978 963 226 459 2.
HRABÁK, A.: Orvosi kémia és biokémia feladatgyűjtemény – 1. vyd. – Budapest: Semmelweis Kiadó, 2005. – 186 s. – ISBN 963 9214 80 9.
LAKATOŠ, B., ŠIMKOVIČ, M.: Biochémia: Návody na laboratórne cvičenia – 1. vyd. – Bratislava: STU, 2012. – 150 s. – ISBN 978-80-227-3793-7.
MANDL, J.: Biokémia : Aminosavak, peptidek, szenhidrátok, lipidek, nukleotidok, nukleinsavak, vitaminok és koenzimek szerkezete és tulajdonságai - 1. vyd. - Budapest : Semmelweis Kiadó, 2006. - 176 s. - ISBN 963 9656 18 6
PORÁČOVÁ, J., Nagy, M.: General and Applied Biochemistry for Natural-Sciences – 1. vyd. – Budapest: Műszaki Pedagógia Tanszék, 2021. – 223 s. – ISBN 978-963-421-847-0.
PORÁČOVÁ, J., VAŠKOVÁ, J., VAŠKO, L., NAGY. M.: Základné biochemické procesy organizmov – 1. vyd. – Prešov: Prešovská univerzita v Prešove, Fakulta humanitných a prírodných vied - 2015. – 343 s. – ISBN 978-80-555-1514-4.
RODWELL, V.: Harper´s Illustrated Biochemistry – 31. ed. – New York: McGraw-Hill, 2018. – 789 s. – ISBN 978-1-259-8379-7.
RONNER, P.: Netter´s essential biochemistry – 1. vyd. – Philadeplhia: Elsevier, 2018. – 482 s. – ISBN 978-1-929007-63-9.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: RNDr. Eva Tóthová Tarová, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ BCH2/22	**Name:** Biochemistry and molecular biology II.
Types, range and methods of educational activities: **Form of study:** Seminar / Practical **Recommended extent of course (in hours):** **Per week:** 1 / 1 **For the study period:** 13 / 13 **Methods of study:** present	
Number of credits: 2	
Recommended semester/trimester of study: 6.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: The condition for passing the subject is active participation in the seminars and practical lessons, which consist of a theoretical and practical part. During the practical part, the student will develop laboratory experiments focused on various biochemical topics: proteins, nucleic acids, replication, transcription, translation and basic recombinant DNA techniques. Students complete practical experiments in the laboratory at home as homework; while these procedures will be simple and do not require complicated material and equipment, students will be able to master these experiments later in their practice. The protocols will be documented with their photo documentation. At the end of the semester, the student submits the reports to examine the practical part of the course (10%). In the final part, the student proves his theoretical knowledge by completing a test from the lecture part (50%). Participation in the oral exam is conditional on achieving at least 50% of the points from the written examination. Final assessment: share of an oral exam, written examination and protocols on the grade: 40% - 50% - 10%. Total student load: 2 credits = 50-60 hours Twenty-six hours of participation in contact classes; 10 hours of preparation of protocols from laboratory experiments; 14-24 hours of self-study and preparation for the test and oral exam; The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject. Overall evaluation of the success of the subject: - A = 90-100% (90-100 points) - B = 80-89% (80-89 points) - C = 70-79% (70-79 points) - D = 60-69% (60-69 points) - E = 50-59% (50-59 points) - FX = 0 – 49% (0 – 49 points)	
Results of education: Knowledge: - The student can describe amino acids and proteins and characterize their biological functions in living organisms.	

- The student can characterize the difference between the terms nucleoside and nucleotide and between the terms ribonucleotides and deoxyribonucleotides and describe the structure, forms and properties of nucleic acids, their primary, secondary and tertiary structure.
- The student can independently characterize the central dogma of molecular biology and its steps: replication, transcription and translation.
- The student knows the procedure and use of basic molecular methods of DNA study, such as PCR, electrophoresis, sequencing, transformation, transduction, and conjugation.

Abilities:
- The student can describe basic biochemical processes in living systems that relate to proteins and nucleic acids and their significance in nature, in plants, animals and humans.
- The student can characterize biochemical processes from transforming genetic information from DNA to transcription into the structure of proteins in living organisms.
- The student can explain the principles of basic molecular biology methods and their importance in genetics, medicine, the pharmaceutical and food industry, etc.
- The student can apply his theoretical knowledge from the seminars in practical experiments, which he will partially prepare at home and which are aimed at demonstrating the biochemical processes in the cell and organisms, and will subsequently use this knowledge in school practice and his profession in the teaching process.

Competencies:
- The student has a positive attitude toward the subject due to understanding individual chemical processes from a biological point of view, bringing these processes closer to the human body and nature.
- The student has an overview of biochemical processes in the human organism, and he will use this knowledge in creating his eating habits and the teaching process to create a healthy lifestyle for children.
- The student has a positive attitude toward creating a healthy lifestyle.
- The student has a positive attitude toward molecular methods in medicine by understanding the essence of these methods for use in genetic diagnostics, treatment and the food and pharmaceutical industry.
- The student also assumes responsibility for forming prejudices against various molecular techniques, genetic manipulations at the DNA level, and pharmaceutical and medical techniques using biological treatment.

Brief syllabus:

1. Proteins, their functions. Amino acids, properties of amino acids, their chemical reactions, peptide bonds.
2. Proteins - biologically essential proteins, protein classification, denaturation, reactions, structure, protein synthesis. Methods of studying protein structure.
3. Nucleic acids: nitrogenous bases, nucleoside, nucleotide, ribonucleotides and deoxyribonucleotides, their structure, forms and properties.
4. Denaturation of double-stranded DNA. Central dogma. DNA replication, semiconservative replication model.
5. Mechanism of replication: replication fork, types of DNA polymerases, other enzymes involved in DNA replication. Semidiscontinuous replication.
6. Ribonucleic acids: types of RNA - ribosomal, information and transfer ribonucleic acid, their structure and function, transcription of genetic information.
7. The essence of the genetic code. Model of an operon, inducer, repressor, promoter, regulator - Lac-operon model.
8. Translation: ribosomes and their parts, translation steps - initiation, elongation, termination. Basic methods of DNA study, PCR reaction, electrophoresis.

9. Mobile genetic elements, transposons, DNA polymorphisms. Sanger sequencing and the principle of automatic fluorescence sequencing.
10. Recombinant DNA techniques - recombination, transformation, transduction, conjugation
11. Mutagenesis, molecular cloning, human genome project, gene therapy, in vitro mutagenesis.
12. Metabolism of nitrogen compounds, the nitrogen cycle in nature.
13. Repetition and summary of the curriculum

Literature:

ÁDÁM, V.: Orvosi biokémia – 3. vyd. – Budapest: Medicina Könyvkiadó Rt., 2004 – 648 s. – ISBN 963 242 902 8.
BÁLINT, M.: Molekuláris biológia I. – 1. vyd. – Budapest: Műszaki Kiadó, 2006. – 206 s. – ISBN 963 16 2654 7.
BÁLINT, M.: Molekuláris biológia I. – 1. vyd. – Budapest: Műszaki Kiadó, 2006. – 207 s. – ISBN 963 16 2656 3.
BERG, J. M., TYMOCZKO, J. L., STRYER, L.: Biochemistry – 5. vyd. – New York, USA: W. H. Freeman, 2002. – 1100 s. – ISBN 978-0716746843.
ČURDA, M., MAŠTEROVÁ, V.: Biochémia – 3. vyd. – Prešov: Rokus, 2020. – 308 s. – ISBN 978-80-89510-81-8.
DE LENNART, E.: Táplálkozzunk okosan: Testünk biokémiai laboratóriuma – 1. vyd. – Budapest: Medicina Könyvkiadó Zrt., 2014. – 457 s. – ISBN 978 963 226 459 2.
GÁLOVÁ, Z., SALAJ, J., MATUŠÍKOVÁ, I.: Molekulárna biológia – 2. vyd. – Nitra: Slovenská poľnohospodárska univerzita, 2007. – 165 s. – ISBN 978-80-8069-951-2.
HRABÁK, A.: Orvosi kémia és biokémia feladatgyűjtemény – 1. vyd. – Budapest: Semmelweis Kiadó, 2005. – 186 s. – ISBN 963 9214 80 9.
LAKATOŠ, B., ŠIMKOVIČ, M.: Biochémia: Návody na laboratórne cvičenia – 1. vyd. – Bratislava: STU, 2012. – 150 s. – ISBN 978-80-227-3793-7.
MANDL, J.: Biokémia : Aminosavak, peptidek, szenhidrátok, lipidek, nukleotidok, nukleinsavak, vitaminok és koenzimek szerkezete és tulajdonságai - 1. vyd. - Budapest : Semmelweis Kiadó, 2006. - 176 s. - ISBN 963 9656 18 6
PORÁČOVÁ, J., NAGY, M.: General and Applied Biochemistry for Natural-Sciences – 1. vyd. – Budapest: Műszaki Pedagógia Tanszék, 2021. – 223 s. – ISBN 978-963-421-847-0.
PORÁČOVÁ, J., MARIYCHUK, R., NAGY. M. a kol.: Základné biochemické procesy organizmov – 1. vyd. – Prešov: Prešovská univerzita v Prešove, Fakulta humanitných a prírodných vied - 2015. – 343 s. – ISBN 978-80-555-1514-4.
PORÁČOVÁ, J., MARIYCHUK, R., NAGY. M. a kol.: Practical exercises in general and applied biochemistry - 1. vyd. - Užhorod : Lira, 2020. - 109 s. - ISBN 978-617-596-309-8.
RODWELL, V.: Harper´s Illustrated Biochemistry – 31. ed. – New York: McGraw-Hill, 2018. – 789 s. – ISBN 978-1-259-8379-7.
RONNER, P.: Netter´s essential biochemistry – 1. vyd. – Philadeplhia: Elsevier, 2018. – 482 s. – ISBN 978-1-929007-63-9.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: RNDr. Eva Tóthová Tarová, PhD.
Date of last update: 23.05.2022
Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ BE1/22	**Name:** Biodiversity and ecology of taxons I.

Types, range and methods of educational activities:
Form of study: Seminar / Practical
Recommended extent of course (in hours):
Per week: 2 / 1 **For the study period:** 26 / 13
Methods of study: present

Number of credits: 4

Recommended semester/trimester of study: 2.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
The condition for passing the subject is active participation in the seminars and practical lessons, which consists of a theoretical and practical part. During the practical part, the student works in the laboratory on topics related to algology and mycology.
From the practical part, the student submits a report for inspection at the end of the semester. The submission of reports is a condition for passing the course. During the semester, the student passes four written examinations, two in microbiology and another two in algology and mycology (one in the middle of the semester, the other at the end of the semester). In the final part, the student proves his theoretical knowledge with an oral exam from both parts.
Final assessment: written examinations, and final exam on the grade: 50% - 50%.
Total student workload: 4 credits = 100-120 hours
39 hours of participation in contact lessons; 20 hours of preparation of protocols from laboratory experiments; 35-60 hours of self-study and preparation for tests and oral exams;
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
The theoretical part of the subject provides students with a general overview of the world of microorganisms, including cyanobacteria, algae, and fungi - their systematics, diversity, genetics, and practical consequences of their metabolic activity in medical, food, biotechnological and environmental applications. It can also provide an overview of viruses, their structure, and morphogenesis concerning the host organism.
Knowledge:
- The student knows the ecology and basics of the taxon system of viruses, bacteriophages, bacteria, protozoa, cyanobacteria, algae, fungal organisms, fungi, and lichens.

- The student can characterize prions, their origin, diseases caused by prions, viroids, structure, and related diseases.
- The student can describe the essential characteristics of viruses, bacteriophages, bacteria, and protozoa, their physiological and morphological features, and reproduction and recognize the diseases they cause in plants, animals, and humans.
- The student knows important representatives of taxonomic groups of cyanobacteria, algae, fungal organisms and fungi, their essential characteristics and importance in ecology, medicine and economic sectors.
- The student knows the concepts of virulence, pathogenicity, and basic immunological concepts; he can characterize the individual stages of the infectious process and the basic principles of vaccination and passive immunization.

Abilities:
- The student can distinguish the differences between morphological, anatomical and physiological characteristics between viruses, bacteria, protozoa, fungi and algae and classify them accordingly in taxonomic groups.
- The student can assign the causative agent to a specific disease and describe the mechanism of infection, symptoms and the procedure for treating the disease, regardless of the type of host (plants, animals, humans).
- The student can explain the origin and principle of antibiotic resistance and thus justify the importance of limiting the use of antibiotics and the importance of symbiotic bacteria for ecosystems and health.
- The student can prepare and examine preparations from moulds, yeasts and other organisms.

Competencies:
- The student has a positive attitude toward using microorganisms, cyanobacteria, algae, fungi, and lichens in the food industry, medicine, and biotechnology.
- The student has an overview of pathogenic and non-pathogenic microorganisms, which he can incorporate into practice in everyday life. In the teaching process, he can also explain and characterize the emergence of a specific disease caused by microorganisms, viruses, bacteria, protozoa or fungi.
- The student can explain to future generations the principle of infection by microorganisms, and last but not least, he can objectively describe the advantages and disadvantages of active immunization
- The student can explain the roles, importance and irreplaceability of the studied groups of organisms for the ecosystem and human society.
- The student is active in the pedagogical areas of education within his competencies; he takes responsibility for forming prejudices against microbiological techniques and scientific fields connected with microbiology.
- The student is responsible for correctly presenting information regarding microbiological topics, including vaccination, healthy lifestyle, composting, use of antibiotics, etc.
- The student has a responsible approach to building awareness among people around him on topics related to microbiology, bacteriology, virology, algology, and mycology.

Brief syllabus:

Microbiology seminar:

1. History of microbiology – ancient time, the middle ages, modern time, essential personalities of each era and their merit. Microbiology as a biological science - related scientific disciplines, types of microbiological sciences, applied microbiological sciences, and taxonomy of microorganisms.
2. Chemical composition, division of microorganisms, functional anatomy of prokaryotic and eukaryotic cells.

3. Prions - their origin, structure, meaning, prion diseases. Viroids - their characteristics and related diseases.
4. Viruses - history of virology, taxonomy, structure and morphology of viruses, replication of viruses, theories of the origin of viruses, viruses of prokaryotic and eukaryotic cells, the lytic and lysogenic cycle of bacteriophages.
5. Viruses of plants, invertebrates and vertebrates, essential viruses causing human and animal diseases, influenza virus - pandemics in the world, epidemiology.
6. Written the examination of prions, viroids and viruses.
7. Classification of prokaryotic microorganisms - Bacteria. History of bacteriology, origin and evolution of bacteria, their morphology and structure, way of life and metabolism, growth and reproduction of bacteria.
8. Importance of symbiotic bacteria, bacterial diseases of animals and humans, food poisoning, treatment of bacterial infections and resistance.
9. Protozoa - unicellular heterotrophic organisms systematics, economic and phylogenetic significant representatives. Their classes and the most famous representatives, diseases.
10. Virulence and pathogenicity. The emergence of an infectious state, types of infection, endo- and exotoxins.
11. Basic immunological terms, types of the immune system, active immunization, immune response, chemotherapeutics.
12. Written the examination of bacteria and Protozoa
13. Importance and distribution of microorganisms on Earth.
Seminar on algology and mycology:
1. Introduction to the system of algae, fungal organisms and fungi
2. Characteristics and ecology of taxons belonging to the subject of algology. Prokaryotic algae - System and ecology of Cyanophyta (Cyanobacteria),
3. Eukaryotic algae - Euglenophyta, Cryptophyta, Haptophyta, Dinophyta, Heterokontophyta,
4. Chlorophyta.
5. The importance of algae to nature
6. Characteristics and ecology of taxons belonging to the subject of mycology and lichenology. Acrasiomycota, Dictyosteliomycota, Myxomycota, Plasmodiophoromycota, Hyphochytridiomycota, Labyrinthulomycota
7. Oomycota, Chytridiomycota, Zygomycota,
8. Ascomycota,
9. Basidiomycota,
10. Deuteromycetes,
11. Lichenes
12. The importance of fungal organisms, fungi and lichens for nature.
13. Algae and fungi as essential bioindicators of the state of the environment (water quality, air quality)
Practice lessons - from algology and mycology:
1. Types of the thallus of cyanobacteria and algae
2. System and essential representatives of cyanobacteria Cyanophyta (Cyanobacteria),
3. System and important representatives of Euglenophyta, Cryptophyta, Haptophyta, Dinophyta, Heterokontophyta,
4. System and essential representatives of Chlorophyta
5. The importance of algae for human society
6. Review of the study with a written examination in algology and subcellular organisms
7. Types of thalli of fungal organisms and fungi

8. System and essential representatives of Acrasiomycota, Dictyosteliomycota, Myxomycota, Plasmodiophoromycota, Hyphochytridiomycota, Labyrinthulomycota, Oomycota, Chytridiomycota, Zygomycota
9. System and essential representatives of Ascomycota,
10. System and essential representatives of Basidiomycota,
11. System and essential representatives of Deuteromycetes, Lichenes
12. Study control by written examination in mycology, lichenology, bacteriology and protozoa
13. The importance of fungal organisms, fungi and lichens for human society

Literature:

KEVEI F. KUCSERA J.: Mikrobiológiai gyakorlatok I. 1. vyd. – Szeged: JATEPress, 2002, 134 s.
KEVEI F., KUCSERA J.: Mikrobiológia I. 1. vyd. – Szeged: JATEPress, 2002, 301 s.
KEVEI F., KUCSERA J.: Mikrobiológia II. 1. vyd. – Szeged: JATEPress, 1999, 226 s.
MAKOVICKÝ, P.: Mikrobiológia. 1. vyd. – Komárno: Univerzita J. Selyeho, 2018, 115 s., ISBN 978 80 8122 235 1.
BAČKOR M.: Systematika nižších rastlín: huby, lišajníky, machorasty. 1. vyd.- Košice: UPJŠ, 2007, 130. s. ISBN 978-80-7097-674-6
TUBA Z., SZERDAHELYI T., ENGLONER A.,: Botanika I. = Rendszertan: Bevezetés a növénytanbam algológiába, gombatanba és a funkcionális növényökológiába. 1. vyd. utánnyomás. – Budapest: Nemzedékek Tudása Tankönyvkiadó, 2013 – 280 s. – ISBN 978-963-19-5848-5.
TUBA Z., SZERDAHELYI T., ENGLONER A., NAGY J.: Botanika II. = Rendszertan: Bevezetés a növénytanbam algológiába, gombatanba és a funkcionális növényökológiába. 1. vyd. – Budapest: Nemzedékek Tudása Tankönyvkiadó, 2007. – 523 s. – ISBN 978-963-19-5849-2.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: RNDr. Eva Tóthová Tarová, PhD., Ing. Pavol Balázs, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ BE2/22	**Name:** Biodiversity and ecology of taxons II.

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 2 / 2 **For the study period:** 26 / 26
Methods of study: present

Number of credits: 6

Recommended semester/trimester of study: 3.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
The condition for passing the subject is active participation in the lessons, which consist of a theoretical and practical part. There will be two written examinations during the semester. Completion of the subject is conditional upon successful completion of the interim examinations and the final oral and written examination. During the semester, students will make a presentation of their choice about one of the important families in Powerpoint; the relevance of the literature and the presentation itself will be evaluated.
Total student load: 6 credits = 150-175 hours
The student will participate in 52 hours of teaching. He works 25 hours on a Powerpoint presentation and 35-45 hours on preparation for one written examination.
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
Knowledge:
- The student knows the professional terminology of the scientific field.
- Can identify the basic conceptual, categorical and methodological apparatus of the subject.
- He has expanded his knowledge in related sciences and understands and categorizes connections from other scientific disciplines.
- By completing the subject, he will learn and master the essential characteristics of bryophytes, ferns, gymnosperms and angiosperms.
- The student knows the importance and use of plants for human society.
Abilities:
- The student can identify and classify plants into higher taxons.
- The student can see the diversity of plants in ecological contexts.

Competencies
- The student has a positive attitude towards the diversity of plants in the wild.
- The student leads his environment to a diversified attitude towards economic, rare and invasive species.

Brief syllabus:

Seminar:
1., From the history of botany, - Taxonomic categories, hierarchical system
2., The main development directions of higher plants. - Hepatophyta, Anthocerotophyta, Bryophyta – characteristics of taxons,
3., Lycopodiophyta, Equisetophyta, Pteridophyta, characteristics of taxons,
4., Cycadophyta, Ginkgophyta, Gnetophyta, Pinophyta, characteristics of taxons,
5., Dicotyledonopsida: Magnoliidae, Ranunculidae, characteristics of taxons at the level of orders, families or even subfamilies
6.., Caryophillidae, Hamamelididae, characteristics of taxons at the level of orders, families or even subfamilies
7., Rosidae characteristics of taxons at the level of orders, families or even subfamilies
8., Dilleniidae characteristics of taxons at the level of orders, families or even subfamilies
9., Lamiidae, Asteridae characteristics of taxons at the level of orders, families or even subfamilies
10., Monocotyledonopsida: Alismatidae, Aridae, Liliidae characteristics of taxons at the level of orders, families or even subfamilies
11., Zingiberidae, Commelinidae, Arecidae characteristics of taxons at the level of orders, families or even subfamilies.
12., Extension of plants
13., Flora and vegetation. - The development of Slovakia's flora after the last glacial period. - Protection of the plant gene pool of Slovakia.

Practical lessons:
1., Basic sources of taxonomic information
2., Hepatophyta, Anthocerotophyta, Bryophyta - representatives, observation of bryophytes with a school microscope.
3., Lycopodiophyta, Equisetophyta, Pteridophyta, representatives, their importance in nature and for human society
4. Cycadophyta, Ginkgophyta, Gnetophyta, Pinophyta, representatives, their importance in nature and for human society
5. General characteristics of the department Magnoliophyta and the classes Dicotyledonopsida and Monocotyledonopsida
6. Examination of studies in written form from lectures and seminars
7., Magnoliophyta: Dicotyledonopsida: Magnoliidae, Ranunculidae, Caryophillidae, Hamamelididae, representatives, their importance in nature and for human society
8., Rosidae representatives, their importance in nature and for human society
9., Dilleniidae representatives, their importance in nature and for human society
10., Lamiidae, Asteridae representatives, their importance in nature and for human society
11., Monocotyledonopsida: Liliidae, Commelinidae, representatives, their importance in nature and for human society
12., Control of studies in written form, both from lectures and seminars
13., Alismatidae, Aridae, Zingiberidae, Arecidae, representatives, their importance in nature and for human society

Literature:

BALÁZS P., (2012): Základy systému krytosemenných rastlín – A zárvatermő növények rendszerének alapjai. Univerzita J. Selyeho – Selye János egyetem, Komárno ISBN 978-80-8122-054-8
GOJDIČOVÁ E., MÁRTONFI P., MÁRTONFIOVÁ L., (2008): Botanika-Cievnaté rastliny. Vydavateľstvo : Ústav vysokohorskej biológie Žilinskej univerzity ISBN 977808889223121
HORTOBÁGYI T., SIMON T., (red.) (1991): Növényföldrajz, társulástan és ökológia. Tankönyvkiadó Budapest. ISBN 963 18 3459
TUBA Z., SZERDAHELYI T., ENGLONEr A., NAGY J., (2007) : Botanika II. Rendszertan Nemzeti tankönyvkiadó, Budapest. ISBN : 978-963-19-5849-2

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Pavol Balázs, PhD., Dr. habil. Sarolta Zsuzsanna Mészárosné Darvay, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ BE3/22	**Name:** Biodiversity and ecology of taxons III.

Types, range and methods of educational activities:
Form of study: Lecture / Seminar / Practical
Recommended extent of course (in hours):
Per week: 1 / 1 / 2 **For the study period:** 13 / 13 / 26
Methods of study: present

Number of credits: 5

Recommended semester/trimester of study: 4.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
The condition for passing the subject is active participation in the lessons, which consist of a theoretical and practical part.
During the practical part, the student works in the laboratory on topics related to the issue of invertebrates and the comparative anatomy of chordates. During the semester, the student passes four written examinations, two on the issue of invertebrates and the other two on the comparative anatomy of chordates. One examination is in the middle of the semester, the other at the end of the semester. During the examination period, the student is examined from the invertebrate system. In the final evaluation, written examinations and final oral exam on the system of invertebrates, the final grade is 50% - 50%.
Total student workload: 5 credits = 125-150 hours
The student will participate in contact hours in the range of 52 hours. Each written examination is prepared by self-study in 20-25 hours.
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
Knowledge:
- The student knows the basics of the professional terminology of the scientific field.
- The student can identify the subject's basic conceptual, categorical and methodological apparatus.
- The student knows the characteristics and basics of the system of taxonomic groups of invertebrates.
- The student knows selected species and their importance to human society.

- The student masters the phylogeny of individual systems of chordates, covering, supporting, muscular, nervous, digestive, vascular, respiratory, excretory, sexual and sensory organs.
Abilities:
- The student can classify biological material obtained from nature at the taxonomic level of classes, even lower in the case of insects.
- The student can see the diversity of invertebrates in ecological contexts.
Competencies
- The student has a positive attitude towards the diversity of invertebrates in the wild.
- The student understands the connections of the anatomical structure of higher chordate taxons.
- The student leads his surroundings to a diversified attitude towards the species of invertebrates.

Brief syllabus:

1., Metazoa - multicellular organisms. Porifera - general characteristics and system. Eumetazoa. Cnidaria - general characteristics and system.
2., Plathelminthes (Trematoda, Cestoda), Nematoda, system, economically and medically important species
3., Annelida (Oligochaeta, Hirundinoidea) - general characteristics and system.
4., Mollusca - general characteristics, system.
5., Arthropoda - general characteristics. Crustacea - crustaceans. system
6., Chilopoda – centipedes, Diplopoda – millipedes, general characteristics and system, Hexapoda – six-legged, general characteristics.
7., Parainsecta - general characteristics and system, Insecta - general characteristics, hemimetabola - general characteristics, the system of lower taxons.
8., Insecta - hemimetabola, holometabola - general characteristics and system of lower taxons.
9., Insecta - holometabola - general characteristics and system of lower taxons.
10., Arachnida - arachnids - general characteristics and system
11., Deuterostommia – second mouth, general characteristics. Echinodermata - echinoderms, Hemichordata - hemichordates, general characteristics and system
12., Chordata - chordates, lower chordates - Urochordata - tunicates, Cephalochordata - spearfish. - system.
13., Systematic zoology. Zoological system and nomenclature. The origin and development of the zoological system. Modern zoological systematics.
Practical lessons - invertebrates
1., Systematic zoology. Zoological system and nomenclature. The origin and development of the zoological system. Modern zoological systematics.
2., Metazoa - multicellular organisms. Porifera - general characteristics and ecology. Eumetazoa. Cnidaria - general characteristics and ecology, Plathelminthes (Trematoda, Cestoda), Nematoda general characteristics and their ecology.
3., Annelida (Oligochaeta, Hirundinoidea) - general characteristics and ecology.
4., Mollusca - general characteristics and ecology.
5., Arthropoda - general characteristics. Crustacea - crustaceans. General characteristics and ecology.
6., Study control
7., Chilopoda – centipedes, Diplopoda – millipedes, general characteristics and ecology, Hexapoda – six-legged, general characteristics.
8., Parainsecta - general characteristics and ecology, Insecta - general characteristics, hemimetabola - general characteristics, lower taxons and their ecology.
9., Insecta - hemimetabola, holometabola - general characteristics, lower taxons, and ecology.
10., Insecta - holometabola - general characteristics, lower taxons and ecology.
11., Arachnida - arachnids - general characteristics and their ecology

12., Deuterostommia – second mouth, general characteristics. Echinodermata - echinoderms, general characteristics and ecology, Hemichordata - hemichordates, general characteristics and ecology, Chordata - chordates, lower chordates - Urochordata - tunicates, General characteristics and ecology, Cephalochordata - lanceolate, general characteristics and ecology.
13., Study control
Seminar - comparative anatomy of chordates
1., Introduction to the comparative anatomy of chordates
2., Covering system of chordates
3., The support-movement system of chordates
4., Vascular system of chordates.
5. Excretory system of chordates.
6., Study control.
7., Respiratory system of chordates.
8., Genital system of chordates.
9., Sensory organs of chordates.
10., Nervous system of chordates.
11., Secondary body cavity. The digestive system of chordates.
12., Glands with internal secretion.
13., Study control.

Literature:

BELÁKOVÁ A., (1994): Rozmnožovanie a ontogenéza živočíchov. Vyd. UK, Bratislava ISBN 8022307319,1994.
BIHARI, Z. – CSORBA, G.: Magyarország emlőseinek atlasza. Kossuth Kiadó, 2007.
HORVÁTH L.,: Funkcionális anatómia.Nemzeti tankönyvkiadó, Budapest ,1988
KOVÁCS Zs.,, KRISKA Gy., MOLNÁR K., PÁLFIA Zs.,: Összehasonlító metszetanatómiai atlasz. Nemzeti Tankönyvkiadó, 2005.
KRISKA Gy., LŐW P.,: Biológia érettségire felkészítő. Állati szervezetek. Nemzeti Tankönyvkiadó, 222. o. + DVD, 2012
PECHENIK, J. E.: Biology of the Invertebrates. 6. vyd. - Boston : McGraw-Hill International, 2005. - 603s. - ISBN 978-0-07-128455-4.
PETŘVALSKÝ, V.: Zoológia. 3. vyd. - Nitra : Slovenská poľnohospodárska univerzita, 2010. 136 s. ISBN 978-80-552-0465-9.
UJHELYI, P.: A Kárpát-medence állatai. Kossuth Kiadó, 2005.
ZBORAY G., (szerk): Összehasonlító anatómiai praktikum I. - A gerinctelenek - Anamnia-Az alacsonyabbrendű gerincesek. Nemzeti Tankönyvkiadó, 2010.
ZBORAY G.,: Összehasonlító anatómiai praktikum II. Amniota- 1. vyd. - Budapest : Nemzeti Tankönyvkiadó, Budapest, ISBN 978-963-19-6000-6, 2007.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Pavol Balázs, PhD., Dr. habil. Sarolta Zsuzsanna Mészárosné Darvay, PhD.

Date of last update: 13.07.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ BE4T/22	**Name:** Biodiversity and ecology of taxons IV. and fieldwork in zoology and anthropology

Types, range and methods of educational activities:
Form of study: Lecture / Practical
Recommended extent of course (in hours):
Per week: 1 / 3 **For the study period:** 13 / 39
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 6.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
The condition for passing the subject is active participation in classes and practical exercises in the field. During the semester, the student passes two written examinations (one in the middle of the semester, the other at the end of the semester). In the final part, the student will prove his theoretical knowledge with an oral exam on the system and ecology of vertebrates. Final assessment: Two written examinations together with the protocol will weigh 50% of the final grade, and the oral exam is another 50%. The student completes the practical part in the field, from which he also submits a protocol. Submission of a protocol is a condition for passing the subject.
Total student workload: 3 credits = 75-90 hours
The student will participate in contact teaching hours during the semester for 26 hours and the field exercise for another 26 hours (a total of 52 hours). He prepares for the written examinations by self-study in the range of 30-35 hours and prepares a protocol from the fieldwork.
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
Knowledge:
- The student knows the basics of the professional terminology of the scientific field.
- The student can identify the subject's basic conceptual, categorical and methodological apparatus.
- The student knows the characteristics and basics of the system of taxonomic groups of vertebrates.
- The student knows selected species and their importance to human society.

- The student controls the characteristics of individual lower taxons, especially orders and with examples.
Abilities:
- The student can observe terrestrial vertebrates in their habitats.
- The student can see the diversity of vertebrates in ecological contexts.
- The student will learn the basic skills of finding and recognising animals in the field.
- The student acquires knowledge of the systematic classification of individuals in the animal kingdom according to the characteristics of individual determining keys.
- The student will gain practical knowledge and experience from osteoanthropological research.
Competencies
- The student has a positive attitude towards the diversity of vertebrates in the wild.
- The student understands the context of the phylogeny of vertebrates.
- The student leads his surroundings to a diversified attitude towards the species of vertebrates.

Brief syllabus:

1.,Agnatha - system. - Gnathostomata – system of taxons: Placodermi, Acanthodii, Chondrichthyes system of lower taxons.
2nd, Osteichthyes – a system of lower taxons I.
3., Osteichthyes – system of lower taxons II.
4., Amphibia – a system of lower taxons.
5., Reptitia - a system of lower taxons.
6., Aves - a system of lower taxons I.
8., Aves - a system of lower taxons II.
9., Mammalia - a system of lower taxons I.
10., Mammalia - a system of lower taxons II.
11., Distribution of vertebrates on Earth
12., Behavior of vertebrates
13., Evolution and phytogenesis of vertebrates
exercise
1., Vertebrates - vertebrates (higher chordates) general characteristics.
2., Agnatha - general characteristics and ecology. - Gnathostomata – general characteristics and ecology. Placodermi, Acanthodii, - Chondrichthyes – general characteristics and ecology.
3., Osteichthyes – general characteristics and ecology.
4., Amphibia – general characteristics and ecology.
5., Reptitia - general characteristics and ecology.
6., Study control
7., Aves - general characteristics and ecology I.
8., Aves - general characteristics and ecology II.
9., Mammalia - general characteristics and ecology I.
10., Mammalia - general characteristics and ecology II.
11., The importance of vertebrates for human society
12., Study control
13., Protection of vertebrates in Slovakia
Fieldworks in the range of 5 days
Establishment of a collection of invertebrates, vertebrates and photo-documentary material of animals, collection and a systematic classification of animal species of selected biotopes, collection and a systematic classification of pests of cultivated plants. Familiarisation with the principles of osteoanthropological research, uncovering a burial site. Processing and identification of osteological material. Preparation of documentation from the excursion.

Literature:

BAKONYI G. (szerk). (2003): Állattan. Mezőgazda Kiadó. - Budapest : Mezőgazda Kiadó, 2003. - 718 s. - ISBN 963 286 044 6.)
BIHARI Z., CSORBA G., (2007): Magyarország emlőseinek atlasza. Kossuth Kiadó. 360 s. - ISBN 978-963-09-5610-9.).
ČIHÁK, R.: Anatomie I.-III. Avicenum Praha, 2001, 2002, 2004. ISBN 80-7169-970-5
CSÖRGŐ és mtsi szerk. (2009): Magyar madárvonulási atlasz. Kossuth Kiadó - 672 s. - ISBN 978-963-09-5865-3.).
DONÁTH T.: Anatómiai atlasz. - Budapest : Medicina Könyvkiadó, 2006. - 212 s. - ISBN 963 242 907 9.
FORRÓ L., (szerk) (2007): A Kárpát-medence állatvilágának kialakulása. Magyar Természettudományi Múzeum, Budapest. 399 s. - ISBN 9789637093999.).
H.BATTHA, L. Növények és rovarok preparálása . NATURA, 1978. - 191. - ISBN 963 233 046 3.
HARKA Á., SALLAI Z. (2004): Magyarország halfaunája : Képes határozó és elterjedési tájékoztató. Nimfea Természetvédelmi Egyesület. 269 s. - ISBN 963 86475 3 1
KRISKA Gy., LŐW P., (2012): Biológia érettségire felkészítő. Állati szervezetek. Nemzeti Tankönyvkiadó, 222. o. + DVD 223 s. - ISBN 978-963-19-7109-5.).
NAGY, M.: Természetismereti exkurziók : Nyugati úticélok / Melinda Nagy. - 1. vyd. - Komárom : Selye János Egyetem, 2010. - 81 s. - ISBN 978-80-89234-98-1.
NAGY, M.: Természetismereti exkurziók : Keleti úticélok / Melinda Nagy. - 1. vyd. - Komárom : Selye János Egyetem, 2010. - 92 s. - ISBN 978-80-8122-005-0.
STANĚK, V. J.: Veľký obrazový atlas zvierat, - 5. vyd. - Bratislava : Vydavateľstvo Mladé Letá, 1983. - 592s.
UJHELYI P., (szerk.) (2005): Élővilág enciklopédia I A Kárpát-medence állatai. Kossuth Kiadó, - 526 s. - ISBN 963 09 4745 5.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Pavol Balázs, PhD., Dr. habil. PaedDr. Melinda Nagy, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ BED/22	**Name:** Bioethics and volunteering
Types, range and methods of educational activities: **Form of study:** Lecture / Practical **Recommended extent of course (in hours):** **Per week:** 1 / 1 **For the study period:** 13 / 13 **Methods of study:** present	
Number of credits: 3	
Recommended semester/trimester of study: 4.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: The condition for passing the subject is active participation in the lessons, which consists of a theoretical part. To pass the subject, the student must write a test (50%) from the theoretical part during the exam period. The student will also prepare a seminar paper (50 points), which he will present himself. The seminar work will follow the theoretical part of the subject both thematically and in terms of content. The seminar paper must meet the content and formal requirements of scientific writing. Point distribution of the seminar work: interpretation of the situation//problem (10%), presentation of the literature review (10%), analysis and evaluation (10%), drawing conclusions and formulating proposals (10%), elaboration (10%). Total student workload: 3 credits = 75-90 hours Twenty-six hours of participation in contact classes; 20 hours of preparation of the educational activity project and tasks assigned in the lessons; 35-45 hours of self-study; The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject. Overall evaluation of the success of the subject: A = 90-100% (90-100 points) B = 80-89% (80-89 points) C = 70-79% (70-79 points) D = 60-69% (60-69 points) E = 50-59% (50-59 points) FX = 0-49% (0-49 points)	
Results of education: Knowledge: - The student knows the principles of biomedical ethics. - The student is ready to realistically convey the moral issues of the relationship between body and soul. - The student is familiar with the fundamental problems of green bioethics in our Anthropocene age. - The student is informed about the moral issues of environmental protection and globalization. - The student is familiar with the latest ethical research.	

- The student knows the importance of the results of biological scientific research in everyday life and its ethical consequences.
Abilities:
- The student can apply the acquired knowledge in the teaching-learning process of biology.
- The student can develop moral sensitivity in pupils.
- The student can convey the moral issue of life, respect and protection of nature.
- The student can recognize the moral relationship between actions and consequences.
- The student can recognize the connections of global responsibility.
- The student can raise awareness of the importance of ecological, value-based and sustainable behaviour based on love for nature and knowledge of the environment.
Competencies:
- The student has a positive attitude towards preserving the values of life, human life, natural beings, and a healthy and clean environment.
- The student is committed to developing a new perspective on life and values, not on modern consumer society's values.
- The student is open to voluntary work that contributes to individual development, teaches empathy, altruism and helpfulness, and helps to become a better person.
- The student is active in pedagogical areas of education within his competencies; he takes responsibility for forming prejudices against bioethical issues and scientific fields connected with bioethics and volunteering.

Brief syllabus:

1. Concept, subject, morality and law of ethics, bioethics as a discipline.
2. Principles of biomedical ethics, autonomy, justice, health credibility. Personal data protection in healthcare. The ethical dimension of the doctor-patient relationship.
3. Ethics of reproductive procedures. Bioethical aspects of the beginning of human life. Contraception: contraception, abortion. Artificial insemination, fetal transplantation-surrogate motherhood; sterilization.
4. Ethical challenges in gerontology. Bioethical aspects of the end of human life. Dying and human dignity. Euthanasia, palliative medicine.
5. Ethical and legal aspects of organ transplantation. Brain death.
6. Ethical aspects of treatment and research. Declaration of Helsinki on Ethical Principles of Medical Research on Humans.
7. Ethical issues of human breeding (eugenics). Cloning.
8. Green bioethics - the concept of ecological ethics. Ethical issues of environmental sustainability.
9. The common heritage of humanity and the rights of future generations. Responsibility for the future, responsibility for the living world. Global issues - personal responsibility. Volunteering and the social-community benefit of volunteering.
10. Obligations and moral prohibitions in handling animals. Ethical imperatives of animal experiments.
11. Ethical issues in biotechnological interventions.
12. Ethical problems of scientific progress, research ethics.
13. Test writing

Literature:

BALÁZS, P.: Bioetika : Az emberi élet erkölcsteológiája. 1. vyd. - Veszprém : VEK -Veszprémi Egyetemi Kiadó, 1995. 53 s.
Bioetikai Kódex. Az orvosbiológiai/klinikai kutatások elveiről és gyakorlatáról. 2022. Egészségügyi Tudományos Tanács https://ett.aeek.hu/bioetikai-kodex/

FRANCIS FUKUYAMA .: Our Posthuman Future : consequences of the biotechnology revolution. - 1.vyd. - London : Profile Books, 2002. - 256 s. - ISBN 1 86197 297 0.
GAIZLER, G.: Bioetika. 1. vyd. - Budapest, 1999. 285 s.
KOVÁCS József: Bioetikai kérdések a pszichiátriában és a pszichoterápiában. Budapest, 2006, http://real-d.mtak.hu/347/1/Kovacs_Jozsef.pdf
LŐW Péter: Bevezetés a bioetikába, 2014, ELTE
Magyar Bioetikai Szemle Hungarian Review of Bioethics, 2015/1.http://bioetikai-tarsasag.hu/docs/szemle/BIOETIKA-FUZET-boritoval-2015_1-.pdf
MAKÓ, J. – ULLRICH, Z.: Bioetika – Ökumené. Budapest : Széphalom Könyvműhely, 2003. 332. - ISBN 963 9373 44 3. VARGHA, B.: Eutanázia. - Komárno : Selye János Egyetem, 2011. - DM.4504-TF.11.29B.2B. 74 s

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Dr. habil. PaedDr. Melinda Nagy, PhD., Dr. habil. Sarolta Zsuzsanna Mészárosné Darvay, PhD., Ing. Iveta Szenczióvá, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ BPO/22	**Name:** Biopolitics
Types, range and methods of educational activities: **Form of study:** Seminar **Recommended extent of course (in hours):** **Per week:** 2 **For the study period:** 26 **Methods of study:** present	
Number of credits: 1	
Recommended semester/trimester of study: 6.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: The condition for passing the subject is active participation in the lessons, which consists of a theoretical and practical part. As part of the practical part, the student will have to prepare a seminar paper based on the knowledge he acquired while teaching the subject. The seminar work will consist of professional terms and topics of a biopolitical nature. The seminar paper must meet the content and formal requirements of scientific writing. At the end of the semester, the student submits the seminar work for review and presents it as a presentation (20%). During the exam period, the student writes a test on theoretical knowledge (80%). Total student load: 1 credit = 25-30 hours 26 hours of participation in contact lessons; 4 hours of preparation of the project of the educational activity and tasks assigned in the lessons The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject. Overall evaluation of the success of the subject: - A = 90-100% (90-100 points) - B = 80-89% (80-89 points) - C = 70-79% (70-79 points) - D = 60-69% (60-69 points) - E = 50-59% (50-59 points) - FX = 0 – 49% (0 – 49 points)	
Results of education: The student acquires new knowledge about biopolitics, expands knowledge of technical terms and can understand ecological and political contexts. Knowledge: - The student can apply the acquired knowledge in the teaching-learning process of biology. - The student will become familiar with biopolitics as a direction, its meaning and the correct application of biopolitical procedures and their application in the EU. - The student will expand his knowledge about environmental protection, ecology and principles of application of the standard European policy. Abilities:	

- The student can understand political concepts, procedures, and valid legislative standards in ecology, agriculture and the environment.
- The student can develop a complex seminar work and use the knowledge from it in practice.
- The student can understand biotechnological procedures.
- The student can use the acquired knowledge in practice and is also able to interpret it for other persons or students in the future teaching process.
Competencies:
- The student will develop a more positive relationship and understanding of ecological and political environmental protection issues and will gain more self-confidence in his abilities.
- A better understanding of individual biopolitical aspects gives the student lifelong knowledge that will positively affect his attitude towards nature and the environment.
- The student is active in pedagogical areas of education within his competencies and takes responsibility for forming prejudices against biopolitical procedures and their effective use in practice.

Brief syllabus:
1. Basic concepts of biopolitics.
2. Climatology and elemental climate pacts
3. Ecological procedures and systems
4. Climate changes and their impact on the environment
5. Activity of international organisations in the field of climate change
6. Diplomacy and international law in the field of biopolitics
7. Modern biotechnologies and their distribution
8. Impact of biotechnology on the environment
9. Bioarchitecture in human settlements
10. State of the environment in Central Europe and our region
11. State of the environment in the world and the most significant challenges
12. Presentation and submission of the seminar work
13. Presentation and submission of the seminar work

Literature:
BARTHA D.: Természetvédelmi élőhelyismeret. - 1. vyd. - Budapest : Mezőgazda Kiadó, 2013. - 213 s. - ISBN 978-963-286-691-8.
MEZEI C. - ,BAKUCZ M.: Agrárátalakulás,környezeti változások és regionális fejlődés: Tanulmányok Buday-Sántha Attila 70. születésnapjára. - 1. vyd. - Pécsi Tudományegyetem : Molnár Nyomda és Kiadó Kft., 2011. - 508 s. - ISBN 978 963 642 401 5.
BÁNDI GY.: A környezetvédelmének joga - környezetjog - 1. vyd. - Budapest, 1995. - 88 s.
BALOGH J., NEMES CS.: A biológiai sokféleség állapota és védelme Magyarországon- 1. vyd. - Budapest : Fenntartható Fejlődés Bizottság, 1998. - 115 s. - ISBN 963 03 4462 9.
KERÉNYI A.: Európa természet- és környezetvédelme. - 1. vyd. - Budapest : Nemzeti Tankönyvkiadó, 2003. - 534 s. - ISBN 963 19 3502 7.
SALLAI R. B.: Zöldszemmel : Túrkeve : "Nimfea" Természetvédelmi Egyesület, 2003. - 232 s. - ISBN 9630356935.
ŠÍBL, J.: Restoration of the Wetlands of Záhorie Lowland. - 1. vyd. - Banská Bystrica - Bratislava : Štátna ochrana prírody - BROZ, 2008. - 21 s. - ISBN 978-80-89310-53-1.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects

Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Iveta Szencziová, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ BS-B/22	**Name:** Bachelor's Thesis Seminar
Types, range and methods of educational activities: **Form of study:** Seminar **Recommended extent of course (in hours):** **Per week:** 1 **For the study period:** 13 **Methods of study:** present	
Number of credits: 4	
Recommended semester/trimester of study: 5.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: Submission of a selected bibliography related to the topic of the Bachelor thesis and drafting of a part of the Bachelor thesis (10-12 pages). Attendance at the seminar is compulsory. The student prepares part of the Bachelor thesis and submits the bibliography. The student must hand in a ready part of the thesis to the tutor by the deadline. If the student does not hand in the ready part of the thesis within 7 days after the deadline, he/she will not receive the credits for the course. The length of the ready part of the thesis to be handed in is determined by the tutor, the formal requirements are specified in the Rector's Directive 2/2021. The work must comply with the technical rules and ethics of citation. Criteria for the evaluation of the work: – the student's analytical-synthetic thought process, – expression of personal opinion supported by theoretical knowledge, – the definition of the problem and the aim of the work, the way in which it has been developed, – the structure of the work - logical structure and proportional length of each part, – work with literature and sources of information (how they are selected and used), – compliance with the basic formal requirements of the essay, compliance with citation requirements, – aesthetic and linguistic quality of the essay. Percentages for each task: Work done in seminars: 20 %. Seminar paper: 80 %. The student must complete at least 50 % of all assignments.	
Results of education: Knowledge: The student is able to: - list and explain the general requirements for the preparation of the Bachelor thesis, describe and characterize the content structure of the Bachelor thesis and its parts (introduction, main body, appendices),	

- explain the concepts of phenomenon and fact, list and describe ways of investigating educational phenomena,
- describe in more detail the main methods of collecting and processing the data presented in the Bachelor thesis,
- identify the basic requirements for the author of a thesis, describe and characterise the model, characteristics and formal structure of a thesis,
- list and explain the formal requirements for the Bachelor thesis,
- define the concept of an abstract, describe its structure, describe the characteristics of a quality abstract, list the most common mistakes in abstract preparation, distinguish between an abstract and an annotation, an extract, a summary and an overview,
- explain the concepts of citation, quotation, paraphrasing, compilation, plagiarism, distinguish between quotating and paraphrasing, and illustrate different citation and referencing techniques with examples,
- define and interpret in his (her) own words the basic concepts and motifs of the chosen subject area,
- be familair with the basic terms used in the thesis,
- explain thebasic terms used in an essay,
- construct (elaborate) the theoretical plane of the thesis, including all its important aspects,
- analyse and justify the conclusions of the thesis,
- critically analyse, re-evaluate and use in theory the knowledge gained.

Skills:

The student is able to:
- write a draft of his (her) own Bachelor thesis,
- explain the methodological rules for writing a Bachelor thesis,
- define the main question and the aim of the thesis, formulate hypotheses where appropriate,
- plan a timetable for the preparation of the Bachelor thesis, including its table of contents,
- work with literature (primary and secondary sources), search for information in library information databases,
- prepare the text of the Bachelor thesis, based on the knowledge acquired, by formulating ideas in a logical and precise way, producing a quality abstract, writing an introduction and conclusion, taking into account the criteria given,
- present the knowledge acquired in the field, recognising its complexity and drawing conclusions,
- apply knowledge of the ethics and techniques of citation and drafting,
- use correctly the various methods of citation and referencing and compile a bibliography correctly,
- create (develop) the practical aspects of the thesis, including all relevant aspects,
- analyse, synthesise and compare knowledge and propose solutions on this basis,
- draw conclusions and formulate practical implications through critical analysis,
- critically analyse, reassess and apply the knowledge acquired in practice,
- present, discuss and support the ideas with proper arguments, while writing the thesis,
- present, in a group of students and in the presence of the tutor, the outputs of the activity and justify their relevance and practical use,
- complete the Bachelor thesis and prepare for its public defence,
- to grade the strengths and weaknesses of the topic of the thesis and the thesis itself,
- critically evaluate the methods and procedures used in the thesis and make suggestions for their practical application,
- acquire independent knowledge in the chosen field,
- apply theoretical knowledge to teaching practice.

Competences:
The student
- is aware of the importance of respecting academic ethics and the ethical implications for his/her own student and future teaching activities,
- acts in accordance with the rules of good conduct,
- has mastered the basics of social appearance, and is dressed appropriately for the state examination,
- adheres to the wthical principles of citation
- expresses his/her beliefs and opinions in a straightforward and honest manner, while accepting that the other party has the right to form his/her own opinion,
- bears and accepts the consequences of his/her own actions.

Brief syllabus:

1. Requirements for the Bachelor thesis in the SJE guidelines.
2. A concise description of the Bachelor thesis.
3. The importance of the Bachelor thesis
4. Selection of the topic for the Bachelor thesis.
5. Preparation of a selected bibliography for the thesis.
6. Tasks and objectives of the Bachelor thesis.
7. Choosing the appropriate citation.
8. Content of the Bachelor thesis.
9. Formulating a strategy for the development of each part (chapter).
10. Working with reference books and journals.
11. Use of the Internet and online publications.
12. Preparing and carrying out the research, and getting ready for the defence of the Bachelor thesis.

Literature:

A magyar helyesírás szabályai. 2015. Budapest: Akadémiai Kiadó. 12. kiadás. ISBN 978 963 05 9631 2
ECCO, U.: Hogyan írjunk szakdolgozatot? Kairosz, 1987. - 255. - ISBN 9639137537
CHAJDIAK, J.: Štatistika jednoducho v Exceli. - 1. vyd. - Bratislava : Statis, 2013. - 340 s. - ISBN 978-80-85659-74-0.
KATUŠČÁK, D.: Ako písať záverečné a kvalifikačné práce. 5. vyd. - Nitra : Enigma, 2007. - 164 s. - ISBN 978-80-89132-45-4
MADARÁSOVÁ, J. (red.) 2000. Pravidlá slovenského pravopisu. Bratislava: VEDA. ISBN 8022406554
MARKO J.: Ako písať záverečnú prácu. - 1. vyd. - Zvolen : TU, 2010. - 66 s. - ISBN 978-80-228-2112-4.
MURRAY R.: How to Write a Thesis - 3. vyd. - England : McGraw-Hill Open University Press, 2011. - 326 s. - ISBN 978-0-33-524428-7.
NAGY-GYÖRGY, J.: Valószínűségszámítás és statisztika példatár : POLYGON Jegyzettár - 1.vyd. - Szeged : Szegedi Egyetemi Kiadó POLYGON, 2010. - 111 s.
SILVERMAN, D.: Ako robiť kvalitatívny výskum /. - Bratislava : Ikar a.s., 2005. - 328 s. – ISBN 80-551-0904-4.
Smernica rektora č. 2/2021 o úprave, registrácii, sprístupnení a archivácii záverečných, rigoróznych a habilitačných prác na Univerzite J. Selyeho. 2021. Komárno: UJS

Language, knowledge of which is necessary to complete a course:

Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Pavol Balázs, PhD., Dr. habil. Sarolta Zsuzsanna Mészárosné Darvay, PhD., Dr. habil. PaedDr. Melinda Nagy, PhD., Ing. Iveta Szencziová, PhD., RNDr. Eva Tóthová Tarová, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ CHM1/22	**Name:** Chemistry I.
Types, range and methods of educational activities: **Form of study:** Lecture / Seminar **Recommended extent of course (in hours):** **Per week:** 1 / 1 **For the study period:** 13 / 13 **Methods of study:** present	
Number of credits: 3	
Recommended semester/trimester of study: 1.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: Within the seminars, student presentations on selected topics are also evaluated; at the same time, during the semester, the student continuously works on a seminar paper, which he submits at the end of the seminar. Completion of the subject is conditional on successfully passing the interim (40 points) and final written examination (60 points). Participation in the final examination is conditional on achieving at least 50% of the points (min. 20 points) from the interim examination. The final evaluation of the subject results from the evaluation and the summary written examination are as follows: Final grade=(0.2 x average % of success on the presentation of the topic + 0.3 x % evaluation of the seminar work + 2.5 x % of success from written examinations) / 3. Total student workload: 3 credits = 75-90 hours The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject. Overall evaluation of the success of the subject: - A = 90-100% (90-100 points) - B = 80-89% (80-89 points) - C = 70-79% (70-79 points) - D = 60-69% (60-69 points) - E = 50-59% (50-59 points) - FX = 0 – 49% (0 – 49 points)	
Results of education: After completing the subject, the student: Knowledge: - becomes familiar with the basic laws and regularities of life on Earth; - understands the structure of atoms and molecules, as well as the empirical laws of chemistry; - understands the process of formation of bonds between atoms, understands the importance of intermolecular interactions in biological systems; - becomes familiar with the states of matter and their properties, as well as the regularities of the periodic system of elements; - thanks to the knowledge of the structure of atoms and molecules, he can interpret the course of chemical reactions;	

- as part of learning about chemical reactions, he will learn the regularities of equilibrium states, which play an essential role in biological living systems;
- becomes familiar with the theory of acids and bases and understands the principle of acid-base reactions, which are essential in everyday life and individual biological processes.
Abilities:
- with the help of the knowledge acquired during the course, the graduate can understand the more complex laws of chemistry, which are also applied in biology;
- understands the complex interrelationships between individual fields of chemistry and biology;
- knows how to use the periodic table of elements to determine the properties of elements;
- can modify simple chemical reactions;
- can routinely and expertly use concepts important for everyday life (e.g., acidity, alkalinity).
Competencies:
- tries to understand the primary chemical and physical relationships important in biological systems;
- strives for accurate and professional use of chemical and biological terms;
- can independently interpret basic natural phenomena
- after successful completion of the subject, the student will acquire basic general and inorganic chemistry with an emphasis on the competence of using this knowledge in the practice of a future biology teacher.

Brief syllabus:

1. Introduction, general concepts, and the subject of chemistry. Substance, system, pure substance, mass, weight, energy, chemical element, compound, fundamental laws, and regularities of chemistry.
2. Structure of an atom, elementary particles of substances, proton, nucleon number, amount of matter, molar mass, chemical formulas, and equations.
3. Periodic table of elements, periodic law, the electron configuration of atoms
4. Formation of a chemical bond, types of a chemical bond, covalent and ionic bond, weak intermolecular interactions - their role in biological living systems.
5. State of matter (gas, liquid, and solid-state), characteristics, and properties.
6. Solutions. Ways of expressing the composition of solutions.
7. Diffusion and osmosis - their role in living organisms
8. Chemical reactions. Classification of chemical reactions, oxidation-reduction reactions, electrode processes, standard electrode potentials, galvanic cells, electrolysis.
9. Theory of acids and bases, acid-base reactions, solution pH, neutralization, hydrolysis, acid-base titrations.
10. Rate of chemical reaction, catalysis, biocatalysts.
11. Chemical equilibrium, equilibrium constants of chemical reactions.
12. Written verification
13. Chemical energy. Reaction heat and thermochemical equations, thermochemical laws.

Literature:

BÁRTA Milan: Chemické zlúčeniny okolo nás : Anorganika., Edika, Bratislava, 2017. - 112 s. - ISBN 978-
BODONYI Ferenc: Kémiai összefoglaló: Műszaki Könyvkiadó, Budapest (4. vyd.), 1983. 537 s. - ISBN 963 10 4947 7.
SZABÓ, L.: Kémia I. – Általános kémia. Budapest : Nemzeti Tankönyvkiadó, 1995. - 255 s. - ISBN 9631864634.
ŽÚRKOVÁ, Ľ.: Všeobecná chémia. Bratislava : SPN, 1985. - 330 s. - ISBN 0010597.

GREENWOOD, N. N., EARNSHAW, A.: Az elemek kémiája I.,II.és III.kötet, Nemzeti Tankönyvkiadó, Budapest, 2004. ISBN 80-566-0068-9
KYSEĽ, Ondrej a György JUHÁSZ. Entrópia v energetike chemických reakcií. In: Pregraduální příprava a postgraduální vzdělávaní učitelů chemie. Ostrava: Ostravská Univerzita v Ostravě, 2001, S. 144-146. ISBN 80-7042-817-1.
KYSEĽ, Ondrej a György JUHÁSZ. Didaktický výklad súčasného poňatia periodickej sústavy prvkov - PSP. In: Škola a učiteľ v treťom tisícročí, Zv. 1 : Multimédiá vo vzdelávaní. Nitra: UKF v Nitre, 1999, S. 299-303. ISBN 80-967746-2-X.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Dr. habil. PaedDr. György Juhász, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ CHM2/22	**Name:** Chemistry II.
Types, range and methods of educational activities: **Form of study:** Lecture / Seminar **Recommended extent of course (in hours):** **Per week:** 1 / 1 **For the study period:** 13 / 13 **Methods of study:** present	
Number of credits: 3	
Recommended semester/trimester of study: 2.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: During the seminars, student presentations on selected topics are also evaluated; at the same time, during the semester, the student continuously works on a seminar paper, which he submits at the end of the seminar. Completion of the subject is conditional on successfully passing the interim (40 points) and final written examination (60 points). Participation in the final examination is conditional on achieving at least 50% of the points (min. 20 points) from the interim examination. The final evaluation of the subject results from the evaluation and the summary written examination are as follows: Final grade=(0.2 x average % of success on the presentation of the topic + 0.3 x % evaluation of the seminar paper + 2.5 x % of success from written examinations) / 3. Total student workload: 3 credits = 75-90 hours The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject. Overall evaluation of the success of the subject: - A = 90-100% (90-100 points) - B = 80-89% (80-89 points) - C = 70-79% (70-79 points) - D = 60-69% (60-69 points) - E = 50-59% (50-59 points) - FX = 0 – 49% (0 – 49 points)	
Results of education: After completing the subject, the student: Knowledge: - becomes familiar with the basic laws and regularities of life on Earth; - understands the structure of atoms and molecules as well as connections with the properties of elements, masters the empirical laws of chemistry; - understands the process of formation of bonds between atoms, understands the importance of intermolecular interactions in biological systems; - can categorize biogenic elements and their compounds based on their physical and chemical properties and knows the biological importance of these elements;	

- can identify the basic conceptual, categorical and methodological apparatus of organic chemistry at the level necessary for biologists;
- has basic knowledge of organic chemistry, within which he controls the division of organic compounds based on their structure and content of functional groups;
- acquires knowledge of organic chemistry, with the help of which he can solve theoretical and practical problems related to living biological systems during his work;
- knows the fundamental structural principles and reactions of organic compounds;
- acquires theoretical knowledge necessary for the study and understanding of biochemistry.
Abilities:
- knows how to use the periodic table of elements to determine the properties of biogenic elements;
- with the help of the knowledge acquired during the course, the graduate can understand the more complex laws of chemistry, which are also applied in biology;
- master the basics of the nomenclature of organic compounds, based on which he can correctly determine the structure of organic compounds;
- understands the complex interrelationships between individual areas of organic chemistry and biology;
- can modify simple organic chemical reactions;
- can routinely and expertly use concepts important to living systems (e.g. nucleic acids, DNA, proteins, etc.).
Competencies:
- understand the primary chemical and physical relationships important in biological systems;
- strives for accurate and professional use of chemical and biological terms;
- can independently interpret basic natural phenomena
- after successful completion of the subject, the student acquires basic knowledge of inorganic and organic chemistry with an emphasis on the competence of using this knowledge in the practice of a future biology teacher.

Brief syllabus:

1. Introduction to inorganic chemistry, periodic table of elements, the electron configuration of atoms.
2. Overview of the most important biogenic elements and their simple compounds: hydrogen, oxygen, properties, compounds and their biological significance.
3. Overview of the most important biogenic elements and their simple compounds: carbon, nitrogen, metals and transition elements and their biological significance.
4. Basics of organic chemistry. Chemical bonding in organic compounds. Hybridization, Stereochemistry. Alkanes and cycloalkanes, nomenclature, physical and chemical properties and their reactions.
5. Alkenes, cycloalkenes, dienes and alkadienes, alkynes, nomenclature, physical and chemical properties and reactions
6. Aromatic hydrocarbons, nomenclature, physical and chemical properties and their reactions.
7. Halogen and hydroxy derivatives of hydrocarbons, nomenclature, physical and chemical properties and their reactions.
8. Aldehydes and ketones, nomenclature, physical and chemical properties, reactions and their biological significance.
9. Carboxylic acids. Functional and substituted derivatives of carboxylic acids. Nomenclature, physical and chemical properties, reactions and their biological significance
10. Written examination of knowledge,
11. Fatty acids and lipids and their biological significance.

12. Heterocycles, nomenclature, physical and chemical properties, and their importance in living organisms.
13. Nucleic acids, physical and chemical properties and their biological significance.

Literature:

BALOGH, Á.: Szerves kémia. Budapest: Műszaki Könyvkiadó, 1993. - 148 s. - ISBN 9631849791.
BRUCKNER GY.: Szerves kémia I-2. kötet : Aminosavak, peptidek, fehérjék, szénhidrátok, Tankönyvkiadó, Budapest, 1982.(6. Vyd.), 1283 s. - ISBN 963 17 6643 8.
BRUCKNER GY.: Szerves kémia III-1. kötet : Heterociklusos vegyületek. Budapest : Tankönyv Kiadó, 1991. - 755 s. - ISBN 963 18 3637 1.
GREENWOOD, N. N., EARNSHAW, A.: Az elemek kémiája I.,II.és III.kötet, Nemzeti Tankönyvkiadó, Budapest, 2004, ISBN 963 19 5255 X.
KAJTÁR M.: Változatok négy elemre - Szerves kémia 1-2. Budapest : ELTE Eötvös Kiadó, (2009). - 1000 s. - ISBN 978 963 284 114 4.
KYSEĽ, Ondrej a György JUHÁSZ. Didaktický výklad súčasného poňatia periodickej sústavy prvkov - PSP. In: Škola a učiteľ v treťom tisícročí, Zv. 1 : Multimédiá vo vzdelávaní. Nitra: UKF v Nitre, 1999, S. 299-303. ISBN 80-967746-2-X.
MACH, Pavel, Šimon BUDZÁK, György JUHÁSZ, Miroslav MEDVEĎ a Ondrej KYSEĽ. Theoretical study (CC2, DFT and PCM) of charge transfer complexes between antithyroid thioamides and TCNE: electronic CT transitions. DOI 10.1007/s0894-014-2312-7 Journal of Molecular Modeling. Vol. 20, no. 6 (2014), p. 1-16. ISSN 1610-2940. WoS. IF (2013): 1,867.
PORÁČOVÁ, J., NAGY, M.: General and Applied Biochemistry for Natural-Sciences – 1. vyd. – Budapest: Műszaki Pedagógia Tanszék, 2021. – 223 s. – ISBN 978-963-421-847-0.
PORÁČOVÁ, J., MARIYCHUK, R., NAGY. M. a kol.: Základné biochemické procesy organizmov – 1. vyd. – Prešov: Prešovská univerzita v Prešove, Fakulta humanitných a prírodných vied - 2015. – 343 s. – ISBN 978-80-555-1514-4.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Dr. habil. PaedDr. György Juhász, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ DIE/22	**Name:** Dietetics

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 1 / 1 **For the study period:** 13 / 13
Methods of study: present

Number of credits: 1

Recommended semester/trimester of study: 6.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
The condition for passing the subject is active participation in the lessons, which consists of a theoretical part. To pass the subject, the student must write a test (50%) from the theoretical part. The student prepares a seminar paper (50 points), which he also presents. The seminar work will follow the theoretical part of the subject both thematically and in terms of content. The seminar paper must meet the content and formal requirements of scientific writing. Point distribution of the seminar work: interpretation of the situation//problem (10%), presentation of the literature review (10%), analysis and evaluation (10%), drawing conclusions and formulating proposals (10%), elaboration (10%).
Total student load: 1 credit = 25-30 hours
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
Knowledge:
- The student knows the development of the concept of health and can interpret levels of prevention in the context of healthy nutrition.
- The student knows the dietary causes of civilisation diseases.
- The student knows inorganic and organic nutrients that make up the organism, their use, and optimal and pathological processes of digestion and absorption.
- The student knows the types of malnutrition and is aware of the issue of individual responsibility.
- The student knows the criteria for a healthy diet and domestic and international sustainable dietary recommendations.
- The student knows the types of diet food and the role of a dietitian and nutritionist.

- The student knows how to navigate global and local problems related to the challenges of sustainable agriculture.
Abilities:
- The student can independently obtain information on the topic of dietetics.
- The student can calculate nutrients and analyse menus.
- The student can think critically based on his knowledge of anatomy and physiology.
- Based on his botanical and zoological knowledge and primary ecological education, the student can interpret the consequences of destructive human activities on the food safety of humankind and the food supply of future generations.
Competencies:
- The student is committed to a healthy and ecological diet.
- The student consciously and credibly represents evidence-based principles of healthy eating

Brief syllabus:

1. Levels of prevention. Health as an individual and social value. Epigenetic knowledge.
2. Nutrition-related diseases of civilisation, analysis of public health data. The importance of primary prevention and health-conscious behaviour in personalised nutrition.
3. Inorganic nutrients (water, vitamins, minerals).
4. Organic nutrients (proteins, fats, carbohydrates). Functional foods.
5. The process of digestion and absorption (anatomical-physiological knowledge), the importance of the microbiome, probiotics, and prebiotics.
6. Body composition. BMI. Types of malnutrition: obesity, malnutrition. Disturbances in the perception of body proportions.
7. Metabolic diseases, autoimmune diseases. Types of diabetes.
8. Absorption disorders, allergies, food intolerances.
9. Healthy eating. Dietary recommendations, types of diets - domestic and international overview.
10. Types of diets, fashionable diets.
11. Duties of a dietitian and nutritionist. Analysis of the menu, calculation of nutritional values.
12. Food security from farm to table. The importance of traditional ecological knowledge. The importance of water and carbon footprint and biodiversity in the food industry.
13. Sustainability in animal husbandry and plant production. Precision agriculture. Criteria for ecological/biological agriculture. Biodynamic agriculture. Foods of the future, research directions.

Literature:

FIEGLER, M.: Klinikai és gyakorlati dietetika. Medicina Könyvkiadó Zrt, Budapest, 2015. 668s. ISBN 978 963 226 562 9 https://www.etk.pte.hu/public/upload/files/Palyazati_iroda/elnyert/Klinikai_es_gyakorlati_dietetika.pdf
HOPFENZITZOVÁ, P.: Minerálne látky : Aby sme boli fit. 1. vyd. : Media klub, 1999. 88 s. ISBN 80-88963-22-2
MANZ F., VAN´T HOF M., HASCHKE F., DARVAY S. Iodine supply in children from different European areas: The Euro-Growth study. Journal of Pediatric Gastroenterology and Nutrition. Vol. 31, no. 1 (2000), p. 72-75.
NAGY, M.: Humánbiológia. – 1. vyd. – Komárno – Dunajská Streda: Selye János Egyetem – Lilium Aurum, 2006. – 250 s. – ISBN 8080622833.
ROIZEN, M. F.: You on a Diet: The Owner's Manual for Waist Management- 1. vyd. - New York : Simon & Schuster, Inc., 2006. - 370 s. - ISBN 9780743292542.
ŠIMONEK, J.: Pohyb a zdravie. 1. vyd. - Bratislava : PEEM, 2010. 155s. ISBN 978-80-8113-034-2
TARSOLY, E.: Funkcionális anatómia - 3. prepr. vyd. - Budapest : Medicina Könyvkiadó, 2010. - 261 s. - ISBN 978 963 226 248 2.

WARD, E. M.: A diétázás bibliája. 1. vyd. Pécs : Alexandra Kiadó, 2005.320 s. ISBN 963 369 475 2.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Dr. habil. Sarolta Zsuzsanna Mészárosné Darvay, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ EMB/22	**Name:** Embryology and education for parenthood

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 2.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
The condition for passing the subject is active participation in seminars and the preparation of a seminar paper, for which the student can receive 30% of the total assessment (assessment for the expertise of resources, graphic documentation and the overall content of the seminar paper at most) and from the seminar paper the preparation of a presentation, which the student will deliver at seminars. During the semester, there will be two written tests on which the student can achieve 35% of the total evaluation for each test.
Total student workload: 3 credits = 75-90 hours
26 hours of participation in contact classes; 25 hours of preparation of seminar work and presentation; 24-39 hours of self-study and preparation for written tests;
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
Knowledge:
- The student can characterize the genitals, gametes and their formation and the associated ovarian and uterine cycle of a woman.
- The student can characterize the ontogenetic developmental stages of a person from prenatal development together with the function of the placenta to postnatal development (newborn age).
- The student can characterize the origin and development of individual organs and organ systems during the prenatal development of the fetus.
- The student knows the factors affecting the fetus with the characteristics of the most common developmental and congenital disabilities in the fetus.
- The student knows the basics of sex education, which he can use to teach family planning in primary and secondary schools.

Abilities:
- The student can explain the basic mechanisms of human reproduction and physiological events occurring during pregnancy and after childbirth.
- The student can characterize the importance of sexual education in teaching biology and will transfer his knowledge to the methodology of teaching biology.
- The student can understand the importance of a healthy lifestyle during pregnancy and in preparation for parenthood.
- The student can use the acquired knowledge in his own life and pedagogical practice.
Competencies:
- The student has a positive approach to education about responsible family planning.
- The student has a positive attitude towards sex education; from the knowledge imparted, the children know sexually transmitted diseases, their mode of transmission, and their prevention and contraceptive methods.
- The student knows how to incorporate the importance of prevention into education and thus prevent termination of pregnancy.
- With the acquired knowledge, the student contributes to the creation of a responsible generation, which will have relevant information and knowledge about the reproductive systems, prenatal development, a healthy lifestyle during pregnancy, sexually transmitted diseases, as well as about contraceptive methods, sexual abuse and termination of pregnancy.

Brief syllabus:
1. Human embryology, topographic terms in embryology, and basic developmental processes. Genital organs and sex cells.
2. Gametogenesis - spermiogenesis, oogenesis. Reproductive cycle of a woman - ovarian and uterine cycle.
3. Overview of human ontogenetic development. Egg fertilization, blastogenesis. Implantation of blastocyst, trophoblast, embryoblast.
4. Germ leaves and extraembryonal parts. Primitive organs of the embryo, formation of the body of the embryo.
5. Placenta - the structure and function of the placenta, abnormalities in the shape and placement of the placenta. The umbilical cord, fruit packaging. Development of the external shape of the embryo and fetus, determination of the age of the embryo and fetus.
6. Writing the test. Head and neck region, gill arches and gill slits.
7. External genitalia. Development of internal organs - nervous system.
8. Development of the cardiovascular system and placental blood circulation. Development of the digestive system, respiratory system, urinary and genital organs and locomotor system.
9. Hormonal influences in pregnancy. Factors of the external environment - physical, chemical, biological.
10. Developmental disorders and congenital disabilities. Postnatal development of the individual, characteristics of the newborn.
11. Division of age periods in a person's life. Gender, gender and gender stereotypes.
12. Sexual and reproductive health and rights. Sexual education in primary and secondary schools. Planned Parenthood. Contraceptive methods.
13. Summarizing the curriculum and writing the test.

Literature:
HORTOBÁGYINÉ, N. Á.: Családi életre nevelés az oktatásban: Család-órákat segítő kézikönyv. – 1. vyd. – Budapest: Sapientia Szerzetesi Hittudományi Főiskola Családpeadagógiai Intézete, 2005. – 443 s. – ISBN 963 218 400 9.

KAPELLER, K.: Embryologický Atlas/Atlas of embryology. - 1. vyd. - Bratislava : Vydavateľstvo OSVETA, 1996. - 120 s. - ISBN 80-217-0549-3.
SADLER, T.W.: Orvosi embriológia, 12. vyd. -. Budapest. Medicina Könyvkiadó Zrt., 2014, - 426 s. - ISBN: 978 963 226 501 8.
SZILÁGYI, V.: Szexuálpedagógia. Szexuális egészségnevelés. - 1. vyd. - Budapest : Athenaeum 2000 Kiadó, 2006. - 223 s. - ISBN 963 9615 51 X
KISS, F., SZENTÁGOTHAI, J.: Az ember anatómiájának atlasza – 1., - 85. vyd. – Budapest: Medicina Könyvkiadó Zrt., 2012. – 415 s. – ISBN 978 963 226 347 2.
LÁZÁR, I., PIKÓ, B.: Orvosi antropológia. – 1. vyd. – Budapest: Medicina könyvkiadó, 2012. – 582 s. – ISBN 978 963 226 406 6.
NAGY, M.: Humánbiológia. – 1. vyd. – Komárno – Dunajská Streda: Selye János Egyetem – Lilium Aurum, 2006. – 250 s. – ISBN 8080622833.
WULF, Ch.: Az antropológia rövid összefoglalása. – 1. vyd. – Budapest: Enciklopédia Kiadó, 2007. – 323 s., - ISBN 963 9655 09 0.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: RNDr. Eva Tóthová Tarová, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ EPI/22	**Name:** Basics of epidemiology

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 1 **For the study period:** 13
Methods of study: present

Number of credits: 1

Recommended semester/trimester of study:

Level of study: I.

Prerequisites:

Conditions for passing the subject:
Total student load: 1 credit = 25-30 hours
Students participate in 13 hours of teaching. Through self-study, in the range of 15 hours, they prepare for the final test for 50 points.
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
Knowledge:
- The student knows the task's subject and epidemiology's history.
- The student knows the epidemiology of non-infectious (civilised) diseases,
- Knows the role of epigenetic factors in the development of diseases.
- The student knows the systematic classification of pathogens.
- The student knows the most important infectious diseases.
- The student has basic epidemiology knowledge and knows prevention tips.
- The student knows the role of the school in the prevention process.

Skills:
- The student can analyse epidemiological indicators of domestic and international epidemiological statistics.
- The student can apply his knowledge of health science in practice.
- The student can organise and implement the activities necessary to manage epidemics, taking into account the peculiarities of the age categories of the youth.

Competencies:
- The student positively approaches the tasks of epidemiological prevention and the tasks during the epidemic at schools.

- The student is a role model in preventing diseases by personal example.

Brief syllabus:

1. The subject of epidemiology, its role, and history.
2. Development of the epidemiological situation in Slovakia compared to international, mainly European, development.
3. Epidemiology of the most important non-infectious diseases. The role of epigenetic factors in the development of diseases.
4. Epidemiology of the most important infectious diseases. System of pathogens. Bacteriology, virology, mycology, parasitology.
5. The concept of infection and influencing factors. Infectious disease, epidemic. Basics of statistics.
6. Basic concepts of immunology, the concept of immunity, and its types.
7. Classification of infectious diseases based on their entry into the human body 1. Respiratory infections, diseases of the digestive tract, infections from food, infectious diseases of the bloodstream and lymphatic system.
8. Classification of infectious diseases based on their entry into the human body2. Infectious diseases penetrate through the immune system, and diseases spread through sexual contact.
9. Classification of infectious diseases based on their entry into the human body3. Zoonoses.
10. Basic epidemiological knowledge, subject of epidemiology, its importance.
11. Driving forces of the epidemic. Necessary activities in the event of epidemics.
12. Possibilities of prevention. The role of schools in prevention.
13. Final test.

Literature:

BETINA, V.: Mikrobiológia 1.,2. Bratislava : Slovenská Technická Univerzita, 1993, 472 p. ISBN 8022705764.
HORÁKOVÁ, K..: Mikrobiológia 2. Bratislava : Slovenská Technická Univerzita, 1993, 214 s. ISBN 802270525
KEVEI F., KUCSERA J.: Mikrobiológia I. 1. vyd. – Szeged: JATEPress, 2002, 301 s.
KEVEI F., KUCSERA J.: Mikrobiológia II. 1. vyd. – Szeged: JATEPress, 1999, 226 s.
KOPP M.: Epigenetika, epidemiológia és magatartásorvoslás. Magyar Tudomány, 2012, 923-930. http://www.matud.iif.hu/2012/08/06.htm
MAKOVICKÝ, P.: Mikrobiológia. 1. vyd. – Komárno: Univerzita J. Selyeho, 2018, 115 s., ISBN 978 80 8122 235 1.
NAGY, M.: Humánbiológia. – 1. vyd. – Komárno – Dunajská Streda: Selye János Egyetem – Lilium Aurum, 2006. – 250 s. – ISBN 8080622833.

Language, knowledge of which is necessary to complete a course:

Hungarian or Slovak

Notes:

Evaluation of subjects

Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Pavol Balázs, PhD., Dr. habil. Sarolta Zsuzsanna Mészárosné Darvay, PhD., Dr. habil. PaedDr. Melinda Nagy, PhD., RNDr. Eva Tóthová Tarová, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ FYP/22	**Name:** Phytopathology
Types, range and methods of educational activities: **Form of study:** Seminar **Recommended extent of course (in hours):** **Per week:** 2 **For the study period:** 26 **Methods of study:** present	
Number of credits: 3	
Recommended semester/trimester of study: 3.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: The condition for passing the subject is passing the final knowledge test for 100 points and writing a seminar paper. Total student workload: 3 credits = 75-90 hours The student will participate in 26 hours of teaching. He works for 20 hours on the seminar paper preparation and prepares for the test by self-study in the range of 30-45. The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject. Overall evaluation of the success of the subject: - A = 90-100% (90-100 points) - B = 80-89% (80-89 points) - C = 70-79% (70-79 points) - D = 60-69% (60-69 points) - E = 50-59% (50-59 points) - FX = 0 – 49% (0 – 49 points)	
Results of education: Knowledge: - The student will learn about plant infectious diseases' causative agents, such as phytopathogenic viruses, viroids, mycoplasmas, bacteria and fungi. - The student will learn the life cycles of pathogenic organisms, especially fungi, as the basis for the successful cultivation of economic plants. - The student knows the negative side of protecting agricultural plants with chemicals. Abilities: - The student can identify some widespread diseases of cultivated plants. - The student can see plant pathogens in ecological contexts. Competencies: - The student has a positive attitude toward the diversity of life in the cultural landscape and can consider the consequences of chemical intervention in order to preserve yields from economic plants in the environment.	

- The student leads his environment to a diversified attitude towards economic, rare and invasive species.

Brief syllabus:

1., Introduction to the scientific discipline - phytopathology. Symptoms of diseases on plants
2., Physiological diseases. Characteristics of non-cellular pathogenic microorganisms
3., Characteristics of prokaryotic pathogenic microorganisms
4., Characteristics of eukaryotic pathogenic microorganisms 1. (fungi below)
5., Characteristics of eukaryotic pathogenic microorganisms 2. (fungi above)
6. Harmfulness of pathogenic microorganisms. Pathogenesis, Methods of protection against plant pathogens.
7., Economically significant cereal diseases.
8., Economically essential diseases of fruit species (seeds, drupes)
9., Economically significant diseases of fruit species (other fruits and vines)
10., Economically essential diseases of vegetables (fruit vegetables, root vegetables)
11., Economically essential diseases of vegetables (other vegetables)
12., Economically essential diseases of ornamental plants
13., The impact of chemical agents used for plant protection on the environment

Literature:

GÁBORJÁNYI, R.: Molekuláris növénykórtan. - Budapest : Agroinform Kiadó, 2007. - 338 s. - ISBN 9789635028719.
HORVÁTH, J.: Növényvirusok. Budapest : Mezőgazda Kiadó, 1999. 430 s. ISBN 963 9239 372.
TÚRI I.: Zöldséghajtatás : Gazdakönyvtár. - 1. vyd. - Budapest : Mezőgazda Kiadó, 1993. - 419 s. - ISBN 963 8160 56 X.
ŽEMLA, J. Všeobecná virológia - 1. vyd. - Bratislava : SAP, 1995. - 238 s. - ISBN 80-85665-47-6.

Language, knowledge of which is necessary to complete a course:

Hungarian or Slovak

Notes:

Evaluation of subjects

Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Pavol Balázs, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ FYR/22	**Name:** Plant physiology

Types, range and methods of educational activities:
Form of study: Seminar / Practical
Recommended extent of course (in hours):
Per week: 1 / 2 **For the study period:** 13 / 26
Methods of study: present

Number of credits: 4

Recommended semester/trimester of study: 5.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
There will be two written examinations during the semester. At the end of the semester, the student submits a laboratory protocol from the laboratory exercises. Completion of the subject is conditional upon completing two mid-term examinations and a final oral and written exam. Participation in the exam is conditional on handing over the protocol from the laboratory exercises before the exam and passing written examinations during the semester.
Total student workload: 4 credits = 100-120 hours
The student will participate in theoretical teaching and laboratory exercises for 39 hours. Twenty hours of work on preparing the protocol from laboratory exercises and 40-60 hours of self-study. The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
Knowledge:
- The student knows the professional terminology of the scientific field
- The student knows the basic physiological processes of plants.
- The student knows the importance of photosynthesis for life on Earth.
- The student knows the importance of mineral nutrition for plants.

Abilities:
- The student can approach the issue of plant physiology to his students through simple laboratory experiments.
- The student will understand the life cycle of plants and their regulatory mechanisms.

Competencies:
- Based on acquired theoretical knowledge and practical experience, the student can explain the importance of physiological research for human society.

- The student leads his surroundings to a better understanding of biological processes.

Brief syllabus:

Physiology of plants - Seminar
1., Introduction to plant physiology
2., The influence of the environment on the physiological processes of plants
3., Plant nutrition (mineral, heterotrophic)
4., Photosynthesis
5., Breathing
6., Nitrogen metabolism in the plant body
7., Transport of water in plants
8. Transport of substances in the plant body
9., Growth and development
10., Important growth regulators - phytohormones
11., Ontogeny of higher plants
12., Vegetative and generative phases of plant development
13., Movements of plants
Physiology of plants - Practical lessons
Separate laboratory exercises are part of the subject. In the introductory lesson, the student gets to know the laboratory regulations. He is gradually familiar with the instructions for performing experiments. He will document the conducted experiments in plant physiology protocols. In the last week of the semester, the student will submit all the protocols, and he will be tested on the theory of one of the experiments. During the practical lessons in the 6th and 12th weeks, they write a review of the theoretical part of the study.

Literature:

HARASZTY Á., (1990): Növényszervezettan és növényélettan. Tankönyvkiadó, Budapest ISBN 963 18 3006 3
HEJNÁK V., a kol. (2010) : Fyziologie rostlin. Vydala Česká zemedelská univerzita v Praze ISBN 978-80-213-1667-6
SUBA J., (1991): Növényélettani gyakorlatok. Tankönyvkiadó, Budapest

Language, knowledge of which is necessary to complete a course:

Hungarian or Slovak

Notes:

Evaluation of subjects

Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Pavol Balázs, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ FYZ/22	**Name:** Animal and human physiology
Types, range and methods of educational activities: **Form of study:** Lecture / Practical **Recommended extent of course (in hours):** **Per week:** 2 / 1 **For the study period:** 26 / 13 **Methods of study:** present	
Number of credits: 5	
Recommended semester/trimester of study: 5.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: General conditions for passing the subject: active student participation in the lessons, which consist of a theoretical and practical part. - student participation in assigned practical and theoretical tasks (30%) - involvement in analysis and discussions during lectures (5%) - proposal of an educational activity project (5%) - oral exam (60%) Protocol evaluation criteria: - content page of protocols (50%) - formal protocol page (10%) - manual skills (40%) Total student load: 5 credits = 125-150 hours - 39 hours of participation in contact classes; 11 hours of preparation of protocols; 20 hours of preparation of the educational activity project and tasks assigned in the lessons; 55-70 hours of self-study; The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject. Overall evaluation of the success of the subject: - A = 90-100% (90-100 points) - B = 80-89% (80-89 points) - C = 70-79% (70-79 points) - D = 60-69% (60-69 points) - E = 50-59% (50-59 points) - FX = 0 – 49% (0 – 49 points)	
Results of education: Knowledge: - The student can characterise the basic concepts of physiology, explain the basic principles of physiology - The student can characterise the physiology of individual human and animal organ systems, emphasising these systems' functional characteristics and differences in specific systematic units.	

- The student can summarise theoretical knowledge about the primary pathological conditions of these organ systems.
Abilities:
- The student can understand and understand the physiological events in the bodies of animals and humans.
- The student can explain and use his knowledge of physiology in his pedagogical practice.
- The student can practically perform basic laboratory exercises
- The student can explain the importance of health protection
Competencies:
- The student will gain an overview of the functioning of the body of animals and humans, as well as the diseases that can most often affect health, thus gaining a positive attitude towards protecting and maintaining their health.

Brief syllabus:

Literature:
ČALKOVSKÁ, A.: Fyziológia človeka : pre nelekárske študijné programy. - 1. vyd. - Martin : Osveta, 2010. - 220 s. - ISBN 978-80-8063-344-8
HILL, R.W. et al.: Animal Physiology. 3rd ed., 2012, ISBN 978-0-87893-559-8
KISS, J.: Élettan : Feladatok és megoldásaik. Budapest : Typotex, 2004. - 660s. - ISBN 963 9548 07 3.
MADER, S. S.: Human biology. - 11. vyd. - Boston: Wm. C. Brown Publishers, USA, – 2008. - 600 s. - ISBN 0-978-0-07-016778-0.
MYSLIVEČEK, J., TROJAN, S.: Fyziológie do kapsy. Praha : Triton, 2004. - 466s. - ISBN 80-7254-497-7
NAGY, M.: Humánbiológia. – 1. vyd. – Komárno – Dunajská Streda: Selye János Egyetem – Lilium Aurum, 2006. – 250 s. – ISBN 8080622833.
PORÁČOVÁ, J., NAGY, M., BERNÁTOVÁ, R., a kol. Fyziológia živočíchov a človeka - 1. vyd. - Prešov : Fakulta humanitných a prírodných vied PU v Prešove, 2014. - 591 s., [36,65 AH]. - ISBN 978-80-555-1150-4.
PORÁČOVÁ, J., NAGY, M., MYDLÁROVÁ-BLAŠČÁKOVÁ, M., a kol. Cvičenia z fyziológie živočíchov a človeka. - 1. vyd. - Prešov : FHPV PU v Prešove, 2014. - 313 s. - ISBN 978-80-555-1149-8.
PORÁČOVÁ, J., NAGY, M., MYDLÁROVÁ-BLAŠČÁKOVÁ, M., a kol. Ekofyziológia živočíchov a človeka - 1. vyd. - Prešov : Prešovská univerzita v Prešove, Fakulta humanitných a prírodných vied, 2015. - 583 s. - ISBN 978-80-555-1524-3.
REECE, W.R.: Fyziologie a funkční anatomie domácích zvířat. 2., rozšířené vydání, Vydavateľstvo: Grada, 2010, 473 strán, ISBN: 9788024732824 Oldal: 29
SZENTÁGOTHAI, J.: Funkcionális anatómia I.-III. Budapest : Medicina Könyvkiadó, 2006. - 710, 600, 800. - ISBN 963 242 565 0.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:
Lectures:
1. Introduction to physiology, basic physiological terms
2. Cell physiology, cell membrane.
3. Physiology of the circulatory system
4. Physiology of sensory organs: vision, skin receptors
5. Physiology of sensory organs: smell, taste, hearing, perception of body balance

6. Physiology of the nervous system
7. Physiology of the endocrine system
8. Physiology of the gastrointestinal system
9. Physiology of the respiratory system
10. Physiology of the excretory system
11. Physiology of the reproductive systems
12. Physiology of the muscular system
13. Physiology of bones and joints

Practical lesson:
1. Rules of work in the laboratory, work safety
2. Cell physiology exercise
3. Exercise on the physiology of the circulatory system I.
4. Exercise in the physiology of the circulatory system II.
5. Exercise on the physiology of sensory organs: sight
6. Exercise on the physiology of sensory organs: skin receptors
7. Exercise on the physiology of sensory organs: hearing
8. Exercise on the physiology of the nervous system I.
9. Exercise in the physiology of the nervous system II.
10. Physiology exercise of the gastrointestinal system and the respiratory system
11. Exercises on the physiology of the endocrine system, the excretory system, the reproductive system and the musculoskeletal system
12. Proposal for an educational activity project
13. Control of laboratory protocols from physiology

Evaluation of subjects

Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Dr. habil. PaedDr. Melinda Nagy, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ HIC/22	**Name:** Histology and cytology

Types, range and methods of educational activities:
Form of study: Lecture / Practical
Recommended extent of course (in hours):
Per week: 1 / 1 **For the study period:** 13 / 13
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 1.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
The condition for passing the subject is active participation in the lessons, which consist of a theoretical and practical part. The student will learn to work with a microscope during the practical part. He documents his work with a protocol. At the end of the semester, he passes a test and an oral exam. Submitting the protocols and passing the test are conditions for passing the subject.
Final grade of the subject: A – 100-90%, B – 89-80%, C – 79-70%, D – 69-60%, E – 59-50%.
Achieving 50% of the total points is necessary to award credits.
Intermediate assessment of protocols from practical exercises - 50%, and final test - 50%.
Total student workload: 3 credits = 75-90 hours
The student will attend classes in the range of 26 hours. He works for 20 hours on the protocols and prepares for the test by self-study for 30-45 hours.
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
Knowledge:
- The student knows the professional terminology of the scientific field.
- Can identify the basic conceptual, categorical and methodological apparatus of the subject.
- He has expanded his knowledge in related sciences and understands and categorizes connections from other scientific disciplines.
- By completing the subject, students will learn about the prokaryotic and eukaryotic cells as the basic structural and functional units of living organisms.
- The student knows the essential characteristics of plant tissues and animal tissues.
- The student knows the structure of the microscope as a work tool in biological work.

Abilities:
- The student can work with a microscope.
- The student can prepare a simple specimen for further examination under the microscope.
Competencies:
- The student has a positive attitude toward working with a microscope to solve biological problems.
- The student can work independently with the school microscope.

Brief syllabus:

Lecture:
1., Brief history of cytology and histology.
2., Organization of the pro- and eukaryotic cells.
3., Characteristics. Cells of plants, animals and fungi.
4., Chemical composition of the cell - inorganic compounds
5., Chemical composition of the cell-organic compounds
6., Structure and function of cells - biological membranes, nucleus and nucleolus, lysosomes, microtubules, endoplasmic reticulum.
7., Structure and function of cells - mitochondria, plastids, microbodies, Golgi apparatus.
8., Cell reproduction - mitosis, meiosis and cytokinesis.
10., Classification of plant tissues: Meristematic tissues, mechanical tissues, covering tissues, absorbent tissues, ventilation tissues, excretory tissues, storage tissues, and conductive tissues.
11., Classification of tissues I.: epithelial, connective.
12., Classification of tissues II.: muscular, nervous.
13., Aging and cell death.
Exercise:
1. Introduction. Work safety in biological laboratories.
2., Types of microscopes.
3., Construction of school microscopes.
4., Other laboratory techniques and their use.
5., Using a microscope - observation of permanent preparations.
6., Using a microscope - manual preparation and observation of preparations from different materials.
7., Observation of a plant cell and its nucleus.
8., Observation of plant tissues and plastics.
9., Observation of an animal cell.
10., Observation of human epithelium, hair, nails, etc.
11., Observation of tissues.
12., Observation of unicellular organisms.
13., Observation of osmosis on cucumber cells.

Literature:

BÓZNER, A: Cytológia. Osveta, 1992. - 266. - ISBN 8021701684.
HUDÁKOVÁ, A.: Histológia živočíchov. Bratislava : Univerzita Komenského v Bratislave, 1994. - 100. - ISBN 8022307297.
KONRÁDOVÁ, V., VAJNER, L., UHLÍK, J.: Histologie přednášky pro bakalařské studium. - 1. vyd. - Praha : HH, 2005. - 186 s. - ISBN 80 7319 009 5.
NAGY, M.: Humánbiológia, Lilium Aurum, Dunaszerdahely, 2006, ISBN 8080622833.
PAPP, M.: A növények szövetei és a szervek szövettana. - Debrecen : Kossuth Egyetemi Kiadó, 2003. - 210. - ISBN 0013794.

Language, knowledge of which is necessary to complete a course:

Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Pavol Balázs, PhD., PaedDr. Daniel Dancsa, Dr. habil. PaedDr. Melinda Nagy, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ OB/22	**Name:** Bachelor's Thesis and Defense
Types, range and methods of educational activities: **Form of study:** **Recommended extent of course (in hours):** **Per week: For the study period:** **Methods of study:** present	
Number of credits: 8	
Recommended semester/trimester of study:	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: While writing the Bachelor thesis, the student follows the instructions of the supervisor and the Rector's guidelines on the preparation, registration, access and archiving of Bachelor and Master's theses, dissertations and habilitation theses written at Selye János University. The recommended length of the Bachelor thesis is 30 to 40 pages (54 000 to 72 000 characters with spaces). The deadline for submission of the Bachelor thesis is specified in the timetable for the academic year. The Bachelor thesis is checked for authenticity in the central register of final theses. A report is drawn up on the outcome. The examination of authenticity is a prerequisite for the defence. The submission of the Bachelor thesis includes a licence agreement between the student and the Slovak Republic, represented by the University, on the use of digital copies of the Bachelor thesis. The Bachelor thesis is evaluated by the supervisor and the assessor who prepare their evaluation on the basis of the criteria provided. The supervisor mainly assesses the fulfilment of the objective, the student's autonomy and initiative in the development of the topic, the cooperation with the supervisor, the logical structure of the Bachelor thesis, the chosen methods and methodology, the professional quality of the thesis, the depth and quality of the development of the topic, the usefulness of the thesis, the applicability of its results, the work with literature, the relevance of the sources used, as well as the formal features, spelling, style and originality of the thesis. The assessor focuses on the relevance and appropriateness of the topic of the thesis, the aim of the thesis and its fulfilment, the logical structure of the Bachelor thesis, the sequencing and division of chapters, the appropriateness of the methods and methodology used, and the professional quality of the thesis, the depth and quality of the treatment of the topic, the usefulness of the thesis, the applicability of its results, the work with the literature, the relevance of the sources used, and the formal features, spelling, style and originality of the thesis. The examination board will assess the originality of the thesis, the degree of student involvement in the solution of the academic problem, the student's self-reliance and ability to solve the scientific problem - including the search for literature, the formulation of objectives, the choice of method, the selection of research material, the ability to evaluate, the ability to discuss the results, the summary and presentation of the results, and the relevance to the educational process, etc.	

The committee will also assess the ability to present the results, including answers to questions on the topic, adherence to time constraints, etc.
The State Examination Board will evaluate the examination in an informal meeting and decide the mark. The grading is a complex assessment of the quality of the Bachelor thesis and its defence, taking into account the reviews and the process of thesis defence. The committee will mark the defence with an aggregate mark. The mark may be the same as, or better or worse than, the mark given in the marks, depending on the thesis defence.
The grading scale is A - 100-91%, B - 90-81%, C - 80-71%, D - 70-61%, E - 60-50%. A student who does not achieve 50% will not receive credit.
The results of the oral and theoretical part of the examination will be announced publicly by the chairperson of the board in public.

Results of education:
Knowledge:
- The student is familiar with the structure of an academic publication,
- The student can use the resources in an independent and creative way,
- The student is able to analyse and evaluate the problem under study in his/her field of research,
- The student is able to select research methods and procedures appropriately and to apply them effectively.

Skills:
- The Bachelor thesis demonstrates the student's knowledge of the theoretical and practical aspects of the problem under study,
- The student should demonstrate the ability to work with national and international literature, to select relevant information and to use his/her ability to collect, interpret and process literature,
- The student is able to learn independently, enabling him (her) to continue his (her) studies,
- The student is able to collect and interpret relevant data (facts) in the field of his (her) study and to make decisions that take into account social, scientific and ethical aspects,
- The student is able to support the ideas presented with arguments and to draw practical conclusions and formulate proposals,
- The student is able to present the results of the Bachelor thesis,
- The student is able to respect the principles of academic integrity and ethics.

Competences:
The student is able to
- express his/her own linguistic and professional culture and approach to the professional issues encountered in the course of his/her studies, in an appropriate way
- reason and apply knowledge methodologically, both theoretically and practically,
- put knowledge into practice and to organise it,
- answer the questions of the supervisor and the assessor to the required standard and thus be able to defend their Bachelor thesis successfully.

Brief syllabus:
The procedure for defending the Bachelor Thesis is as follows:
1. The student presents his/her thesis.
2. The main points of the thesis supervisor' and opponent's reviews are presented.
3. The student answers the questions of the supervisor and the opponent.
4. Professional discussion of the Bachelor Thesis, when the student answers questions.

The presentation of the Bachelor thesis should mainly include the following points:
1. A brief justification of the choice of topic, its relevance and practical utility.
2. Explanation of the objectives of the thesis and the methods used.
3. The main content of the thesis.

4. The conclusions and proposals drawn by the student.
A copy of the thesis and its electronic presentation are provided to the student during the presentation. The student presents the thesis on his own for a minimum of 10 minutes. He/she may use computing devices.
The final thesis is available to the committee before and during thesis defence.

Literature:
KATUŠČÁK, D. Ako písať vysokoškolské a kvalifikačné práce. Bratislava: Enigma, 2004.
Aktuálna Smernica rektora o úprave, registrácii, sprístupnení a archivácii záverečných prác na Univerzite J. Selyeho – dostupné na https://www.ujs.sk/documents/Smernica_c.2-2021o_zaverecnych_pracach_.pdf

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher:

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ OKB/22	**Name:** Slovak professional conversation

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 3.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
The condition for passing the subject is active participation in the lessons, which consist of a theoretical and practical part. As part of the practical part, the student will have to develop an independent project in the Slovak language based on the knowledge acquired during the subject. The project will consist of technical terms and topics of a biological nature. The student submits the project for review at the end of the semester and presents it (30%). During the exam period, students take a final exam on theoretical knowledge (70%).
Total student workload: 3 credits = 75-90 hours
26 hours of participation in contact classes; 20 hours of preparation of the educational activity project and tasks assigned in the lessons; 35-45 hours of self-study;
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
The student acquires new knowledge, expands the vocabulary of professional terms, and is capable of continuous communication at the professional level.
Knowledge:
- The student becomes familiar with new words, professional expressions and stylization in the Slovak language.
- The student expands his vocabulary and can express his thoughts professionally.
- The student knows how to work more efficiently with Slovak texts.
Abilities:
- The student can understand Slovak professional texts at a higher level.
- The student can develop a project in the Slovak language.

- The student can use the knowledge acquired from Slovak conversation and apply it in preparing the final theses.
Competencies:
- The student will develop a more positive relationship with the Slovak language and gain more self-confidence in his abilities.
- With a better understanding of Slovak texts, the student gains a more positive attitude and removes the fear of unknown concepts.
- The student is active in pedagogical areas of education within his competencies and takes responsibility for forming prejudices against the Slovak language and its practical use in practice.

Brief syllabus:
1. Basic technical terms from biology
2. Professional conversation focusing on cell biology
3. Professional conversation focusing on zoology 1
4. Professional conversation focusing on zoology 2
5. Professional conversation focusing on ethology
6. Professional conversation focusing on botany 1
7. Professional conversation focusing on botany 2
8. Professional conversation focusing on genetics
9. Professional conversation focusing on the basics of agriculture
10. Professional conversation with a focus on laboratory work
11. Expert conversation focusing on ecology
12. Professional conversation focusing on the environment
13. Submission and presentation of the project

Literature:
GLOVŇA J., DUDOVÁ K.: Konverzačná príručka zo slovenského jazyka. - 1. vyd. - Nitra : Univerzita Konštantína Filozofa, 2015. - 174 s. - ISBN 978-80-558-0850-5.
KISS T., GAJDA T., GYURCSIK B.: Bevezetés a bioszervetlen kémiába. - 1. vyd. - Budapest : Nemzeti Tankönyvkiadó, 2007. - 300 s. - ISBN 978-963-19-5999-4.
NAGY, M.: Humánbiológia. Komárno : Selye János Egyetem, 2006. 250 s. ISBN 8080622833.
NOVÁK, J. – SKALICKÝ, M.: Botanika : Cytologie, histologie, organologie, systematika. 2. vyd. - Praha : Powerprint, 2009.352 s. ISBN 978-80-904011-5-0.
O. REECE W.: Fyziologie a funkční anatomie domácích zvířat . - 2.rozšířené vyd. - Praha : Grada Publishing, a.s., 2011. - 473 s. - ISBN 978-80-247-3282-4.
TÓTH, Z.: Bevezetés a Kémiába : Fizikai-kémiai laboratóriumi gyakorlatok biológiaszakos halgatók számara. 1. vyd. - Debrecen : Kossuth Egyetemi Kiadó, 2002. 89 s.
WOLF, J.: ABC človeka. 1. vyd. - Praha : Orbis, 1977. 462s.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Iveta Szencziová, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ PEP/22	**Name:** Cultivation of plants

Types, range and methods of educational activities:
Form of study: Practical
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 4.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
The condition for passing the subject is active participation in the lessons, which consist of a theoretical and practical part. As part of the practical part, the student will have to prepare a seminar paper based on the knowledge he acquired while teaching the subject. The seminar work will consist of technical terms and topics of an agricultural nature. The seminar paper must meet the content and formal requirements of scientific writing. At the end of the semester, the student submits the seminar work for review and presents it as a presentation (20%). During the exam period, the student writes a test on theoretical knowledge (80%).
Total student workload: 3 credits = 75-90 hours
26 hours of participation in contact classes; 20 hours of preparation of the educational activity project and tasks assigned in the lessons; 35-45 hours of self-study;
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
The student acquires new knowledge about agriculture, expands his knowledge of technical terms and can understand and carry out basic cultivation practices.
Knowledge:
• The student can apply the acquired knowledge in the teaching-learning process of biology.
• The student will become familiar with growing practices, the importance of individual types of plants and their proper treatment.
• The student will expand his knowledge about plant reproduction, their requirements, and the proper harvesting of fruits.
• The student knows how to work more efficiently with tools and aids for growing plants.
Abilities:

• The student can understand agrotechnical concepts, procedures, and agriculturally essential works.
• The student can develop a complex seminar work and use the knowledge from it in practice.
• The student can use the acquired knowledge in practice and is also able to interpret it for other persons or students in the future teaching process.
Competencies:
• The student will develop a more positive attitude towards growing practices and gain more self-confidence in his abilities.
• Through a better understanding of cultivation operations, the student will acquire lifelong knowledge that will positively affect his attitude towards nature and the soil.
• The student is active in the pedagogical areas of education within his competencies; he takes responsibility for forming prejudices against cultivation procedures and their effective use in practice.

Brief syllabus:
1. Basic division of growing practices and their practical use
2. Function and method of use of basic types of tools and aids
3. Treatment and reproduction of plants, requirements of plants for habitat
4. Cultivation procedures - garden plants - vegetables 1
5. Cultivation practices - garden plants - vegetables 2
6. Cultivation practices - fruit trees and bushes 1
7. Cultivation practices - fruit trees and bushes 2
8. Cultivation practices - ornamental plants
9. Cultivation procedures - potted plants
10. Cultivation practices and their impact on the environment, agrochemistry
11. Cultivation practices in greenhouses, greenhouses and flower beds
12. Submission and presentation of seminar papers
13. Submission and presentation of seminar papers

Literature:
KOMONYI É.: Mezőgazdasági alapismeretek. - 1. vyd. - Ungvár : Líra Poligráfcentrum, 2013. - 184 s. - ISBN 978-617-596-129-2.
ÁNGYÁN JÓZSEF, MENYHÉRT ZOLTÁN. : Alkalmazkodó növénytermesztés, környezet- és tájgazdákodás / - 1. vyd. - Budapest : Szaktudás Kiadó Ház, 2004. - 559 s. - ISBN 963 9553 14 X.
HATVANI A., TOMCSÁNYI E.: Kertészeti növényvédelemi gyakorlatok : Növénykórtan és növényvédelmi állattan /. - 1. vyd. - Kecskemét : KFKFK, 2001. - 154 s.
Gyümölcs-, szőlő- és zöldségtermesztés, 2002 : KSH, 2002. - 30. - ISBN 0085723.
KOLTAY Z., VIOLA M.: Kertészeti termesztés speciális gépei - 1. vyd. - Kecskemét : Kertészeti és Élelmiszeripari Egyetem, 1998. - 229s.
ORLÓCI L.: Gyógynövények enciklopédiája. - Budapest : Ventus Libro Kiadó, 2005. - 320 s. ISBN 963 9546 30 5.
SZŐKE L.: Szőlőtermesztés - 1. vyd. - Kecskemét : Kertészeti Föiskola, 2000. - 192s.
TERBE I., HODOSSI S., KOVÁCS A.: Zöldségtermesztés termesztőberendezésekben. - 1. vyd. Budapest : Mezőgazda Kiadó, 2005. - 271 s. - ISBN 963 286 204 X.
WALTER S. J, S. CAMPBELL, A. KELLOGG, F. STEVENS, DONOGHUE, M.J. .: Plant Systematics : A phylogenetic approach. - 3. vyd. - Massachusetts : Sinauer Associates Inc., 2010. - 611 s. - ISBN 978 0 87893 407 2.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Iveta Szencziová, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ POZ/22	**Name:** Health development

Types, range and methods of educational activities:
Form of study: Lecture / Seminar
Recommended extent of course (in hours):
Per week: 1 / 1 **For the study period:** 13 / 13
Methods of study: present

Number of credits: 2

Recommended semester/trimester of study: 5.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
During the semester, students must meet the following requirements. A test (50%) must be written from the theoretical curriculum.
Evaluation of seminar work: planning of the thematic day of health (10%), presentation of literature (10%), analysis, evaluation (10%), reflection, drawing conclusions (10%), elaboration, language correctness (10%).
Total student load: 2 credits = 50-60 hours
26 hours of participation in contact classes; 20 hours of preparation of the educational activity project and tasks assigned in the lessons; 10-20 hours of self-study;
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
Knowledge:
- The student knows the holistic conceptual system and determinants of health
- The student has anatomical, physiological, genetic and ecological knowledge about the importance of factors determining and influencing health.
- The student knows the areas, tasks and methods of comprehensive school health support
- The student has scientific and methodological knowledge that supports the harmonious and complex development of the personality of children and youth and their full health development.
- The student knows the sociocultural definition, connections, components and determinants of health and can interpret the resulting differences.
- The student has a set of tools for differentiated pedagogical tasks of health development resulting from a comprehensive approach to health.
Abilities:

- The student can analyse domestic and international data on health statistics indicators
- The student can apply his knowledge of health science with a holistic approach and in an adaptive way
- The student can design and implement a thematic health day program considering children's individual characteristics, needs and age characteristics.

Competencies:
- The student undertakes to choose strategies, methods and activities that help systematise and expand the experience and knowledge of children and youth.
- The student commits to fully developing the health of children and youth.
- The student has a positive attitude toward the creation of a favourable school environment
- Through his example, the student plays a role in shaping health-conscious behaviour

Brief syllabus:

Lecture:

1. Bio-psycho-social conceptual framework of health, the concept of health education, health promotion, health education.
2. Analysis of domestic and international data on health statistics indicators.
3. The role of environmental and sociocultural influences in maintaining health.
4. The role of communities in promoting health, active participation in local programs instead of passive inclusion.
5. Health education and prevention place in the State Education Program and the School Education Program.
6. Areas, tasks and methods of comprehensive school health support.
7. Presentation of the possibilities of primary prevention at school, taking into account the developmental aspects of disadvantaged children with special educational needs
8. Aspects and tools of planning and evaluation of the school health promotion program - possibilities of special development for pupils with special educational needs
9. Planning the school health promotion program, organisational tasks, documentation, evaluation, considerations
10. Planning the thematic health day, its organisation, methods, tools, documentation, evaluation and reflection - theory 1.
11. Planning the thematic health day, its organisation, methods, tools, documentation, evaluation and reflection - theory 2.
12. Planning the thematic health day, its organisation, methods, tools, documentation, evaluation and reflection - theory 3.
13. Writing the test

Seminar:

1. Literary overview of the concept of health
2. Determinants of health, literature review.
3. Inequality in health, overview and analysis of statistical data
4. Overview of local health promotion programs.
5. Concept of health promotion school.
6. Practical implementation of comprehensive health support in schools, analysis of programs
7. Planning, organisation, methods, tools, documentation, evaluation of the thematic health day - reflection - practice
8. Planning, organisation, methods, tools, documentation, evaluation of the thematic health day - reflection - practice
9. Planning a thematic day of health - group work
10. Planning a thematic day of health - group work
11. Group student presentations and conducting exercises 1.

12. Group student presentations and conducting exercises 1.
13. Evaluation

Literature:

ČIHÁK, R.: Anatomie I.-III. Avicenum Praha, 1987, 1989, 1997. ISBN 80-7169-970-5
DYLEVSKÝ, I.: Somatológia. Bratislava : OSVETA, 2000. - 439 s. - ISBN 80-8063-127-1
LEHOTSKY Á, FALUS S, LUKÁCS Á, FÜZI R, GRADVOHL E, , MÉSZÁROSNÉ DARVAY S et al. Kortárs egészségfejlesztési programok közvetlen hatása alsó tagozatos gyermekek kézhigiénés tudására és megfelelő kézmosási technikájára. Orvosi Hetilap. Vol. 159, no. 12 (2018), p. 485-490.
MADER, S. S.: Human biology. Wm. C. Brown Publishers, USA, Third edition 1992. 500 s. - ISBN 0-697-12333-2
McCRACKEN, T.O.: Háromdimenziós anatómiai atlasz. Budapest : Scolar Kiadó, 2000. - 237 s. - ISBN 978-963-9193-99-4
NAGY, M.: Humánbiológia, Lilium Aurum, Dunaszerdahely, 2006, ISBN 80-8062-283-3.
SZENTÁGOTHAI, J.: Funkcionális anatómia I.-III. Budapest : Medicina Könyvkiadó, 2006. - 710, 600, 800. - ISBN 963 242 565 0
VITÁLYOS G. Á., DANCS G, BÄRNKOPFNÉ ZSOFFAY K, VENYINGI B, MÉSZÁROSNÉ DARVAY S. Egyetemi hallgatónők vérnyomásának tápláltsági állapotának és életvitelének összefüggései. Anthropologiai Közlemények, 59 (2018), p. 31-45.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Dr. habil. Sarolta Zsuzsanna Mészárosné Darvay, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ TEB/22	**Name:** Botanical fieldwork
Types, range and methods of educational activities: **Form of study:** Practical **Recommended extent of course (in hours):** **Per week:** 2 **For the study period:** 26 **Methods of study:** present	
Number of credits: 4	
Recommended semester/trimester of study: 4.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: Protocol on botanical practice and preparation of a herbarium of 200 items from which students will be tested. The scientific name of 30 plants will be tested by random selection. Credits will not be awarded to a student who does not recognize at least 16 items out of 30 randomly selected from his herbarium. Total student workload: 4 credits = 100-120 hours The student will participate in field practice for 26 hours. It takes 75-100 hours for the post-harvest treatment of plant material, its inclusion in the herbarium and its determination with the help of the identification key and learning of the herbarium. The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject. Overall evaluation of the success of the subject: - A = 90-100% (90-100 points) - B = 80-89% (80-89 points) - C = 70-79% (70-79 points) - D = 60-69% (60-69 points) - E = 50-59% (50-59 points) - FX = 0 – 49% (0 – 49 points)	
Results of education: Knowledge: - The student will learn to make a herbarium of vascular plants. - The student knows the current law on nature and landscape protection. Abilities: - The student can identify higher plants according to the identification key. - The student can establish a handy herbarium in the future workplace. Competencies: - The student has a positive attitude towards plant protection.	
Brief syllabus: Fieldwork in the scope of 5 days.	

Students will learn to identify taller plants using an identification key. They collect plant material in various habitats for the preparation of herbarium. According to agreement and possibilities, they will take part in an excursion in the botanical garden or in the arboretum. Protected and endangered taxons will be documented with photographs—preparation of herbarium. Students will be familiar with the current law on nature and landscape protection.

Literature:

BALÁZS P., (2012): Základy systému krytosemenných rastlín – A zárvatermő növények rendszerének alapjai. Univerzita J. Selyeho – Selye János egyetem, Komárno ISBN 978-80-8122-054-8
GOJDIČOVÁ E., MÁRTONFI P., MÁRTONFIOVÁ L., (2008): Botanika-Cievnaté rastliny. Vydavateľstvo : Ústav vysokohorskej biológie Žilinskej univerzity ISBN 977808889223121
SIMON T., (2004) : A magyarországi edényes flóra határozója. Nemzeti tankönyvkiadó, Budapest. ISBN 963 19 1226 4
Aktuálny zákon NR SR o ochrane prírody a krajiny a súvisiace vyhlášky MŽP SR.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Pavol Balázs, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ VSB1/22	**Name:** General biology I.

Types, range and methods of educational activities:
Form of study: Seminar / Practical
Recommended extent of course (in hours):
Per week: 2 / 2 **For the study period:** 26 / 26
Methods of study: present

Number of credits: 6

Recommended semester/trimester of study: 1.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
Students prepare a collection of letters that contains 20 items. They characterize leaves morphologically, and at the end of the semester, they are tested on the morphology of the leaves. During the semester, there will be two written examinations from the botanical part and one from the zoological part at the end of the semester.
The final oral exam is half botanical and half zoological. Completing at least 50% of the botanical part and at least 50% of the zoological part is a condition for granting credits.
Total student load: 6 credits = 150-175 hours
The student will participate in 52 hours of contact lessons; the student works for 20 hours on the collection of leaves, their morphological description and preparation for the examination, and in the 25 hours of self-study; he prepares for one written examination from the botanical part (a total of 50 hours), for the examination from the zoological part is composed by self-study in the range of 50 hours.
The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
Knowledge:
- The student can identify the basic conceptual, categorical and methodological apparatus of the subject;
- The student has expanded knowledge in the field of related sciences and understands and categorizes connections from other scientific disciplines;
- By completing the subject, the student will acquire knowledge of the anatomy and morphology of higher plants and animals, which he can use in their identification.
Abilities:

- The student can recognize plant and animal organs.
- The student can apply theoretical knowledge to other botanical and zoological subjects.
Competencies:
- The student can soundly express himself in the scientific field of the anatomy and morphology of higher plants and animals.

Brief syllabus:
seminar 1. – part of botany
1., Definition of basic terms. A brief history of the issue.
2., Stem branching, types of branching, germination of higher plants.
3., Root: Primary and secondary structure of the root. Monocotyledonous and dicotyledonous roots.
4., Stem: Anatomy of the stem. The primary structure and its tissues. Secondary construction. Structure of the stem of monocotyledonous and dicotyledonous plants
5., Telomere theory.
6., Sheet: Basic structure and types of meshes. Leaf structure of gymnosperms and angiosperms.
7., Flower – flower structure, flower packaging, stamen, carpels
8., Floral formula and diagram
9., Introduction to plant embryology. Male genital organs, microsporogenesis, formation and structure of the pollen grain.
10., Female genital organs, megasporogenesis, germinal sac structure.
11., Introduction to plant embryology. Formation and structure of the embryo. The anatomical structure of the fetus. –
Pollination, fertilization, emergence and development of seed and fruit - embryogenesis.
12., Vegetative and generative plant reproduction.
13., Adaptations of plant organs to their environment
seminar 2. – part of zoology
1., Introduction to the issue
2., Covering systems of vertebrates
3., Support systems of vertebrates
4., Digestive systems of vertebrates
5., Circulatory systems of vertebrates
6., Respiratory systems of vertebrates
7. Excretory systems of vertebrates
8., Reproduction - asexual, sexual - vertebrates
9., Gland systems with the internal secretion of vertebrates
10., Nervous systems of vertebrates
11., Vertebrate sensory organs
12., Ontogenesis of animals - embryogenesis - vertebrates
13., Ontogenesis of animals, regulation of development, postembryonic development - vertebrates
exercise 1. – botanic part
1., Plant organs, characteristics, general morphological features
2., Metamorphosis and forms of the root.
3., Metamorphosis of the stem. - Morphology – meaning, phylogenetic, ontogenetic development,
4., Morphology and organology of the leaf I., leaf veins, shapes of the leaf blade,
5., Morphology and organology of leaf I., simple and compound leaves, leaf development, vernation and position of leaves on the stem.
6., Study control
7., Morphology – inflorescences simple and compound. Inflorescences fringed.
8., Apical inflorescences
9., Double fertilization of angiosperms

10., Types of true fruits,
11., Types of false fruits, propagation of seeds and fruits
12., Study control
13., Examining the morphology of leaves
exercise 2 – zoology part
1., Basic concepts
2., Covering systems of invertebrates
3., Support systems of invertebrates
4., Digestive systems of invertebrates
5., Circulatory systems of invertebrates
6., Respiratory systems of invertebrates
7., Excretory systems of invertebrates
8., Reproduction - asexual, sexual - invertebrates
9., Gland systems with the internal secretion of invertebrates
10., Nervous systems of invertebrates and vertebrates
11., Sensory organs of invertebrates
12., Ontogenesis of animals - embryogenesis - invertebrates
13., Ontogenesis of animals, regulation of development, postembryonic development - stateless

Literature:

BAKONYI, G.: Álattan. Mezőgazda Kiadó. 2003. 718 s. - ISBN 963 286 044 6.
BELÁKOVÁ, A.: Rozmnožovanie a ontogenéza živočíchov. Bratislava : Univerzita Komenského v Bratislave, 1994. 80. ISBN 8022307319.
CSÖRGŐ et al.(eds.) Magyar madárvonulási atlasz. Kossuth Kiadó, 2009.,672 s. - ISBN 978-963-09-5865-3.
HARASZTY Á., (1990): Növényszervezettan és növényélettan. Tankönyvkiadó, Budapest ISBN 963 18 3006 3
KRISKA, G., LŐW, P.: Biológia érettségire felkészítő. Állati szervezetek. Nemzeti Tankönyvkiadó, 222. o. + DVD. 2012 223 s. - ISBN 978-963-19-7109-5.)
TUBA Z., SZERDAHELYI T., ENGLONER A., NAGY J., 2013 : Botanika I. Sejttan, szövettan alaktan. Nemzeti tankönyvkiadó, Budapest. 28O s ISBN : 978-963-19-5848-5.)
ZBORAY, G.: Összehasonlító anatómiai praktikum I. - A gerinctelenek - Anamnia-
Az alacsonyabbrendű gerincesek. Nemzeti Tankönyvkiadó, 2014, 486 s. - ISBN 978-963-19-6819-4.)
ZBORAY, G.: Összehasonlító anatómiai praktikum II. Amniota. Magasabbrendű gerincesek. ELTE Eötvös Kiadó Kft., 2007, 480 s. - ISBN 978-963-19-6000-6.)

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Pavol Balázs, PhD.

Date of last update: 13.07.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ VSB2/22	**Name:** General biology II.

Types, range and methods of educational activities:
Form of study: Lecture / Seminar / Practical
Recommended extent of course (in hours):
Per week: 1 / 1 / 1 **For the study period:** 13 / 13 / 13
Methods of study: present

Number of credits: 5

Recommended semester/trimester of study: 2.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
During the semester, students must meet the following requirements:
Total student workload: 5 credits = 125-150 hours
The student participates in 39 hours of contact classes, 15 hours of preparation of tasks given at seminars, 16 hours of self-study for the written examination from the seminar section, and 15 hours of preparation of protocols and preparation for the oral exam by self-study of 40 hours.
The final assessment is as follows: Protocols - 10%, written examination from the seminar part - 30%, oral exam - 60%. The condition for successful subject completion is obtaining at least 50% from each part of the subject evaluation.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
Knowledge:
- The student will get to know more thoroughly the structure of every organ of the human body, including cytology and histology.
- The student knows the structure of each organ and the human organ system.
- The student knows the relational system of each organ system and can think at the system level
- The student has expert anatomical knowledge that supports his health knowledge.
- The student knows the main anatomical terms of the Hungarian, Slovak and Latin equivalents.
- The student knows the rules of laboratory work.
- The student knows the basics of classical genetics
Abilities:
- The student can independently collect information from the field of anatomy
- The student can apply theoretical knowledge in practice
- The student can navigate anatomical diagrams, models
- The student can assemble the human skeleton using diagrams

- The student can determine the age and gender of human bones using specialized materials
- The student can examine the morphology of pig organs
- The student can keep minutes of his laboratory work
- The student can explain the functioning of the central dogma also using examples
- The student can solve examples of classical genetics

Competencies:
- The student has a positive attitude toward learning about the human body
- The student undertakes to protect the human body
- The student commits to evidence-based scientific thinking
- The student has the competence to solve simple problems of monogamous inheritance

Brief syllabus:

1. Anatomical nomenclature. Axes, planes, and directions on the human body.
2. Skeletal system. Anatomy of the trunk, skull, upper and lower limbs.
3. Muscular system. Main muscle groups of the head, neck, torso, upper and lower limbs.
4. Respiratory system. Anatomy of the lower and upper respiratory tract.
5. Digestive system. Anatomy of some organs of the digestive system.
6. Circulatory system. Structure of the heart. Vessels. Lymphatic system. Spleen, lymph.
7. Excretory system. Anatomy of the urinary tract and kidneys.
8. Sexual system. Male genitals. Female genitals.
9. Parts of the central nervous system and brain.
10. Nervous system: parts of the central nervous system, spinal cord.
11. Nervous system: the peripheral nervous system. Cerebral and spinal nerves.
12. Sensory organs. Sight, hearing and balance organs,
13. Sensory organs. Anatomy of smell, taste and skin.

Seminars:

1. Introduction to the issue of inheritance.
2. Brief history of genetics.
3. Definition of basic genetic concepts. Basics of genetic terminology.
4. Genetic code.
5. Central dogma.
6. Practicing examples from replication, transcription and translation
7. Basics of regulation of genetic systems.
8. Mendel's laws I.
9. Mendel's laws II.
10. Calculation of examples of crossing monohybrid, dihybrid
11. Calculation of examples of complete crossing dominance, incomplete dominance
12. Calculation of examples of the crossing of gonosomal inheritance
13. Summary

Literature:

BORISSZA E., VILLÁNYI A., ZENTAI G. Ötösöm lesz genetikából - 5. vyd. - Budapest : Műszaki Könyvkiadó Kft., 2006. - 319 s. - ISBN 963 16 2836 1.
CAMPBELL, A. M., HEYER, L. J. Genomika, proteomika, bioinformatika - 1. vyd. - Budapest : Medicina Könyvkiadó Rt., 2004. - 381 s. - ISBN 963 242 882 X.
ČIHÁK, R.: Anatomie I.-III. Avicenum Praha, 1987, 1989, 1997. ISBN 80-7169-970-5
DYLEVSKÝ, I.: Somatológia. Bratislava : OSVETA, 2000. - 439 s. - ISBN 80-8063-127-1
MADER, S. S.: Human biology. Wm. C. Brown Publishers, USA, Third edition 1992. 500 s. - ISBN 0-697-12333-2

MARÓY, P. Genetika BS - 3. vyd. - Szeged : Jate Press, 2014. - 281 s. - ISBN 978-963-306-003-2.
McCRACKEN, T.O.: Háromdimenziós anatómiai atlasz. Budapest : Scolar Kiadó, 2000. - 237 s. - ISBN 978-963-9193-99-4
NAGY, M.: Humánbiológia, Lilium Aurum, Dunaszerdahely, 2006, ISBN 80-8062-283-3.
SZENTÁGOTHAI, J.: Funkcionális anatómia I.-III. Budapest : Medicina Könyvkiadó, 2006. - 710, 600, 800. - ISBN 963 242 565 0
PORÁČOVÁ, J., NAGY, M. a kol.: General and Applied Biochemistry for Natural-Sciences – 1. vyd. – Budapest: Műszaki Pedagógia Tanszék, 2021. – 223 s. – ISBN 978-963-421-847-0.
PORÁČOVÁ, J., VAŠKOVÁ, J., NAGY, M. a kol. 2015. Všeobecná genetika. Prešov: FHPV PU. 397 s. ISBN 978-80-555-1523-6.
PORÁČOVÁ, J., MARIYCHUK, R., NAGY. M. a kol.: Základné biochemické procesy organizmov – 1. vyd. – Prešov: Prešovská univerzita v Prešove, Fakulta humanitných a prírodných vied - 2015. – 343 s. – ISBN 978-80-555-1514-4.
SNUSTAD, D. P., SIMMONS, M. J. 2009. Genetika. Brno: Masaryková univerzita. 894 s. ISBN 978-80-210-8613-5.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Dr. habil. PaedDr. Melinda Nagy, PhD., Dr. habil. Sarolta Zsuzsanna Mészárosné Darvay, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ ZET/22	**Name:** Basics of ecotoxicology
Types, range and methods of educational activities: **Form of study:** Seminar **Recommended extent of course (in hours):** **Per week:** 2 **For the study period:** 26 **Methods of study:** present	
Number of credits: 2	
Recommended semester/trimester of study: 5.	
Level of study: I.	
Prerequisites:	
Conditions for passing the subject: A condition for passing the subject is active participation in seminars. The evaluation consists of a presentation and writing of a seminar paper on a freely chosen topic related to ecotoxicological problems (range min. five pages, max. ten pages). Evaluation criteria: - Summary of the issue according to currently available professional literature, drawn from relevant professional publications (40%) - Requirements for content, form, and graphic, image documentation (20%). - Elaboration of the presentation of the issues of the seminar work (40%). In the final part, the student proves his theoretical knowledge by completing the test. Final evaluation: share of seminar work and written exam on the grade: 50% - 50%. Total student load: 2 credits = 50-60 hours 26 hours of participation in contact lessons; 15 hours of preparation of seminar work and presentation; 9-19 hours of self-study and test preparation; The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject. Overall evaluation of the success of the subject: - A = 90-100% (90-100 points) - B = 80-89% (80-89 points) - C = 70-79% (70-79 points) - D = 60-69% (60-69 points) - E = 50-59% (50-59 points) - - FX = 0 – 49% (0 – 49 points)	
Results of education: Knowledge: - The student can characterize terms such as toxicity and poisons and determine the factors of the degree of toxicity. - The student can define mutagens, teratogens and carcinogens and classify them. - The student can describe industrial and agricultural pollutants and connect this knowledge with ecology. - The student can list and characterize individual types of toxic tests, their role and evaluation methods, goals of ecotoxicological studies and characterize commonly used test organisms.	

Abilities:
- The student can classify ecotoxicology among other scientific disciplines to characterize its importance for living organisms.
- The student can explain the importance of studying toxic substances for all living systems, such as plants, animals and humans.
- The student can explain the principles of toxicology in the context of ecology, nature protection, and health science.
- The student can use his knowledge in the teaching process by explaining the various consequences of industrial and agricultural disasters, which had a severe impact on the health of animals and people, as well as on the pollution of soil, water, air and thus also on the development of living organisms.
Competencies:
- The student has a positive attitude toward nature by knowing dangerous substances for ecosystems.
- The student has a positive attitude toward the creation of objective knowledge in the next generation; with his knowledge, he can increase the attitude of children towards the protection of the environment and their health and encourage them to take responsibility for the protection of nature and health at the individual level.
- The student is open to possible collaborations, participatory programs, new theories and methods, and their application and integration in the field of sustainability.
- The student can engage in an emotional, ethical approach and positive culture formation in his own life and the lives of the people around him.
- The student, as an active citizen, is responsible in the pedagogical areas of education within his competencies; he takes responsibility for the ecological formation of his environment, living space and community.

Brief syllabus:
1. Introduction to the issue of ecotoxicology - history of ecotoxicology. Place of ecotoxicology in toxicology, connection with environmental protection, subject of ecotoxicology.
2. Toxicity, poison, toxicity rate factors - dose, duration of effect, route of exposure, species used for toxicity rate testing.
3. Ecosystems and ecotoxicology, micropollutants, as environmental stressors, heavy metals, pesticides, the mutagenic, teratogenic and carcinogenic effect of substances, poisons.
4. Industrial and agricultural pollutants, chlorinated hydrocarbons, organophosphorus esters, triazines, polychlorinated biphenyls, and dioxins.
5. Types of toxicological tests, acute and chronic tests, the role of single-species tests and their evaluation, and the role of multi-species tests and their evaluation.
6. Ecotoxicological studies, geno- and cytotoxicological studies, and ecotoxicological measurements.
7. Commonly used test organisms, standard test methods: bacterial bioassays, plant tests, animal tests.
8. The fate of toxic substances in environmental systems: bioindication, bioaccumulation, bioconcentration and biomagnification,
9. Measurement of biodegradation in ecotoxicological studies, biodegradation process, practical applicability, biodegradation testing techniques.
10. Ecotoxicology and risk assessment, early warning systems, environmental impact assessment, biomarkers, biosensors, bioindicators.
11. Microcosm, mesocosm, field experiments and bioremediation technology.
12. Toxicological limits, standard systems, authorization procedures.
13. Repetition, a summary of the curriculum.

Literature:

CALOW, P.: Handbook of Ecotoxicology - 1. vyd. : Blackwell Science, 1998. - 885 s. - ISBN 0 632 04933 2.
DARVAS, B., SZÉKÁCS, A.: Mezőgazdasági ökotoxikológia – 1. vyd. – Budapest: L Harmattan, 2006. – 382 s. – ISBN 963 7343 39 3.
KOMONYI, É.: Életvédelem I.: Környezeti veszélyek és károsító tényezők – 1. vyd. – Ungvár: PoliPrint, 2010. – 105. s. – ISBN 978-966-2596-05-5.
KVASNIČKOVÁ, D.: Životné prostredie - 1. vyd. Bratislava: Slovenské pedagogické nakladateľstvo, 2002. 160 s. ISBN 80-08-03341-X
TOMPA, A.: Kémiai biztonság és toxikológia – 1. vyd. – Budapest: Medicina Könyvkiadó, 2005. – 466 s. – ISBN 963 242 926 5.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: RNDr. Eva Tóthová Tarová, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ ZUR/22	**Name:** Basics of sustainable development

Types, range and methods of educational activities:
Form of study: Seminar
Recommended extent of course (in hours):
Per week: 2 **For the study period:** 26
Methods of study: present

Number of credits: 3

Recommended semester/trimester of study: 1.

Level of study: I.

Prerequisites:

Conditions for passing the subject:
The subject is evaluated by a final knowledge test (100 points) and the preparation of a seminar paper on the subject.Total student workload: 3 credits = 75-90 hours
The student will participate in 26 hours of teaching. He works for 20 hours preparing the seminar paper and for the test by self-study in the range of 30-45. The condition for successful completion of the subject is obtaining at least 50% of the maximum point evaluation of the subject.
Overall evaluation of the success of the subject:
- A = 90-100% (90-100 points)
- B = 80-89% (80-89 points)
- C = 70-79% (70-79 points)
- D = 60-69% (60-69 points)
- E = 50-59% (50-59 points)
- FX = 0 – 49% (0 – 49 points)

Results of education:
Knowledge:
- The student knows the content of the term sustainable development
- The student knows the UN Sustainable Development Goals
- The student systematically perceives the interconnectedness of the environment, human society and the economy.
- The student knows the current state of the biosphere and knows the reasons and consequences of man-made destruction.

Abilities:
- The student can identify and process Sustainable Development problems based on his information collection.
- The student can reveal the system relationships of the Sustainable Development goals.
- The student can distinguish between sustainable and unsustainable processes and their reasons.
- The student can recognize the interconnectedness of local and global problems.
- Based on his ecological, social and economic knowledge, the student is capable of critical thinking.
- Based on his natural science education, the student can correctly perceive and evaluate man's negative impact on the biosphere.

- The student can propose local solutions.
Competencies:
- The student takes a positive attitude towards the phenomena of the biosphere.
- The student feels his responsibility for the future, respects his animate and inanimate surroundings,
- By his conviction, the student will lead his surroundings to a positive attitude toward Sustainable Development.

Brief syllabus:
1. Definition, interpretation, and development of the concept of sustainable development.
2. Origin and characteristics of the Millennium Development Goals and Sustainable Development Goals.
3. Systemic interconnectedness of nature, society and economy. Megatrends 20.-21. Centuries.
4. Climate change in the Anthropocene - the dimension of TUR.
5. Causes and consequences of the destruction of the biosphere by man. Living planet report 2020.
6. The current state of our planet in the light of sustainability numbers. Ecological footprint, carbon footprint, etc.
7. Systems thinking, systemic evaluation of ecological disasters.
8. State of the EU environment (SOER2020 report)
9. The main principles of the regulation of the protection of the atmosphere, climate, hydrosphere, pedosphere and nature protection of the EU.
10. Global risks and challenges affecting human health and well-being.
11. Sustainable way of life, reduction of consumption
12. Global problems, local solutions, good examples.
13. Global problems, local solutions, good examples.

Literature:
HOLÉCZYOVÁ, G. – ČIPÁKOVÁ, A. - DIETZOVÁ, Z.: Hygiena životného prostredia. 1. vyd. - Košice : Univerzita Pavla Jozefa Šafárika, 2011. ISBN 978 80 7097 892 4. 201 s.
MONSPART, E. – TROMBITÁS, G (1998).: 101 lépés a fenntartható világ felé. 1. vyd. - Budapest : Környezeti Tanácsadók Egyesülete, 120 s.
SCHMUCK, E.: A "Fenntarthatóság" első éve : A riói környezet és fejlődés világkonferencia tízéves évfordulójának alkalmából 1. vyd. : Magyar Természetvédők Szövetsége, 2002. 31s.

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher: Ing. Pavol Balázs, PhD.

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.

INFORMATION SHEET

Name of the university: J. Selye University	
Name of the faculty: Faculty of Education	
Code: KBIO/Bdb/ ŠS/22	**Name:** State Examination

Types, range and methods of educational activities:
Form of study:
Recommended extent of course (in hours):
Per week: For the study period:
Methods of study: present

Number of credits: 2

Recommended semester/trimester of study:

Level of study: I.

Prerequisites:

Conditions for passing the subject:
All students who have met the requirements of the programme of study in the final year of their studies may take the state examination at the regular time according to the study schedule.
In the oral state examination, the student gives an account of his/her knowledge and skills in his/her field of specialisation and the interdisciplinary connection with the relevant fields of specialisation. The student demonstrates the ability to communicate information, ideas, problems and solutions to professional and lay audience.
The state examination takes the form of a colloquium in which the student's performance is assessed on a scale from A to FX. The grade counts for the overall state examination grade. The oral examination is graded on the following scale: A - 100-91%, B - 90-81%, C - 80-71%, D - 70-61%, E - 60-50%. A student who fails to achieve 50% receives no credit.
The results of the state examination and the thesis defence are publicly announced by the chair of the board.

Results of education:
Knowledge:
- the student has acquired knowledge in the compulsory and profile subjects of the study programme,
- the student is able to define and interpret basic concepts in his/her own words, to explain and describe basic processes, to characterise and to apply academic methods of research in the areas indicated in the subject's thematic plan,
- the student is able to analyse and evaluate the knowledge acquired in the subject.

Skills:
- the student is able to present his/her expertise,
- the student is able to hand over his/her knowledge
- the student is able to organise and apply the theoretical knowledge acquired,
- the student has the ability to organise and apply the knowledge acquired in the course of his (her) studies.

Competences:
- the student is able to express his/her linguistic and professional culture in the oral examination,
- the student is able to use the knowledge acquired in a wider context,
- the student is able to put the knowledge acquired into practice and organise it,

- the student is able to use his/her knowledge in a creative way while solving problems, as well as to analyse the problem and organise new solutions,
- the student is able to answer the questions of the committee at the expected level.

Brief syllabus:
I. Biodiversity and ecology of taxons of plants, animals and fungi
II. Anatomy, morphology and physiology of plants, animals and humans
III. Basics of chemistry, biochemistry, molecular biology and genetics

Literature:
Literature indicated in the information sheets of the study programme

Language, knowledge of which is necessary to complete a course:
Hungarian or Slovak

Notes:

Evaluation of subjects
Total number of evaluated students: 0

A	B	C	D	E	FX
0.0	0.0	0.0	0.0	0.0	0.0

Teacher:

Date of last update: 23.05.2022

Approved by: Dr. habil. PaedDr. Melinda Nagy, PhD.